BEFORE THE STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES
OFFICE OF ADMINISTRATIVE LAW

IN THE MATTER OF THE PETITION OF SOUTH JERSEY GAS COMPANY FOR APPROVAL OF INCREASED BASE TARIFF RATES AND CHARGES FOR GAS SERVICE AND OTHER TARIFF REVISIONS	)))))	**BPU DOCKET NO. GR03080683** **OAL DOCKET NO. PUCRL 06695-2003S**
IN THE MATTER OF THE PETITION OF SOUTH JERSEY GAS COMPANY TO IMPLEMENT CERTAIN PROVISIONS OF ITS RATE UNBUNDLING STIPULATION	)))))	**BPU DOCKET NO. GR00050295** **OAL DOCKET NO. PUCRL 08532-2003S**

DIRECT TESTIMONY AND EXHIBITS OF JAMES A. ROTHSCHILD ON BEHALF OF THE NEW JERSEY DIVISION OF THE RATEPAYER ADVOCATE

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I. STATEMENT OF QUALIFICATIONS OF JAMES A. ROTHSCHILD

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is James A. Rothschild and my address is 115 Scarlet Oak Drive, Wilton, Connecticut 06897.

Q. WHAT IS YOUR OCCUPATION?

A. I am a financial consultant specializing in utility regulation. I have experience in the regulation of electric, gas, telephone, sewer, and gas utilities throughout the United States.

Q. PLEASE SUMMARIZE YOUR UTILITY REGULATORY EXPERIENCE.

A. I am President of Rothschild Financial Consulting and have been a consultant since 1972. From 1979 through January 1985, I was President of Georgetown Consulting Group, Inc. From 1976 to 1979, I was the President of J. Rothschild Associates. Both of these firms specialized in utility regulation. From 1972 through 1976, Touche Ross & Co., a major international accounting firm, employed me as a management consultant. Touche Ross & Co. later merged to form Deloitte Touche. Much of my consulting at Touche Ross was in the area of utility regulation. While associated with the above firms, I have worked for various state utility commissions, attorneys general, and public advocates on regulatory matters relating to regulatory and financial issues. These have included rate of return, financial issues, and accounting issues. (See Appendix B.)

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received an MBA in Banking and Finance from Case Western University (1971) and a BS in Chemical Engineering from the University of Pittsburgh (1967).

II. PURPOSE

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. The purpose of this testimony is to determine the cost of capital that is appropriate to apply to South Jersey Gas Company ("South Jersey Gas," "SJG" or the "Company"). Additionally, this testimony will provide an evaluation of the testimony of SJG's cost of capital witness, Paul R. Moul.

III. SUMMARY OF CONCLUSIONS

Q. PLEASE BRIEFLY SUMMARIZE YOUR FINDINGS.

A. In consideration of the recent tax law change and other changes in the capital markets, I recommend that SJG be allowed an overall cost of capital of 7.22%. This is based upon a cost of equity of 9.50%. and a capital structure containing 39.69% common equity, 47.30% long-term debt, 12.74% short-term debt, and 0.27% preferred stock. My overall cost of capital recommendation also includes short-term debt in the capital structure at the current actual cost rate of 1.695%.

Because of recent changes in the federal income tax law and the current financial environment, the cost of equity to SJG should be lower than has been allowed by the New Jersey Board of Public Utilities ("Board" or "BPU") in cases that were decided based upon records developed prior to the mid-2003 passage of the tax law.

My cost of equity recommendation is based upon an analysis using both the Discounted Cash Flow ("DCF") method and the Risk Premium/Capital Asset Pricing Model ("CAPM") method. The cost of equity was determined by examining the financial data for a group of gas distribution companies consisting of all of the gas distribution companies covered by Value Line, as well as financial data for the same group of companies utilized by Company witness Mr. Moul.

As explained in detail later in this testimony, my capital structure recommendation is based upon the actual capital structure of SJG, modified to exclude the impact of the artificial

reduction and elimination of the common dividend paid by SJG to its parent, South Jersey Industries ("SJI").

Q. WHAT HAS SJG REQUESTED?

A. SJG has requested an allowed a cost of equity of 12.0%, based upon a capital structure containing 50.10% common equity, 0.28% preferred equity, 43.06% long-term debt, and 6.56% short-term debt, for an overall cost of capital of 9.14%.

The 12.0% cost of equity requested by the Company is considerably more than the 9.50% to 9.75% cost of equity the BPU has allowed in recent electric base rate cases and the 9.50% I recommend in this case. Unlike the cost of equity recommended by Mr. Moul, my cost of equity recommendation can be reconciled to the cost of cost of equity allowed in these recent New Jersey electric rate cases. An important reconciling factor is the tax law change. The new federal income tax law that was passed in late May, 2003, in and of itself, justifies a lowering of the cost of equity.

The 6.56% short-term debt used by the Company in its recommended capital structure is considerably less than the 12.74% short-term debt that I used. As explained below in my testimony, the level of short-term debt that I recommend is based upon the actual average level of common equity used by SJG for the year, adjusted to account for the impact of the artificial reduction and elimination of the common dividend paid by SJG. See Schedule JAR-11, p. 1.

Q. PLEASE SUMMARIZE THE PROBLEMS WITH THE COST OF EQUITY RECOMMENDATION MADE BY MR. MOUL.

A. In his analysis, Mr. Moul applied a DCF method, a risk premium method, a CAPM method, and a comparable earnings method. As explained in detail later in my testimony, Mr. Moul has mis-applied all of these methods. Mr. Moul's DCF method is deficient primarily because he used a higher growth rate in his DCF model than can be justified by the historical data he claims to use. He presents a wide array of short-term non-constant growth rates, that cannot be expected to continue for the long term, even though the form of the DCF model he selected requires constant growth rates, that remain constant over the long term. These non-constant growth rates take the form of historical growth rates and short-term growth rates when applying his DCF method. He then arbitrarily selected a growth rate towards the upper end of the growth rates he computed. The net result of Mr. Moul's mis-application of a DCF method is a cost of equity recommendation that is too high.

In addition, as explained below in my testimony, Mr. Moul relied upon a flawed Risk Premium and CAPM analysis. When applying the Risk Premium and CAPM methods, Mr. Moul erroneously used the arithmetic mean instead of the geometric mean. He also improperly measures the historical actual risk premium by using median values, instead of mean values. Mr. Moul compounded this error by ignoring the substantial downward trend that has occurred in risk premiums over the last several decades. As if these errors are not enough, Mr. Moul incorrectly makes an upward adjustment to the beta's of the companies in his CAPM computation based upon the market-to-book ratio of the companies he analyzes, which has the effect of providing shareholders with a return on their investment which exceeds the required return on the equity component of the company's rate base. As will be explained in detail later

in my testimony, all of these mistakes contribute to a cost of equity that is higher than what can be justified.

IV. CAPITAL STRUCTURE AND EMBEDDED COST RATES

A. Introduction.

Q. WHAT IS CAPITAL STRUCTURE?

A. The capital structure of a company is the percentages of different funding sources obtained by the company from investors. These funds are used by the company to acquire assets. One major source of funding is debt (bonds) and the other major source of funding is common equity. For example, if a company has total capital of $15 million that was obtained by selling $10 million of debt and $5 million of equity, the capital structure of this company would be 67% debt and 33% common equity.

Q. WHY DOES CAPITAL STRUCTURE MATTER?

A. It is important for a company to have the right capital structure because if the company has too much equity it will be paying more to raise funds than it has to – the cost of equity is more than the cost of debt. However, if a company has too much debt in its capital structure then that company risks not being able to meet its interest payments and potentially going bankrupt.

B. Summary of Conclusions on Capital Structure.

Q. WHAT CAPITAL STRUCTURE SHOULD BE USED FOR SJG TO DETERMINE ITS OVERALL COST OF CAPITAL?

A. I recommend that the appropriate capital structure to use to determine the overall cost of capital for SJG is one that contains 39.69% common equity, 47.30% long-term debt, 12.74% short-term debt, and 0.27% preferred stock. See Schedule JAR-11, p. 1. This capital structure is based upon the average capital structure for the year ending February 2004 for SJG. In my analysis, I used the actual capital structure of SJG, adjusted to impute the continued booking of regular SJG dividend payments to its parent, South Jersey Industries ("SJI"). This is the appropriate way to view the actual capital structure of SJG because the actual dividends paid by its parent, SJI, to outside investors was not cut. In fact, the dividend was increased. By properly recognizing the continuation of the dividend on the books of SJG as well as SJI, my computation of the capital structure of South Jersey Gas continues to make sense in the context of SJI's consolidated actual capital structure. Furthermore, my recommendation of a capital structure containing 39.69% common equity is consistent with the actual capital structure of the gas distribution companies covered by Value Line. As shown on Schedule JAR-7, p. 1, the average common equity in the capital structure of the gas distribution companies covered by Value Line is 39.27%, or virtually identical to the capital structure I have recommended for SJG.

Q. WHAT CAPITAL STRUCTURE DID COMPANY WITNESS MR. MOUL RECOMMEND FOR THIS RATE CASE?

A. Mr. Moul recommended a capital structure of 50.10% equity, 49.62% debt and 0.28% preferred stock.

Q. HOW DID THE COMPANY OBTAIN ITS RECOMMENDED CAPITAL STRUCTURE?

A. Mr. Moul recommended a capital structure based upon the reported common equity of SJG without considering that the higher common equity ratio of SJG was "artificially" created simply by cutting or suspending the common dividend payments from SJG to SJI. Mr. Moul's downward adjustment to long-term debt reflected his exclusion of reacquisition costs in long-term debt. Making this downward adjustment to the level of long-term debt has the effect of increasing the common equity ratio to a higher level than is being used by the Company to finance its assets. Mr. Moul also made a downward adjustment to short-term debt to exclude the financing associated with an array of short-term projects. In so doing, Mr. Moul ignored any consideration of a normal level of temporary short-term projects. As a result, Mr. Moul is recommending a capital structure with more common equity and less debt than is appropriate. If Mr. Moul's capital structure recommendation were to be used to set rates, ratepayers would be asked to pay more than what is appropriate for financing.

Q. WHAT DID YOU USE FOR THE EMBEDDED COST OF LONG-TERM DEBT, PREFERRED STOCK, AND SHORT-TERM DEBT?

A. I have adopted the cost rates proposed by the Company for long-term debt and for preferred stock. However, I used the actual cost of short-term debt of 1.695% rather than the 2.90% short-term debt cost rate requested by the Company.

C. Impact of Dividend Policy.

Q. IF A COMPANY WANTS TO INCREASE ITS COMMON EQUITY RATIO, HOW CAN THIS BE ACCOMPLISHED?

A. A company can increase its common equity ratio by selling new common stock or by cutting its dividend rate.

Q. CAN SJG SELL COMMON STOCK DIRECTLY TO THE PUBLIC?

A. No. Since SJG is wholly owned by SJI, if it wants to raise new common equity through the sale of common equity, it must sell the common equity to SJI. SJI must then, in turn, sell new common stock to the public.

Q. WHEN SJG PAYS A DIVIDEND, WHO RECEIVES THE DIVIDEND?

A. SJG pays its dividend to SJI. SJI then pays its dividend to outside investors.

Q. WHAT EVIDENCE LED YOU TO THE CONCLUSION THAT THE SOUTH JERSEY GAS CAPITAL STRUCTURE SHOULD VIEWED IN THE CONTEXT OF REFLECTING THE CONTINUED BOOKING OF DIVIDENDS FROM SJG TO SJI?

A. I started by examining the response to RAR-ROR-55. This response shows that SJG cut the rate of dividends it was paying to its parent, SJI, by more than 50% starting in the 2nd quarter of 2002 and then chose to totally eliminate the common dividend from SJG to SJI in 2003. The elimination of the payment of common dividends from SJG to SJI had the effect of increasing the level of common equity on the books of SJG. However, unless there was a corresponding cut in the dividends paid by SJI to its stockholders, there would be no corresponding increase in the common equity ratio of SJI. Under such circumstances, the only economic benefit of the dividend cut by SJG is to create the illusion of a higher common equity ratio on the books of SJG than actually exists from the perspective of outside bond and stock investors.

Q. SINCE THE DIVIDENDS BEING PAID BY SJG TO SJI WERE SO SEVERELY REDUCED, DID SJI RESPOND BY CUTTING THE DIVIDENDS IT PAID TO ITS STOCKHOLDERS?

A. No. As shown on Schedule JAR-11, p. 2, before this sudden and radical change in the dividend rate being paid by SJG to SJI, the total dividend paid by SJG to SJI was $17,500,400 in 2001. This was virtually identical to the total of $17,493,500 paid by SJI to its stockholders in 2001. Moreover, in subsequent years, the dividends paid by SJI to its stockholders

continued to increase even though, during that time, the dividend paid by SJG to SJI was first cut dramatically and then was totally eliminated.

Q. WHAT WAS THE IMPACT OF THE DIVIDEND CUT ON THE REPORTED CAPITAL STRUCTURE OF SJG?

A. The Company's Exhibit PRM-1 Schedule 2 (page 1), shows that the capital structure of SJG contained 34.9% common equity in 2002, averaged 34.0% from 1998-2002, and varied between 32.5% and 34.9% from 1998 through 2002. As I discussed earlier, I found that SJG cut the rate of dividends it was paying to its parent, SJI, by more than 50% starting in the 2nd quarter of 2002 and then chose to totally eliminate the common dividend from SJG to SJI in 2003. SJG's more recent capital structure reflects the change in dividend policy. Company Exhibit PRM-1, Schedule 5, shows the capital structure of SJG to contain 50.10% common equity by February 28, 2003, up from 43.26% as of February 28, 2003.

Q. DOES THE EXTREMELY LARGE INCREASE IN THE PERCENTAGE OF COMMON EQUITY IN THE CAPITAL STRUCTURE REQUESTED BY SJG RESULT FROM A PLANNED NEW COMMON EQUITY ISSUANCE BY SJI?

A. No. SJG has not stated that SJI plans to cut its common dividend or to issue any new common stock other than through the continuation of its ongoing dividend reinvestment plan. See the response to RAR-ROR-53 part c.

Q. IF SJG CUTS OR ELIMINATES ITS DIVIDEND TO SJI BUT SJI DOES NOT CUT ITS DIVIDEND, HOW IS SJI ABLE TO MAKE ITS DIVIDEND PAYMENT?

A. If SJG does not make its dividend payment to SJI, then SJI must rely upon other sources of funds, such as additional debt financing, to make its payment to stockholders. In this way, a cut in SJG's dividend rate without a corresponding cut in SJI's dividend rate is merely internal transactions that result in no substantive increase in the common equity ratio of SJG.

D. Other Factors Impacting Capital Structure.

Q. IS THE FAILURE OF SJG TO PAY DIVIDENDS TO SJI THE ONLY REASON THE CAPITAL STRUCURE SHOWN IN THE COMPANY'S EXHIBIT RPM-1, SCHEDULE 6, OVERSTATES THE COMMON EQUITY RATIO?

A. No. SJG sells most of its gas in the winter heating season. As a result, SJG also earns most of its money and retains most of its earnings during the heating season. Mr. Moul bases his recommendation for the capital structure as of the date of February 28. February 28 is a time in which the common equity ratio is at or near its seasonal high. Rates should be set based upon normal conditions, not conditions that are temporarily distorted by a seasonal factor. As shown on Schedule JAR-11, p. 1, even before correcting SJG's common equity balance to more fairly reflect the dividends paid by SJI - the level of common equity in the capital structure of SJG reaches a seasonal high in February and March.

Q. ARE THERE ANY OTHER REASONS WHY THE 50.10% COMMON EQUITY IN THE CAPITAL STRUCTURE REQUESTED BY THE COMPANY IS TOO HIGH?

A. Yes. Exhibit PRM-1, Schedule 6 (page 2) shows that Mr. Moul made a downward adjustment to the amount of debt outstanding to reflect the call premium on bonds re-acquired by the Company. Mr. Moul's adjustment assumes without justification that the call premiums paid by the Company were financed by extra debt that the Company would not have otherwise issued. By subtracting the call premium from the amount of debt outstanding, the percentage of debt in the capital structure is reduced. This reduction to the amount of debt outstanding has the effect of understating the amount of debt actually carried by SJG.

Mr. Moul's decision to reject using the actual capital structure because of debt re-acquisition is inappropriate because funds are fungible. Just because the Company might have issued more capital because it had to pay a re-acquisition premium does not mean the Company's appropriate capital structure changed. There is no way of telling if the extra capital to pay the call premium was actually financed with debt, with equity, or some combination of both. Good management manages the entire capital to optimize the cost of capital. Therefore, even if one debt issuance might be a little on the high side the impact of this is appropriately offset through actions such as changing the amount of earning retained or the size and timing of the next equity issuance. Hence, the balance of long-term debt used to compute the capital structure of the company should remain as reported.

E. SJG and SJI Capital Structure.

Q. IS IT PROPER TO CONSIDER THE CAPITAL STRUCTURE OF SJG WITHOUT CONSIDERING THE CAPITAL STRUCTURE OF SJI?

A. No. SJG is a wholly owned subsidiary of SJI. Therefore, a correct analysis of the capitalization of SJG includes the impact of SJI.

In light of the importance that SJI's capital structure and business activities have on all its subsidiaries, including South Jersey Gas, it would be improper to automatically adopt SJG's "actual" capital structure for ratemaking purposes. In my analysis, I used a capital structure that was SJG's "actual" capital structure, adjusted to impute the continued booking of regular SJG dividend payments to SJI. My recommended common equity ratio for SJG of 39.69% is consistent with consolidated capital structure, which has 37.10% common equity as of September 30, 2003. See JAR-11, p. 3. In the future, South Jersey Gas's capital structure could be inappropriate especially if the financial characteristics of the South Jersey Gas stand-alone capital structure exceed those of its bond rating.

The Standard & Poor's ("S&P") report provided by the Company in response to RAR-ROR-28 confirms this. The S&P report begins its bond rating rationale section by stating the following in the very first two sentences under the section entitled "Rationale":

> The ratings of South Jersey Gas Co. reflect the qualitative and quantitative attributes of the consolidated entity, which includes its parent South Jersey Industries and its nonregulated subsidiaries. South Jersey Gas represents about 90% of the consolidated assets of South Jersey Industries, whose other

> investments include South Jersey Energy Co. and Marina Energy LLC[1].

The section of the S&P report on SJG entitled "Weaknesses" further shows the tie-in between SJG and SJI by identifying one of the two weaknesses as: "Future increases in riskier nonregulated activities could produce an adverse change in credit quality."[2]

The undeniable tie-in between SJG and SJI is further clarified in the "Liquidity" section of the S&P report provided by the Company in response to RAR-ROR-28. This "Liquidity" section starts out with the following:

> South Jersey Gas' liquidity is adequate to meet its anticipated needs. The company's and its affiliates' lines of credit total $182 million ($125 million was used as of June 30,2003), of which $157 million is an exclusive line for South Jersey Gas. The parent has registered a new $150 million medium-term note program with the SEC, of which $64.5 million was available as of June 30, 2003. Furthermore, debt maturities for the next five years are a manageable $49.4 million[3].

The above-cites from the S&P report are consistent with the stated policy of S&P. Page 43 of S&P's "Corporate Ratings Criteria" which is publicly available on the S&P website, contains the following:

> Utilities are often owned by companies that own other, riskier businesses or that are saddled with an additional layer of debt at the parent level. **Corporate rating criteria would rarely view the default risk of an unregulated subsidiary as being substantially different from the credit quality of the**

[1] "Research: South Jersey Gas Company", *STANDARD & POOR'S RATINGSDIRECT* (Publication date: 25-Sep-2003), pages 1 & 2.

[2] "Research: South Jersey Gas Company," page 1.

[3] "Research: South Jersey Gas Company," pages 2 & 3.

> **consolidated economic entity** (which would fully take into account parent-company obligations). Regulated subsidiaries can be treated as exceptions to this rule –if the specific regulators involved are expected to create barriers that insulate a subsidiary from its parent. [Bold emphasis added.]

Q. DOES SJG HAVE LESS BUSINESS RISK THAN ITS PARENT, SJI?

A. Yes. As noted in the S&P report provided by the company in response to RAR-ROR-28, besides SJG, SJI owns unregulated businesses that have higher business risk than SJG.

Q. IS IT A GENERALLY RECOGNIZED PRINCIPLE OF FINANCE THAT THE LOWER A COMPANY'S BUSINESS RISK, THE LOWER ITS PERCENTAGE OF EQUITY CAN APPROPRIATELY BE?

A. Yes.

Q. IS IT YOUR OPINION THAT IT WOULD BE APPROPRIATE FOR SJG TO HAVE LESS EQUITY IN ITS CAPITAL STRUCTURE THAN ITS PARENT SJI?

A. Yes. For ratemaking purposes SJG should not be allocated a higher common equity ratio than its parent SJI, as the Company witness has requested. This is an indication that the Company's proposed capital structure, with 50% equity, is not an appropriate capital structure for SJG.

Q. DOES SJI HAVE AN INCENTIVE TO LOWER THE OVERALL COST OF CAPITAL OF ITS SJG SUBSIDIARY?

A. No, on the contrary. While there is substantial incentive for the competitive SJI to lower its overall cost of capital on a consolidated basis, it does not follow that a regulated subsidiary has such an incentive. As long as the Company believes the SJG capital structure might be used for regulatory purposes, it has an incentive to keep the common equity ratio of the regulated subsidiary as high as it dares. Since a regulated subsidiary such as SJG can and does provide cash flow to service more debt than it currently has outstanding, that cash flow could be used either to increase borrowing at the SJG subsidiary level or at the consolidated level. The important difference, however, is that unless regulatory procedures are implemented to protect against this, if SJG's extra cash flow is used to finance a higher proportion of debt at the parent level rather than at the SJG level, the percentage of equity in SJG's capital structure is increased to high levels even though the overall debt/equity ratio of the consolidated company may be maintained at more cost effective levels.

Q. WAS SJG ABLE TO PROVIDE ANY COST JUSTIFICATION FOR ITS EXTREMELY LARGE PROPOSED INCREASE IN THE COMMON EQUITY RATIO?

A. No. In its response to RAR-ROR-44, the Company claimed that the pro-forma common equity ratio was justified because it is "… within the range of ratios that investors expect for a gas distribution company." An examination of my Schedule JAR-7, p. 1 shows what is "…within the range..." is extremely wide. A common equity ratio as low as 20.0% and as high as 54.7% would be "within the range."

The additional part of the answer given by the company to cost justify its capital structure is a stated goal of an "A" bond rating. There are two problems with using this "A" bond rating as a cost justification. First, while other things being equal, A rated debt does have a slightly lower cost rate than the "BBB+" "Corporate Credit Rating" for SJG provided in response to RAR-ROR-28. Lowering the cost of debt does not provide cost justification unless the savings in interest cost is enough to at least offset the increase in the cost associated with the higher common equity component in the capital structure. Furthermore, for reasons explained above, even the decrease in the debt cost should not be expected unless the increase in the common equity ratio forecast for SJG were to also occur at the SJI level.

V. COST OF COMMON EQUITY

A. Introduction

Q. WHAT IS THE COST OF EQUITY?

A. The cost of equity is the rate of return that must be offered to a common equity investor in order for that investor to be willing to buy the common stock. The rate of return is earned in two different ways. One part of the return is from a dividend. The other part of the return is through the change in the stock price. Investors buy stock to benefit from the total return. Total return is the sum of the dividend income and the profit (or loss) obtained from the change in the stock price. While dividends are common in the utility industry, many companies do not pay a dividend. Yet, investors are willing to buy the stock if they feel that the likely capital appreciation will offset the lack of any dividend income. Common equity investors do not know with certainty what the stock price will be in the future. Also, investors are not certain at what rate future dividends might be increased or decreased. They also recognize that the possibility exists that dividends could be totally eliminated. Therefore, common equity investment always entails risk, but the risk can vary greatly from company to company.

The return an investor cares about is best measured as the return on market price. An investor who buys a common stock at $10.00 per share and sells it a year later for $10.90 will have received a 9% return (plus dividends, if any) irrespective of whether or not the company earned any money, and irrespective of the return on book value. However, utility commissions have the responsibility of balancing the interests of investors and ratepayers. Therefore, if it can be determined that investors are willing to buy stock with the expectation of being able to earn

an annual return of 9%, then a commission should set rates so that the return on used and useful rate base is at the level where the future return on book value is expected to be 9%. If the market price should happen to be below book value, this would not be justification for providing a lower return than the cost of equity demanded by investors. If the market price should happen to be above book value, this would not be justification for providing a higher return than the cost of equity demanded by investors. As the U. S. Supreme Court found in its decision in Federal Power Commission v. Hope Natural Gas (320 *U.S.* 591), p. 602, the stock price is "… the end product of the process of rate-making not the starting point…" and that "… the fact that the value is reduced does not mean that the regulation is invalid." Therefore, in rate cases it is important to set rates based on a return on book value.

Q. HOW MANY BASIC METHODS ARE USED TO CALCULATE THE COST OF EQUITY?

A. There are two basic methods to determine the cost of equity: the Discounted Cash Flow ("DCF") method and the risk premium/Capital Asset Pricing Model ("CAPM") method. A detailed discussion of the implementation of each method is found in my testimony in Appendix A.

Q. COULD YOU PLEASE EXPLAIN BRIEFLY HOW THE DCF METHOD WORKS?

A. Yes. The DCF method starts with the current dividend yield, and adds to that dividend yield an estimate of growth to arrive at the estimated cost of capital. This growth is really the estimate of the future capital appreciation that investors are expecting. Dividend growth, book value

growth, and earnings growth, to the extent they may be used, are only relevant to the degree they can help estimate stock price appreciation.

Q. COULD YOU PLEASE EXPLAIN BRIEFLY WHY THE DCF METHOD IS USED?

A. Yes. Perhaps a major part of the reason that the DCF method has been so commonly used over the years is because, more than any other method, it directly examines these factors that provide the incentive for investors to buy common stock in the first place.

Q. COULD YOU PLEASE EXPLAIN BRIEFLY HOW THE RISK PREMIUM/CAPM METHOD WORKS?

A. Yes. The risk premium method in a generic sense includes the CAPM method, is also commonly used by witnesses in rate proceedings. The risk premium/CAPM method is really measuring the very same thing as the DCF method --- the total return expected by a common stock investor. However, rather than determining this total return by directly estimating future dividends and capital appreciation, the method is looking either to interest rates or the inflation rate to help estimate what total return common stock investors want.

B. Summary of Conclusions on Cost of Equity.

Q. HOW DID YOU DETERMINE THE COST OF EQUITY AND WHAT WERE YOUR FINDINGS?

A. As explained in detail in this section, I determined the cost of equity to SJG by applying two different versions of the DCF method and two different versions of the Risk Premium/CAPM method. Based upon the analyses I conducted, I find that the cost of equity to SJG and applicable to a capital structure containing 39.69% common equity is 9.50%. See Schedule JAR-2. In contrast, Mr. Moul recommended a cost of equity of "at least" 12.0%,[4] with a capital structure containing 50.10% common equity.

Q. HOW DID YOU ARRIVE AT YOUR RECOMMENDED COST OF EQUITY?

A. I reviewed the results of my analyses using the DCF method and the risk premium/CAPM methods, as shown on Schedule JAR-2.[5] As explained in detail in my Appendix A, the results shown on Schedule JAR-2 were developed from my application of both the constant growth version of the DCF method and the complex DCF method.

Based on my analysis, the DCF-derived cost of equity for comparative gas companies is indicated to be 9.13% to 9.97% depending upon whether average or spot stock prices are used, the group of companies used, or whether the single-stage or multi-stage approach to the DCF method is applied.

As also shown on the bottom of Schedule JAR-2, my analysis using the risk premium/CAPM method indicates a cost of equity of 8.08% (based upon historical returns and

[4] Page 1, lines 19-20 of Mr. Moul's direct testimony.

[5] A detailed description of the DCF method and the Risk Premium/CAPM method is found in Appendix A.

applicable to the gas utility risk category) to 10.00% (based upon a study of inflation premiums and applicable to an equity investment of average risk).

Q. IS YOUR RECOMMENDATION CONSERVATIVELY HIGH?

A. Yes. I did not adjust my cost of equity down even though I recognized that in the current marketplace the DCF method generally overstates the cost of equity. This is because there is a general tendency for analysts' forecasts that some rate of return witnesses mistakenly use in their application of the DCF method to be overly optimistic about future earnings prospects.

Recognizing that analysts' habitual optimism causes the DCF method to overstate the cost of equity, I noted that the constant growth version of the DCF method as applied to the comparative group of gas utilities is 9.13% to 9.67%. See Schedule JAR-2. I also found that the cost of equity indicated by the multi-stage version of the DCF method applied to the same group of gas utilities varied between 9.94% and 9.97% depending upon the company group used and the stock price time period (spot price or average for the year). The cost of equity indicated by the risk premium/CAPM method as applicable to gas utility companies varies from 8.08% to 10.00%. See Schedule JAR-2.

By being conservative and giving more weight to the DCF result even though the DCF result is currently overstating the cost of equity, I find that the proper cost of equity to allow to a gas utility of average risk is 9.50%.

Q. HOW DOES YOUR IMPLEMENTATION OF THE DCF MODEL VARY FROM THE IMPLEMEMTATION USED BY THE COMPANY?

A. Unlike Mr. Moul, when I applied the constant-growth version of the DCF model, I quantified growth by using a method that computes constant growth that is sustainable over the long term. In contrast, Mr. Moul calculates his growth rate by arbitrarily picking a growth rate that is higher than historical or projected growth rates indicate is maintainable in the future. When I examined non-constant growth rates, I used a version of the DCF model that is based upon mathematics that can properly quantify the impact of non-constant growth. These differences are explained in detail later in this testimony.

Q. HOW DOES YOUR IMPLEMENTATION OF THE RISK PREMIUM/CAPM MODEL VARY FROM THE RISK PREMIUM AND CAPM MODELS PRESENTED BY MR. MOUL?

A. As will be explained in detail later in this testimony, Mr. Moul again resorted to deficient mathematics when applying his risk premium and CAPM models by improperly using an arithmetic averaging method. I show later in this testimony that the arithmetic average used by Mr. Moul substantially overstates growth rates that have occurred. Furthermore, the geometric mean method is the method that is consistent with the return rate that should be allowed on rate base. The arithmetic average differential should not form the basis for the allowed return on rate base because arithmetic returns will occur in any event from the normal ongoing stock price fluctuations that will occur irrespective of the return rate that is allowed on rate base. In contrast to Mr. Moul, I use the geometric mean in my analysis.

C. Cost of Equity Impact Caused by New Federal Income Tax Law Change

Q. HAVE THE RECENTLY ENACTED FEDERAL TAX LAW CHANGES IMPACTED THE COST OF EQUITY FOR SOUTH JERSEY GAS COMPANY?

A. Yes. The new U.S. tax cut law results in a large tax savings to equity investors, especially equity investors who own dividend paying utility stocks. Under the old law, dividends were taxed at rates that typically were 30% or more[6]; now dividends are taxed at no more than 15%. Under the old law, long-term capital gains were taxed at 20% and now they also will be taxed at no more than 15%.[7] The result of this tax cut is that investors keep a greater percentage of dividends and capital gains. Because income taxes are lower, the cost of equity allowed by the BPU in the past, assuming all else is equal, needs to be reduced by about 0.50%, or 50 basis points. Reducing the allowed return by 0.50% will result in the investor receiving the same after-tax return that he or she achieved under the old tax law.

Schedule JAR-12, p. 2, shows that under the old tax law, a cost of equity of 9.11% provided a typical investor with an after tax return of 7.61%. As also shown on Schedule JAR-12, p. 3, under the new tax law a cost of equity of 9.11% provides investors with an after-tax return of 8.32%, which is 0.71% more than under the old tax law.

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[6] Prior to the tax law change, federal income tax rates were 10%, 15%, 27%, 30%, 35%,or 38.6% depending upon the relevant income bracket. Under the newly passed law, the 27% drops to 25%, the 30% to 28%, the 35% to 33% and the 38.6% to 35%. Since the old 27% tax bracket applied to married couples with a combined income of no more than $47,450, it is reasonable to say that the dollar weighted dividends paid to most individual investors were in brackets of between 27% and 38.6%.

Q. IS THE CURRENT TAX LAW PERMANENT?

A. The current tax law technically expires after 2008. However, the May 31st 2003 issue of the *Economist* says, "…the chances of politicians letting the taxes reappear are slim."[8] Nevertheless, since the new tax law could expire at the end of 2008, I used a DCF analysis to calculate the tax effect assuming tax rates return to 20% for long-term capital gains and 30% for dividends in 2009. In the unlikely case that the new tax law should only be temporary, investors who hold the stock for 40 years would still receive a 0.12% greater after tax return on equity compared to the return under the old tax law. Investors with a time horizon shorter than 40 years would receive greater than a 0.12% benefit from the new tax law even under the unlikely assumption that the tax reduction is temporary. See Schedule JAR-12, p.1. Furthermore, whether or not the tax law change is permanent, investors will enjoy the benefits of the new tax law change during the years it is in effect. This is a cost reduction benefit that should be passed on to ratepayers for as many years as the new tax law does remain in effect.

Q. WHY DOES A REDUCTION IN THE INCOME TAX RATE PAID BY COMMON STOCK INVESTORS LOWER THE COST OF EQUITY THAT THE BOARD SHOULD ALLOW TO SJG?

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[7] Merrill Lynch "President Bush Signs Tax Bill Into Law" May 29, 2003.

[8] The *Economist*, "Disingenuous and Risky" May 31, 2003, page 13.

A. Investors care about maximizing the return on investment that they keep rather than simply maximizing the before-tax return an investment may return. This is why tax-free bonds pay a lower interest rate than taxable bonds. The cost of equity the Board allows is the return a company is allowed to earn after paying income taxes. However, the cost of equity allowed by the BPU is the rate earned by the investor before the investor pays income taxes on dividends or capital gains. When there is a change to the tax rate the investor pays on interest and on capital gains, there is a corresponding change in the return the Board must allow to give the investor the same return.

In the past, when there has been a tax law change in the income tax rate paid by SJG on its income, the income tax expense included an operating expense charge. For that very same reason it is appropriate to alter the tax allowance when the corporate tax rate changes and it is equally important to change the cost of equity allowance when the individual income tax rate changes.

Q. EARLIER IN YOUR TESTIMONY, YOU SAID THAT THE BOARD SHOULD CONSIDER THE IMPACT OF THE NEWLY PASSED TAX LAW WHEN COMPARING THE ALLOWED RETURN IN RECENT GAS CASES AND WHAT IT SHOULD NOW ALLOW. PLEASE EXPLAIN HOW YOU QUANTIFIED THE IMPACT.

A. The cost of equity impact was quantified by separately examining the following:

1) A present value analysis of cash flows assuming:

A) 40-year holding period with no tax law change;

B) 40-year holding period assuming the old tax law returns after 7 years;

C) A one-year holding period.

2) An examination of AAA corporate bonds versus the AAA tax-free municipal bonds.

I used a 40-year holding period in my DCF analysis because a long-term perspective is appropriate to fairly evaluate the impact on investors. Almost no investors will hold a stock for 40 years but they eventually will sell to another investor who also will be affected by the new tax environment.

Q. IF YOU SHORTEN THE HOLDING PERIOD DOES IT REDUCE THE SAVINGS AVAILABLE FROM THE NEW TAX LAW?

A. No. If it is assumed that an investor sells the stock after only one year, the after-tax return on equity increases to 0. 86% or a slightly greater savings than the 0. 71% savings shown in the assumed 40-year holding period case. See Schedule JAR-12, pp.1, 5.

Q. ARE THERE ANY EXISTING INVESTMENT PRODUCTS THAT CAN BE USED FOR COMPARISON PURPOSES TO EVALUATE THE IMPACT OF THE NEW TAX BILL?

A. Yes. The AAA 20-year tax-free municipal bond can be used for comparison and it provides a return of 4.26%.[9] Unlike the Municipal bonds, interest income from corporate bonds is taxed.

[9] Yahoo Finance, January 6, 2004

AAA Corporate bonds offer a return of 5.52%.[10] The interest rate paid on AAA tax-free municipal bonds is 22.83% less than on AAA taxable corporate bonds.

A 22.83% reduction in the 9.11% DCF-derived cost of equity is a reduction of 2.08%. Since the new tax law approximately cuts the income tax rate in half, not totally eliminating the tax paid by an equity investor, the interest rate differential between taxable and tax-free bonds indicate that the cost of equity will drop by 1.04% (2.08% / 2) as a result of the new tax law. See Schedule JAR-12, p. 6. To be conservative, I interpret the results to mean that as a result of the new income tax law, the cost of equity has declined by at least 0.50%.

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[10] Yahoo Finance, January 6, 2004

VI. EVALUATION OF THE TESTIMONY OF MR. MOUL.

A. Summary

Q. PLEASE SUMMARIZE THE TESTIMONY OF MR. MOUL.

A. Mr. Moul has recommended that SJG be allowed a return on equity of "at least" 12.0%.[11] Based upon this 12.0% return on equity, he calculated an overall cost of capital of 9.14%. He arrived at this recommendation based upon what he calls "... four, well recognized measures of the cost of equity....": DCF, risk premium analysis, CAPM, and comparable earnings. Please see page 3 of his direct testimony.

Q. PLEASE SUMMARIZE THE FLAWS IN MR. MOUL'S ANALYSIS.

A. An analysis of his testimony shows that each of the approaches he has relied upon to determine the cost of equity contain significant errors that have caused him to overstate the cost of equity. Following is a brief summary of the problems with Mr. Moul's testimony that are explained in detail later in this section of my testimony.

DCF Method:

- Failure to use sustainable growth in constant growth form of DCF method.
- Arbitrary selection of growth rates from wide array of improper growth rate results.
- Overstating dividend yield by making an improper downward adjustment to stock price when computing dividend yield.

Risk Premium and CAPM Methods:

[11] Page 1, lines 19-20 of Mr. Moul's direct testimony.

- Overstating historic actual performance by giving weight to arithmetic average and arithmetic median rather than giving exclusive weight to the geometric averaging method.

- Failure to consider the decline in the risk premium that has occurred in the last several decades.

- Further exaggerating the results of the Risk Premium and CAPM models by making an upward adjustment to the already inflated result.

Comparable Earnings Method:

- Not an equity costing method. All it does is assume that whatever is the future expected return on book equity is automatically the cost of equity.

As a result of the flaws in Mr. Moul's analysis, Mr. Moul has recommended a cost of equity and overall cost of capital that are higher than can be justified.

B. DCF Method

Q. IS THERE MORE THAN ONE APPROACH TO THE DCF METHOD?

A. Yes. There are two different DCF approaches that are used for ratemaking purposes. One is a simplified or constant growth DCF method, requiring a constant growth rate assumption that is sustainable in perpetuity. The other is a complex or non-constant growth method that allows for the correct mathematical interpretation of results even if growth is not expected to be constant in the future.

Q. DO YOU USE BOTH DCF METHODS IN YOUR ANALYSIS OF SJG'S COST OF EQUITY?

A. YES.

Q. DOES MR. MOUL USE BOTH DCF METHODS IN HIS ANALSYIS OF SJG'S COST OF EQUITY?

A. No. Mr. Moul uses only a constant growth rate form of the model, but applies the constant growth rate form by using non-constant growth rate inputs.

Q. DID MR. MOUL PROPERLY APPLY THE SIMPLIFIED OR CONSTANT DCF METHOD?

A. No. Strictly speaking, Mr. Moul has not really applied the DCF method at all. Just because he adds a number to a dividend yield does not make it a DCF method. It is only a DCF method if the dividend yield is computed properly, and the growth rate used is derived from a careful study of what future sustainable growth in cash flow is anticipated by investors.

Q. HAS MR. MOUL USED AN APPROPRIATE METHODOLOGY TO DETERMINE THE GROWTH RATE THAT SHOULD BE USED IN THE DCF MODEL?

A. No. Instead of determining a realistic growth rate number, Mr. Moul presented a wide array of growth computations, irrespective of whether or not what he was measuring for growth has anything to do with indicating investors' expectations for future sustainable long-term growth in cash flow. The results he presents in his Schedule 9, page 1, and Schedule 10, page 1, are so wide and imprecise that he could just as well have selected a growth rate that was considerably different from the one he chose.

His method is arbitrary, and results in a substantial overstatement of the growth rate actually expected by investors. Mr. Moul used a 5.75% expected growth rate for his comparative group of gas companies. Please see page 32, line 15, of Mr. Moul's direct testimony. He claims to have based these conclusions on observations of historic and projected growth rates in earnings per share and dividends per share, as summarized on his Schedules 9 and 10. However, a review of the historic growth rate inputs he examined that appears on his Schedule 9, page 1, shows that his historic inputs vary from 2.90% to 5.50%, and average 4.20%. Similarly, an examination of the five-year projected growth rate inputs examined by Mr. Moul on his Schedule 10, page 1, show that these growth rate inputs examined by Mr. Moul vary from a low of 2.31% to a high of 7.28%, and average 5.49%. In contrast to Mr. Moul's projected growth rate of 5.75%, I found that the average of the historic and five-year projected growth rates that he claimed to use is 4.85%.

Q. IS THE DCF METHOD AS IMPRECISE AS MR. MOUL MAKES IT SEEM?

A. No. The DCF method properly implemented is capable of a far greater accuracy than the range defined by Mr. Moul.

Q. BESIDES GROWTH RATE, ARE THERE ANY OTHER DCF ANALYSIS INPUTS THAT MR. MOUL HAS ESTIMATED INCORRECTLY?

A. Yes. As discussed below, Mr. Moul made inappropriate upward adjustments to the dividend yield.

Q. WHAT COST OF EQUITY WOULD BE INDICATED BY MR. MOUL'S DCF METHOD IF HE USED HIS DIVIDEND YIELD, AND USED THE GROWTH RATE INDICATED BY THE AVERAGE OF ALL OF THE GROWTH RATE METHODS HE SELECTED?

A. If he had simply averaged his own data - rather than arbitrarily selecting any growth rate at all from his wide array of growth rates - he would have started with his dividend yield of 4.96%, as shown on his page 32, line 15. To this, he would have added the average of all growth rate methods, 4.85%, instead of the arbitrary 5.75% growth rate that he chose to add to his 4.96% dividend yield. If he did this, his DCF method would have been indicating a cost of equity of 9.81%, instead of 10.71%.[12] If the actual dividend yield, instead of the invalid adjustments to dividend yield, is used then Mr. Moul's DCF result becomes 4.77% dividend yield,[13] plus 4.85% growth, for a DCF indicated cost of equity of 9.62%. There are still many conceptual flaws associated with all of the growth rate indicators selected by Mr. Moul. However, the 4.85% average growth rate derived from these indicators is within the range of the 4.85% to 5.16% growth rate I found proper on my Schedule JAR-4, pp. 1, 2.

Q. YOU SAID THAT MR. MOUL MADE INAPPROPRIATE UPWARD ADJUSTMENTS TO HIS DIVIDEND YIELD COMPUTATION. PLEASE EXPLAIN.

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[12] Page 35, Line 15, of Mr. Moul's direct testimony.

[13] Response to RAR-ROR-45.

A. Mr. Moul explains on pages 25-26 of his direct testimony that he increased his dividend yield computation by making an upward adjustment for dividend accruals. The upward adjustment for accrued dividends is inappropriate because it is incomplete. The return on equity that is allowed to utility companies is an annual rate of return. Actually, since companies bill customers monthly rather than annually, the return rate being earned is a compound monthly return although the cost of equity is an annual return number. Any timing adjustments such as the accrued dividend factor proposed by Mr. Moul is an incomplete adjustment unless the monthly compounding of earnings is also considered. Considering the monthly compounding of earnings would more than offset Mr. Moul's proposed accrued dividend adjustment. For example, if the cost of equity were determined to be 8%, rates would be set to give a utility company a reasonable opportunity to earn 8% on its equity. However, the implementation of the 8% would allow the company to collect 1/12 of that 8% every month. As the company earns that money every month, it keeps a portion of it for re-investment in the business. The rest is paid out as dividends to investors. Investors are then free to take the dividends and re-invest them as they see fit throughout the year. If these funds are re-invested either by the company or by investors at 8%, they will compound. 1/12 of 8% is 0.67%. A monthly return of 0.67% produces an annual return of 8.34%, not 8%. (1.0067^12-1=8.34%)[14]. Therefore, if the BPU were to adopt Mr. Moul's philosophy of adjusting for the timing effect of dividends during the year, to be consistent it would be necessary to also make a downward adjustment of about

[14] ^ means raise to the power of.

0.34% to the allowed return on equity to account for the monthly compounding of earnings available to the company.

Q. IF MR. MOUL'S ADJUSTMENTS TO DIVIDEND YIELD ARE ADOPTED ARE THERE ANY ADJUSTMENTS THAT YOU WOULD PROPOSE?

A. Yes. A downward adjustment to the return on equity must be made to account for the compounding of earnings if Mr. Moul's adjustments to the dividend yield are adopted. My DCF analysis did not require such an adjustment.

Q. IN ADDITION TO THE FAILURE OF MR. MOUL TO ACTUALLY USE THE GROWTH RATES HE PRESENTED FOR THE DCF MODEL, AND HIS ERRONEOUS UPWARD ADJUSTMENT TO THE DIVIDEND YIELD, PLEASE EXPLAIN WHAT CONCEPTUAL FLAWS ARE INHERENT IN THE GROWTH RATES HE SELECTED.

A. The first problem is that of the growth rate methods presented by Mr. Moul only the "b x r" approach is actually used by analysts in a DCF formula and only this "b x r" method is taught in textbooks. The second problem is that even the "b x r" approach Mr. Moul used to arrive at his "b x r" answer has been improperly implemented. The "b x r" method is explained in my Appendix A.

Q. MR. MOUL HAS PRESENTED A "B X R" GROWTH RATE METHOD. PLEASE COMMENT ON HIS APPROACH TO THE METHOD.

A. I have used a "b x r" approach to the DCF method as the method for computing growth in the constant growth version of the DCF model I have presented[15]. However, Mr. Moul failed to make the retention rate he used for computing growth consistent with the retention rate he used to compute the dividend yield. His analysis built-in a serious mis-match. Mr. Moul computed the dividend yield based upon dividends from 2003, but computed growth based upon a forecasted retention rate for 2006-2008. Such a mismatch introduces a potentially major error in his b x r approach.

Q. WHAT CHARACTERISTICS MUST A GROWTH RATE HAVE IN ORDER FOR IT TO BE A VALID INDICATOR OF THE GROWTH RATE TO USE IN THE CONSTANT GROWTH DCF FORMULA?

A. **The only proper growth rate to use in the simplified version of the DCF model is a growth rate that investors expect is sustainable for many years into the future.** A long-term sustainable growth rate in cash flow is a very special type of growth rate. Short-term, five-year earnings per share growth rates, such as those reported by ThomsonFN/First Call, are frequently substantially different from future sustainable growth rates.

Q. CAN YOU PLEASE SUMMARIZE WHY A FUTURE ORIENTED "B X R" METHOD IS SUPERIOR TO A FIVE-YEAR EARNINGS PER SHARE GROWTH

[15] This method is often referred to in a generic sense as the "b x r" method. However, its full implementation requires that not only b x r, or "br" growth (which is the growth caused by the retention of earnings) but also sv growth (which is the growth caused by sales of new stock at other than book value) be considered as well.

RATE FORECAST IN PROVIDING A LONG-TERM SUSTAINABLE GROWTH RATE?

A. Yes. The primary cause of sustainable earnings growth is the retention of earnings. A company is able to create higher future earnings by retaining a portion of the prior year's earnings in the business and purchasing new business assets with those retained earnings. There are many factors that can cause short-term swings in earnings growth rates, but the long-term sustainable growth is caused by retaining earnings and reinvesting those earnings.

Factors that cause short-term swings include anything that causes a company to earn a return on book equity at a rate different from the long-term sustainable rate. Assume, for example, that a particular utility company is regulated so that it is provided with a reasonable opportunity to earn 10.0% on its equity. If the company should experience an event such as the loss of several key customers, or unfavorable weather conditions which cause it to earn only 6.0% on equity in a given year, the drop from a 10% earned return on equity to a 6% earned return on equity would be concurrent with a very large drop in earnings per share. In fact, if a company did not issue any new shares of stock during the year, a drop from a 10% earned return on book equity to a 6% earned return on book equity would result in a 40% decline in earnings per share over the period.[16] However, such a drop in earnings would not be any indication of what is a long-term sustainable earnings per share growth rate. If the drop were caused by weather conditions, the drop in earnings would be immediately offset once normal

[16] By definition, earned return on equity is earnings divided by book value. Therefore, whatever level of earnings is required to produce earnings of 6% of book would have to be 40% lower than the level of earnings required to produce a return on book equity of 10%.

weather conditions return. If the drop is from the loss of some key customers, the company would replace the lost earnings by filing for a rate increase to bring revenues up to the level required for the company to be given a reasonable opportunity to recover its cost of equity.

For the above reasons, changes in earnings per share growth rates that are caused by non-recurring changes in the earned return on book equity are inconsistent with long-term sustainable growth, but changes in earnings per share because of the reinvestment of additional assets is a cause of sustainable earnings growth. The "b x r" term in the DCF equation computes sustainable growth because it measures only the growth which a company can expect to achieve when its earned return on book equity "r" remains in equilibrium. If analysts have sufficient data to be able to forecast varying values of "r" in future years, then a complex, or multi-stage DCF method must be used to accurately quantify the effect. Averaging growth rates over sub-periods, such as averaging growth over the first five years with a growth rate expected over the subsequent period will not provide an appropriate representation of the cash flows expected by investors in the future and, therefore, will not provide an acceptable method of quantifying the cost of equity using the DCF method. The choices are either a constant growth DCF, in which one "b x r" derived growth rate should be used, or a complex DCF method in which the cash flow anticipated in each future year is separately estimated.

Q. WHY ARE ANALYSTS FIVE-YEAR CONSENSUS GROWTH RATES NOT INDICATIVE OF LONG-TERM SUSTAINABLE GROWTH RATES?

A. Analysts' five–year earnings per share growth rates are earnings per share growth rates that measure earnings growth from the most currently completed fiscal year to projected earnings

five years into the future. These growth rates are not indicative of future sustainable growth rates in part because the sources of cash flow to an investor are dividends and stock price appreciation. While both stock price and dividends are impacted in the long-run by the level of earnings a company is capable of achieving, earnings growth over a period as short as five years is rarely in synchronization with the cash flow growth from increases in dividends and stock price. For example, if a company experiences a year in which earnings are temporarily below investor expectations, stock prices generally do not decline at the same percentage that earnings decline, and dividends are usually not cut just because of a temporary decline in a company's earnings. Unless both the stock price and dividends mirror every down swing in earnings, they cannot be expected to recover at the same growth rate that earnings recover. Therefore, growth rates such as five-year projected growth in earnings per share are not indicative of long-term sustainable growth rates in cash flow. As a result, they are inapplicable for direct use in the simplified DCF method.

Q. IS THERE A WAY FOR AN ANALYST TO KNOW WHETHER OR NOT THE EARNINGS FOR ANY PERIOD ARE REFLECTIVE OF NORMAL EARNINGS?

A. Yes**. In order for earnings to be reflective of normal conditions, the company has to earn a return on book equity in that year at a level that is equal to the long-term sustainable return on book equity.**

Q. PLEASE ELABORATE ON WHY THE USE OF FIVE-YEAR EARNINGS PER SHARE GROWTH RATES IN THE DCF MODEL IS IMPROPER?

A. A raw, unadjusted, five-year earnings per share growth rate is usually a very poor proxy for either short-term or long-term cash flow growth that an investor expects to receive. When implementing the DCF method, the time value of money is considered by equating the current stock price of a company to the present value of the future cash flows that an investor expects to receive over the entire time that he or she owns the stock. The discount rate required to make the future cash flow stream, on a net present value basis, equal to the current stock price is the cost of equity. The only two sources of cash flow to an investor are dividends and the net proceeds from the sale of stock at whatever time in the future the investor finally sells. Therefore, the DCF method is discounting future cash flows that investors expect to receive from dividends and from the eventual sale of the stock.

Five-year earnings growth rate forecasts are especially poor indicators of cash flow growth even over the five years being measured by the five-year earnings growth rate number. This is because, for different reasons, the five-year earnings per share growth rate is not indicative of growth in either of the two cash flow sources to an investor.

Q. WHY IS A FIVE-YEAR EARNINGS PER SHARE GROWTH RATE A POOR INDICATOR OF THE FIVE-YEAR CASH FLOW EXPECTATION FROM DIVIDENDS?

A. The board of directors changes dividend rates based upon long-term earnings expectations combined with the capital needs of a company. Most companies do not cut the dividend simply because a company has a year in which earnings were below sustainable trends, and similarly they do not increase dividends simply because earnings for one year happened to be above

long-term sustainable trends. Therefore, over any given five-year period, earnings growth is frequently very different from dividend growth. In order for earnings growth to equal dividend growth, at a minimum, earnings per share in the first year of the five-year earnings growth rate period would have to be exactly on whatever long-term earnings trend line is expected by investors. Since earnings in most years are either above or below the trend line, the earnings per share growth rate over most five-year periods is different than what is expected for earnings growth.

Q. WHY IS A FIVE-YEAR EARNINGS PER SHARE GROWTH RATE A POOR INDICATOR OF FUTURE STOCK PRICE GROWTH?

A. If a company happens to experience a year in which earnings decline below what investors believe are consistent with the long-term trend, then the stock price does not drop anywhere near as much as earnings drop. Similarly, if a company happens to experience a year in which earnings are higher than the investor-perceived long-term sustainable trend, then the stock price will not increase as much as earnings. In other words, the P/E (price/earnings) ratio of a company will increase after a year in which investors believe earnings are below sustainable levels, and the P/E ratio will decline in a year in which investors believe earnings are higher than expected. Since it is stock price that is one of the important cash flow sources to an investor, a five-year earnings growth rate is a poor indicator of cash flow both because it is a poor indicator of stock price growth over the five years being examined and is equally a poor predictor of dividend growth over the period.

Q. ARE YOU SAYING THAT ANALYSTS' CONSENSUS EARNINGS PER SHARE GROWTH RATES ARE USELESS AS AN AID TO PROJECTING THE FUTURE?

A. No. **Analysts' EPS growth rate are, however, very dangerous if used in a simplified DCF without proper interpretation**. While they are not useful if used in their "raw" form, they can be useful in computing estimates of what earned return on equity investors expect will be sustained in the future, and as such, are useful in developing long-term sustainable growth rates. But, the growth rate from an arbitrary starting year is, in and of itself, as useless as attempting to measure the average slope of a mountain based upon the slope encountered over the last five minutes of hiking on a jagged trail up the mountain. In my implementation of the simplified DCF method, I use the Zacks five-year earnings per share growth only to help determine what earned return on book equity investors anticipate will be achieved in five years. Then, I consider the resultant earned return on book equity as one of the inputs to determine the value of "r" that I use in the "b x r" growth rate computation. In this way, I give consideration to analysts' consensus growth rate, but do so in a way that results in a long-term sustainable cash flow growth rate rather than making the erroneous assumption that a five-year earnings per share growth rate is somehow an indicator of cash flow growth remember, cash flow received by an investor is in the form of either dividends or stock price appreciation.

Q. DO ARTICLES IN BUSINESS LITERATURE DEFINITIVELY SHOW THAT INVESTORS ARE AWARE OF THE SERIOUS BIASES CONTAINED IN THE RECOMMENDATIONS OF MANY ANALYSTS' REPORTS?

A. Yes. There have been countless articles that appeared in both business publications and the popular press throughout the last year that show these biases. *Business Week*, a widely read and important business publication, contained numerous articles that reported on the problems with securities analysts. These include:

1. A cover story entitled "How Corrupt is Wall Street" appeared in the May 13, 2002 issue of *Business Week*.

a) The article mentions that Merrill Lynch, Solomon Smith Barney, Morgan Stanley Dean Witter along with 10 other firms are being investigated by the US Securities and Exchange Commission for unethical practices.[17]

b) According to the article, New York State Attorney General Eliot Spitzer made public e-mail exchanges at Merrill where, e-mail messages uncovered by Dr. Spitzer showed that "…analysts disparage stocks as 'crap' and 'junk' that they were pushing at the time. The e-mails are so incendiary that they threaten to thrust Wall Street into the sort of public-relations nightmare that Philip Morris, Ford, Firestone, and Arthur Andersen have endured in recent years."[18]

c) The article features the following quote from David Komansky, the CEO of Merrill Lynch, by placing it in bold letters and large print:

> We have failed to live up to the high standards that are our tradition, and I want to take this opportunity to publicly apologize to our clients, our shareholders, and our employees.[19]

In the above quote, Dr. Komansky was responding to what *Business Week* describes as "…the analyst debacle…"[20]

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[17] May 13, 2002 *Business Week*, page 37.
[18] *Business Week*, May 13, 2002 page 39.
[19] *Business Week* "How Corrupt is Wall Street" May 13, 2002, page 42.
[20] *Ibid*, page 42.

2. The cover of the July 29, 2002 issue of *Business Week* features the article entitled "THE ANGRY MARKET." The Cover summarizes the article by saying "THE BLUNT MESSAGE: Investors are re-pricing stocks to reflect a more honest picture of earnings, options, and the future." In a discussion about the inaccurate and misleading earnings reporting done by many companies, *Business Week* says:

> Brokerage-house analysts aren't much help either. They tend to do what companies want. For example, only six of the 21 analysts that have given First Call their estimates for AOL Time Warner Inc.'s 2003 earnings actually provided GAAP figures.

3. A cover article in the August 5, 2002 issue of *Business Week* is entitled " INSIDE THE TELECOM GAME. How a small group of insiders made billions as the industry collapsed." The article discusses the buy recommendations consistently made by Dr. Grubman on these companies, and says on page 34:

> Now, investors are questioning whether Grubman was motivated by his true opinions – or by the millions of dollars he received from supporting his telecom clique.

4. "HOW TO FIX CORPORATE GOVERNANCE" is the cover article in the in the May 6, 2002 issue of *Business Week*. Page 76 of this article says:

> If investors have learned anything from this crisis, it's that Wall Street's analysts are often loath to put a bad spin on a stock. Historically, "sell" ratings have constituted fewer than 1% of analysts' recommendations, according to Thompson Financial/First Call…It's more a case of an inherently conflicted system, that is now the focus of a Justice Department investigation.

> "'Investors need to realize that the free research they're getting is often just a marketing tool', says Kent Womack, a professor at Dartmouth College's Amos Tuck school of business."

5. A June 10, 2002 issue of *Fortune* had an article entitled "In Search of the Last Honest Analyst". The *Fortune* article noted:

> In fact, stock research sank so low during the bubble that it actually became a contrary indicator of a stock's performance. Researchers at the University of California and Stanford reviewed almost 40,000 stock recommendations from 213 brokerages during the year 2000. The most highly rated stocks had a –31% return for the year, according to the study. Meanwhile, the stocks least favorably recommended (that is, the sells) soared an annualized 49% -- a differential of 80 percentage points.[21]

6. A September 24th, 2002 *Wall Street Journal* article entitled "Will Grubman Case Tone Down the Exaggeration by Analysts?" states the following:

> During the 1980s and 1990s, analysts often served as quasiadvocates for companies that hired their firms for investment-banking work, accompanying them on road shows to sell their stock, setting up one-on-one meetings between management and institutional investors, and proffering their access to management to give an unofficial version of the companies' view of business developments.[22]

[21] Fortune.com, "In Search of the Last Honest Analyst" June 2002, page 1 of 2.

[22] Wall Street Journal "Will Grubman Case Tone Down The Exaggeration by Analysts?" September 24, 2002, starting on pages C-1 and C-3.

7. On October 22, 2002, a *Wall Street Journal* article entitled "Massachusetts Claims CSFB Stock Reports Led Investors Astray" appeared on pages C-1 and C-10. Following are some highlights from this article:

> The complaint [by the Secretary of the Commonwealth of Massachusetts] alleges CSFB misled investors by allowing its investment-banking division – in particular, star Frank Quattrone – to exert undue influence on the firm's research department.
>
> The complaint which echoes one filed earlier this year by Elliott Spitzer against Merrill Lynch & Co. will no doubt add to investor concern that Wall Street peddled research it didn't believe only to get its hands on the much more lucrative investment-banking fees.
>
> 'The presumption that every firm engaged in this behavior is fair,' says Roy Smith, a professor of finance at New York University and a former partner at Goldman Sachs Group, Inc. 'It reminds me of how we used to talk in the locker room after a football game. That talk happens all the time, but it would sure be embarrassing if anyone ever recorded it.'[23]

Q. HAS ALL THE UNFAVORABLE PRESS REGARDING EQUITY ANALYSTS RESULTED IN ANY POSITIVE REFORM IN THE INDUSTRY?

A. No. A *Business Week* editorial published on September 8, 2003 called "The Myth of Independence" states that the new independent research firms also have conflicts of interest to deal with and "Many hire analysts with little or no track record, raising questions about the quality of their research."

Q. ONE OF THE GROWTH RATES THAT MR. MOUL RELIES UPON IS VALUE LINE FORECASTED EARNINGS PER SHARE GROWTH RATES. IS THE VALUE LINE EARNINGS PER SHARE GROWTH RATE SUFFICIENTLY NORMALIZED TO MAKE IT AN ACCURATE INDICATOR OF LONG-TERM SUSTAINABLE GROWTH RATES?

A. No, because Value Line's method results in only a very incomplete normalization of the base period earnings it uses in its earnings per share five-year forecast. The Value Line earnings per share forecast of the type presented by Mr. Moul is defined by Value Line as the earnings per share growth from "Est'd '00-'02 to "06-'08". The procedure used by Value Line is to average the earnings per share from the 2000-02 base period and relate that three-year average to the earnings per share it expects will be achieved, on average, over the future 2006-2008 time period. The method used by Value Line does not assure the appropriate normalization of earnings per share in the base period, because there is not even an attempt by Value Line to make the average earned return on book equity in the base period reflective of the normal expected return on book equity. In fact, in the case of all the gas companies covered by Value Line, the average earned return on book equity from 2000-2002 is lower than Value Line expects in the 2006-2008 period.

C. Risk Premium Method

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[23] Wall Street Journal, October 22, 2002, page C-1 and C-10.

Q. PLEASE BRIEFLY DESCRIBE THE RISK PREMIUM METHOD.

A. The risk premium method estimates the cost of equity by analyzing the historic difference between the cost of equity and a related factor such as the rate of inflation or the cost of debt. This method is explained in detail in my Appendix A.

Q. PLEASE COMMENT ON THE RISK PREMIUM METHODS AS PRESENTED BY MR. MOUL.

A. Mr. Moul applies the risk premium method by computing the difference in the returns earned by common stocks as compared to the return earned on bonds from 1928 through 2001. See Mr. Moul's Schedule 13, page 1. He measures the historic risk premium three different ways. One way he used was the geometric mean, another was the arithmetic mean, and the third way he used was the geometric median. He combines the results of the three methods by first determining the mid-point between the median return and the geometric mean. Then, he averages the results of the mid-point between the geometric mean and the median with the arithmetic mean. See Mr. Moul's Schedule 13, page 2. While giving some weight to the arithmetic mean is a mistake that I have seen other company cost of capital witnesses make, the use of the median for establishing historic returns is, to my knowledge, unique to Mr. Moul.

There are two very serious problems with Mr. Moul's risk premium method. One is a problem with his financial theory, and the other is a mathematical mistake. The problem with his financial theory is that he incorrectly assumes that the risk premium between debt and equity are constant, when they are not. As I have shown earlier in this testimony, empirical evidence,

financial theory, and financial articles all show that the risk premium as measured against interest rates has been anything but constant. It is risk premiums measured against the inflation rate, not interest rates, which have shown to be reasonably constant.

I will discuss Mr. Moul's mathematical mistakes below.

Q. PLEASE EXPLAIN THE MATHEMATICAL MISTAKES MADE BY MR. MOUL.

A. Mr. Moul made mathematical errors when he quantified the historic earned returns actually achieved by both common stocks and by bonds. As will be explained in detail later in this testimony, textbooks, the U.S. Securities and Exchange Commission ("SEC"), and Value Line have all recognized that the only proper way to measure long-term historic actual earned returns is to use the geometric mean. In contrast, Mr. Moul used the arithmetic mean. The arithmetic mean is specifically identified by several sources as a method that will specifically result in an answer that is upwardly biased.

In addition to using the "known-to-be-biased" arithmetic mean, Mr. Moul also presented a risk premium study based upon a comparison of median returns. I have never seen anyone attempt to measure the historic actual risk premium by using median values other than Mr. Moul. The use of the median overstates the risk premium merely because there is a different distribution of the returns on bonds than the returns on stocks. The distribution happens to vary such that there is a larger difference between the median and the geometric mean return on bonds than there is on common stocks. The actual return achieved by real investors is not based upon a median return, but is based upon the actual aggregate return.

Therefore, Mr. Moul is wrong to have even considered using the median analysis in a risk premium context.

Q. IS THERE A MATHEMATICAL RELATIONSHIP BETWEEN THE GEOMETRIC AVERAGE AND THE ARITHMETIC AVERAGE?

A. Yes. Page 24 of the third edition of *Stocks for the Long Run* by Professor Jeremy J. Siegel © 2002 contains the following:

> The geometric return is approximately equal to the arithmetic return minus one-half of the variance s^2 of yearly returns $r_G = r_A - 1/2\ s^2$.
>
> Investors can be expected to realize geometric returns only over long periods of time. The average geometric return is always less than the average arithmetic return except when all yearly returns are exactly equal. This difference is related to the volatility of yearly returns.

As correctly explained above, the only reason the arithmetic average is higher than the geometric average is because of the volatility of yearly returns. Therefore, from the perspective of the cost of equity to allow a regulated utility, the correct return is the geometric return. The geometric return, if allowed, will be the return the utility company is given a reasonable opportunity to earn. If there is a difference between the geometric return and the arithmetic return, for a regulated utility this difference will occur simply because a utility company's stock price will fluctuate up and down even though the allowed return on equity remains fixed at least until the next rate case.

Q. HAVE YOU SEEN WITNESSES CLAIM THAT THE GEOMETRIC AVERAGE IS THE CORRECT AVERAGE TO USE WHEN MEASURING HISTORIC RETURNS, BUT THE ARITHMETIC AVERAGE IS SOMEHOW CORRECT FOR FORECASTING FUTURE RETURNS?

A. Yes, I have seen this argument. But, given that the difference between the geometric return and the arithmetic return is due to volatility and not the true return actually being achieved, such an argument that claims a different measurement technique applies to historic data than to forecasted data is incorrect. Consider the following example. Assume that the U.S. Government issued a 30-year treasury bond 15 years ago that pays an annual interest rate of 5.0% on the face amount of the bond. Further assume that although interest rates fluctuated over the last 15 years, the current interest rate demanded by investors happens to be 5% today. Under these assumptions, over the last 15 years, the price of the bond has gone up in some years and gone down in other years. But, if the current interest rate demanded by investors on this bond is still the same 5% as was demanded by investors at the time of the original issuance, the bond will be selling for the same price as it did when originally issued 15 years ago. Because of this fluctuation, if the total return (price appreciation or price depreciation plus the 5% interest income) is measured using the arithmetic average, then the measured return will include the 5% real return actually obtained by investors plus an additional illusory return cause by volatility rather than an actual return received by the investor. From the perspective of the investor who is forecasting the return on this 5% government bond with 15 years remaining, we know with certainty that the accurate forecasted future return will be 5% per year. We also can be confident that interest rates will fluctuate over the next 15 years. Therefore, this fluctuation

will cause the arithmetic return measurement to be higher than the 5% annual return even though the 5% return is the only possible return an investor who holds this bond to maturity could get.

Q. IS IT THE 5% RETURN ON THE TREASURY BOND OR IS IT THE ARITHMETIC AVERAGE RETURN THAT IS ANALAGOUS TO THE ALLOWED RETURN ON EQUITY TO A REGULATED UTILITY COMPANY?

A. The 5% coupon return is the return that is analogous to the allowed return. Therefore, even if we were to attempt to satisfy the investor who was incorrectly led to believe that he or she would achieve the arithmetic average and not the geometric average, the return based upon the geometric average should form the return allowed. Then, an investor who wishes to be fooled into achieving a higher return than is achieved by the geometric average will continue to be under the misconception that he or he is earning more than the geometric average. This can happen because the stock price fluctuation will still produce annual returns that, under the arithmetic average method, will appear to be higher than the allowed geometric return.

Consider the problem that would develop if allowed returns were errantly set based upon the arithmetic average rather than the geometric average. If a utility company is allowed to earn a return on rate base equal to the arithmetic average, then the normal stock price fluctuations would cause the new arithmetic average measured result to continue to exceed the old allowed arithmetic average. A repetition of the error caused by using the arithmetic average, if repeated in the next rate case, would cause yet a further ratcheting up of the allowed return in each future rate case where this mistake to use the arithmetic average is repeated.

Q. CAN YOU PROVIDE A MATHEMATICAL EXAMPLE THAT SHOWS WHY RISK PREMIUM BASED UPON HISTORIC ARITHMETIC RETURNS ARE IMPROPER?

A. Yes. As previously stated, arithmetic average returns overstate the actual returns received by investors because arithmetic returns measure volatility, not actual returns earned by investors. The more variable historic growth rates have been, the more his method exaggerates actual growth rates. Arithmetic average returns ignore the impact of compound interest. For example, if a company were to have a stock price of $10.00 in the beginning of the first year of the measurement period and a $5.00 stock price at the end of the first year, an arithmetic average approach would conclude that the return earned by the investor would be a loss of 50% [($5-$10)/($10)]. If, in the second year, the stock price returned to $10.00, then the arithmetic average would compute a gain of 100% in the second year [($10-$5)/($5)]. The arithmetic average approach would naively average the 50% loss in the first year with the 100% gain in the second year to arrive at the conclusion that the total return received by the investor over this two year period would be 25% per year [(-50% +100%)/2 years]. In other words, the arithmetic average approach is so inaccurate that it would conclude the average annual return over this two year period was 25% per year even though the stock price started at $10.00 and ended at $10.00. The geometric average would not make such an error. It would only consider the compound annual return from the beginning $10.00 to the ending $10.00, and correctly determine that the annual average of the total returns was not 25%, but was zero.

In order to protect investors from misleading data, the SEC requires mutual funds to report historic returns by using the geometric average only. The arithmetic average is not

permitted. The geometric average, or SEC method, has the compelling advantage of providing a true representation of the performance that would have actually been achieved by an investor who made an investment at the beginning of a period and re-invested dividends at market prices prevailing at the time the dividends were paid.

Q. DOES THE FINANCIAL COMMUNITY COMPUTE HISTORIC ACTUAL ACHIEVED RETURNS BASED UPON ARITHMETIC MEANS OR GEOMETRIC MEANS?

A. As shown earlier in this testimony, the financial community (as represented by articles from *The Wall Street Journal* and from *Business Week*) refers to geometric averages when evaluating historic returns. Additionally, an article on page 92 of the August 16, 1999 issue of *Fortune* magazine refers to the return that is equal to the geometric mean from Ibbotsion Associates as "…the oft-quoted calculation…" of historic actual returns on common stocks. The article does not even mention the number that is equal to the historic arithmetic return.

Q. DO FINANCIAL TEXTBOOKS SUPPORT THE USE OF THE GEOMETRIC AVERAGE FOR COMPUTING HISTORIC ACTUAL RETURNS?

A. Yes. For example, the textbook *Valuation. Measuring and Managing the Value of Companies*, by Copeland, Koller, and Murrin of McKinsey & Co. , John Wiley & Sons, 1994, in a description of how to use the Ibbotson Associates data states the following on pages 261-262:

> We use a geometric average of rates of return because arithmetic averages are biased by the measurement period. An arithmetic average estimates the rates of return by taking a simple average of the single period rates of return. Suppose you buy a share of a nondividend-paying stock for $50. After one year the stock is worth $100. After two years the stock falls to $50 once again. The first period return is 100 percent; the second period return is -50 percent. The arithmetic average return is 25 percent [(100 percent - 50 percent)/2]. The geometric average is zero. (The geometric average is the compound rate of return that equates the beginning and ending value.) **We believe that the geometric average represents a better estimate of investors' expected returns over long periods of time.** [Emphasis added]

Similarly, in another textbook discussion that specifically addresses the use of the Ibbotson data, *Financial Market Rates & Flows*, by James C. Van Horne, Prentice Hall, 1990, states the following on page 80:

> The geometric mean is a geometric average of annual returns, whereas the arithmetic mean is an arithmetic average. For cumulative wealth changes over long sweeps of time, the geometric mean is the appropriate measure.

The textbook *Investments* by Nancy L. Jacob and R. Richardson Pettit, Irwin, 1988, puts it well when it says:

> The existence of uncertainty as reflected in a distribution of possible values makes the **expected value**, or arithmetic average rate of return, a misleading and biased representation of the wealth increments which will be generated from multiperiod investment opportunities.
>
> The average *annual* rate of wealth accumulation over the investment period, termed the **average annual geometric rate of return**, correctly measures the average annual accumulation to wealth when multiple periods are involved.
> [Emphasis is contained in the original]

Q. HAS VALUE LINE SAID ANYTHING REGARDING THE USE OF AN ARITHMETIC AVERAGE OR A GEOMETRIC AVERAGE?

A. Yes. On May 9, 1997, Value Line issued a report entitled "The Differences in Averaging". This report was contained on pages 6844-6845 of the "Value Line Selection & Opinion" portion of its weekly mailings to subscribers. This report says that:

> (t)he arithmetic average has an upward bias, though it is the simplest to calculate. The geometric average does not have any bias, and thus is the best to use when compounding (over a number of years) is involved.

The Value Line report then goes on to provide examples that show why the arithmetic average overstates the achieved returns while the geometric average produces the correct result.

Ibbotson Associates has also said that it is the geometric average that is "… the correct average to compare with a bond yield…"[24]

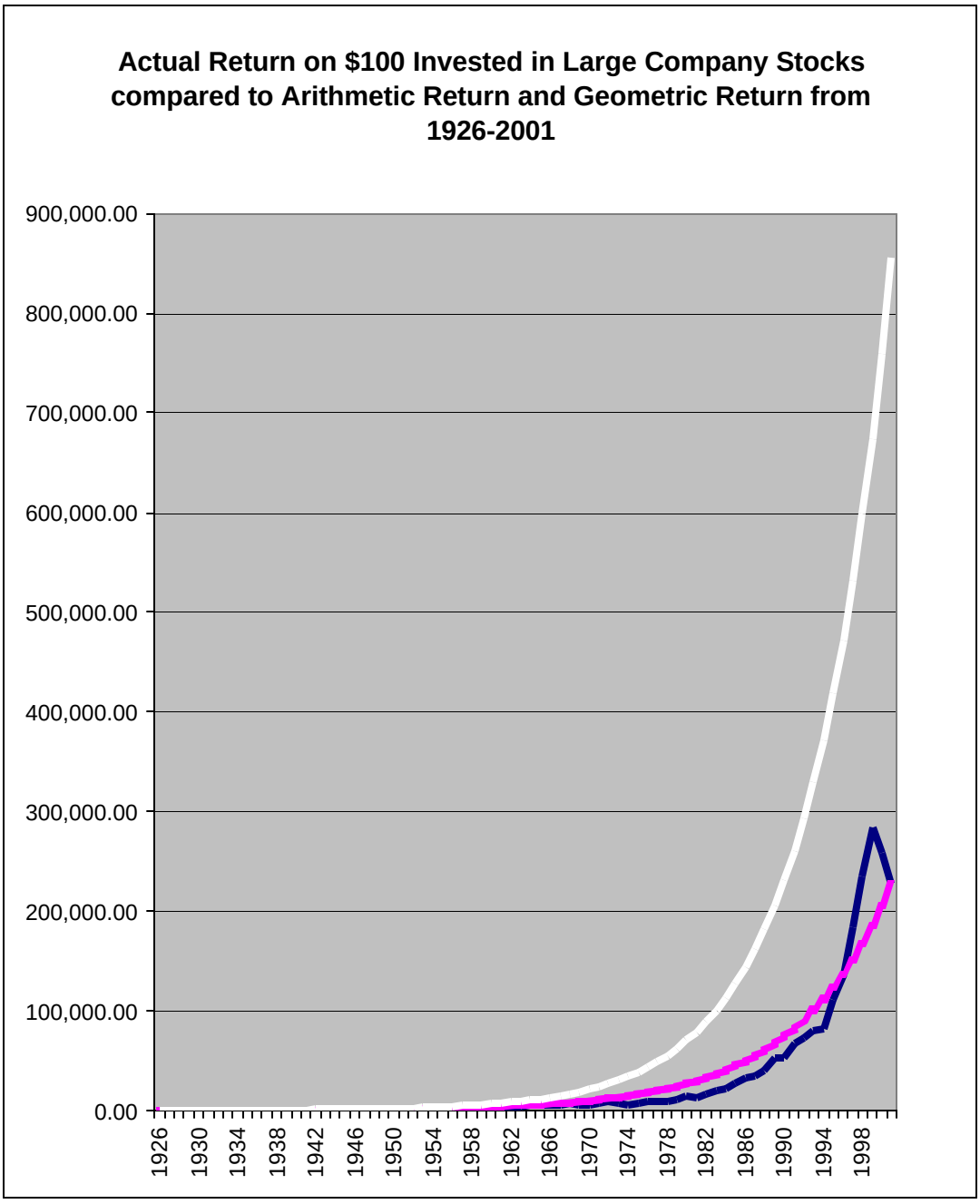
Therefore, when Mr. Moul chose to give weight to the arithmetic average, he chose a method that both a financial textbook and Value Line have specifically noted to be biased. The more weight that is given to the arithmetic average result, the larger the upward bias in the risk premium method.

Q. HAVE YOU COMPARED GRAPHICALLY THE CAPITAL APPRECIATION GROWTH RATE USING THE ARITHMETIC AVERAGE METHOD WITH THE

[24] Page 75 of Stocks, Bonds, Bills, and Inflation 1986 Yearbook.

CAPITAL APPRECIATION GROWTH RATE THAT IS OBTAINED USING THE SEC METHOD?

A. Yes. In the following graph I show the actual movement of the S&P Utility index from 1928 through 2001. I also show how the index would have behaved on a year-by-year basis using the average growth obtained from the SEC method and using the arithmetic average historic growth rate methodology. The graph illustrates that the arithmetic average calculation of historic actual returns deviates at an ever-increasing rate over time from the actual S&P Utility Index, overstating the total return from 1928-2001 by about 400%. By contrast, the historic actual returns computed using the SEC method is a dramatically more reasonable track of the growth of the S&P utility over time and thus is a better measure of historic actual return rates realized by investors.


Actual Return on $100 Invested in Large Company Stocks compared to Arithmetic Return and Geometric Return from 1926-2001
900,000.00
800,000.00
700,000.00
600,000.00
500,000.00
400,000.00
300,000.00
200,000.00
100,000.00
0.00
1926
1930
1934
1938
1942
1946
1950
1954
1958
1962
1966
1970
1974
1978
1982
1986
1990
1994
1998

1

In the above chart, the top line shows that if $100 had been invested in public utility common stocks in 1928 through 2001 and had earned the arithmetic return, the $100 would have grown to about $850,000. The line that starts as the lowest and spikes around 2000 shows what actually would have happened to a real $100 investment if it had been invested in public utility common stocks. As shown on the graph, the $100 investment would have actually grown to about $230,000. While the increase from $100 to $230,000 is a very sizeable return, it is far less than the $855,000 return that would have been achieved if the arithmetic return methodology had been achieved. The smooth line that ends at the same place as the actual return line is the ongoing value of $100 invested in 1928 that grew at the geometric return rate. Note that the $100 invested at the geometric return rate is, by 2001, exactly equal to the actual return. Therefore, the geometric return accurately measures the actual return that was achieved from 1928 through 2001, but the arithmetic average return exaggerates the actual return by over three times.

Q. HOW MUCH HIGHER IS THE RISK PREMIUM DIFFERENCE BASED UPON AN ARITHMETIC AVERAGE THAN IT IS BASED UPON A GEOMETRIC AVERAGE?

A. From 1928 to 2001, the arithmetic average method (to which Mr. Moul gives weight) produced an indicated risk premium that was about 1.90% higher for public utility stocks versus public utility bonds than the risk premium indicated by using the SEC, or geometric average method. The arithmetic median method produced a 1.87% higher risk premium than is indicated by using the SEC, or geometric average method.

Q. HOW MUCH DOES THE USE OF THE ARITHMETIC AVERAGE INCREASE MR. MOUL'S RISK PREMIUM COST OF EQUITY CALCULATION?

A. Mr. Moul recommends a common equity risk premium of 5.00%.[25] Mr. Moul calculated the geometric average of the S&P Public Utilities to be 3.28%.[26] Therefore, if Mr. Moul used the geometric average of 3.28% to calculate the risk premium instead of the 5.00% he recommends his cost of equity calculation using the risk premium method would decrease by 1.72% (5.00% - 3.28%).

Q. HAVE RISK PREMIUMS BEEN STABLE OVER THE YEARS?

A. No. This is yet another important problem with Mr. Moul's approach to the risk premium method. As I have previously stated, Federal Reserve Chairman Alan Greenspan has noted that risk premiums have declined over the last ten years. Mr. Moul has ignored this clear down trend in risk premiums and as a result he over estimates the cost of equity for SJG.

D. CAPM Method.

Q. PLEASE BRIEFLY DESCRIBE THE CAPM METHOD.

[25] Page 39, lines 20-21 of Mr. Moul's direct testimony.

[26] Page 5, Appendix H of Mr. Moul's direct testimony.

A. As explained in greater detail in Appendix A, the risk premium/CAPM method estimates the cost of equity by analyzing the historic difference between the cost of equity and a related factor such as the rate of inflation or the cost of debt.

Q. WHAT ARE THE PROBLEMS WITH MR. MOUL'S CAPM METHOD?

A. Mr. Moul's implementation of the CAPM method in this case is similar to his risk premium method, except that he has added even more financial mistakes to his analysis. Much like his application of the risk premium method, Mr. Moul has erroneously used the arithmetic average and he has ignored the downtrend in risk premiums that I mentioned earlier in testimony. He further inflates the already over-stated risk premium he used in his "Risk Premium" method from 6.4% up to 9.67% by relying on Value Line's short-term forecast of stock price movement. Finally, Mr. Moul super-imposes yet one more serious error within his CAPM method by making an improper upward adjustment to the actual betas.

Mr. Moul recognizes that whatever risk premium is appropriate for industrials should be reduced because of the lower risk of gas utilities. He recognizes that the risk premium is proportionate to the risk difference between the group of industrial companies he examined and gas utilities. However, he understates the adjustment that should be made because he incorrectly defined the risk free investment to be a long-term treasury bond. Long-term treasury bonds are not risk free investments. Long-term treasury bonds can, and do, fluctuate substantially in price as long-term interest rates change. Therefore, long-term treasury bonds do not have the zero beta that would be consistent with a true risk free investment. The beta on 30-day treasury bills, however, is almost zero. In normal capital markets, the interest rate on

30-day treasury bills is considerably lower than the interest rate on intermediate term treasury bonds. However, an additional complication in trying to apply the CAPM method in the current environment exists because this is not a normal capital market. Short-term interest rates are high in relation to longer term bonds. In other words, the yield curve is more flat than usual. The spread between the return expected on a risk-free investment and on a common stock investment in the S&P industrials has a material impact on the cost of equity indicated from the CAPM model because this spread is used to quantify the cost of equity impact of the lower cost of equity for a gas distribution utility as compared to the average industrial company.

Q. PLEASE EXPLAIN THE ERROR MR. MOUL MADE IN THE DETERMINATION OF THE BETA HE USED IN HIS CAPM METHOD.

A. Beta is used in the CAPM method as the technique to compare the risk of a company or group of companies to the risk of a broad market-based group of companies such as the S&P 500 or the New York Stock Exchange index. The periodic stock price movements of the market index are correlated to the stock price movements of the individual company. The resulting correlation coefficient is called beta. A company whose stock price tends to move at the same rate as the overall market has a beta of 1.0. A company whose stock price moves less than the overall market has a beta of less than 1.0, and a company whose stock price moves more than the overall market has a beta greater than 1.0.

Rather than basing the risk adjustment portion of his CAPM computation on the actual computed beta's, Mr. Moul made an upward adjustment to the beta he has determined based upon the market-to-book ratio of a company. Since market-to-book ratios are above 1.0, the

effect of this adjustment is to inflate the risk measurement. Since investors supply funds and buy and sell the stock at market value, not book value, this is an improper computation that does nothing but add yet another upward bias to the cost of equity computation presented by Mr. Moul.

Q. HAVE YOU EVER SEEN ANY WITNESS PROPOSE AN UPWARD ADJUSTMENT TO THE BETA TO ALLOW FOR THE MARKET-TO-BOOK RATIO OF A COMPANY?

A. No. While I have seen Mr. Moul propose this in the past, I have never seen any other witness propose this before. Furthermore, I am not aware of any financial textbook that proposes such an adjustment to beta.

E. Comparable Earnings Method

Q. PLEASE BRIEFLY DESCRIBE THE COMPARABLE EARINGS METHOD.

A. A method in which a group of companies are chosen that are allegedly in the same risk category as the subject company. The future expected return on book equity is estimated. This future expected return on equity is equated the cost of equity without any mechanism to determine weather or not this future expected return on equity is more than is needed to attract capital on reasonable terms.

Q. PLEASE EXPLAIN THE COMPARABLE EARNINGS METHOD PRESENTED BY MR. MOUL.

A. Mr. Moul selected a group of non-utility companies that he believes to be of comparable risk to SJG. After selecting the companies, he presents the historic and Value Line expected return on book equity. See Schedule 15, page 2 of Mr. Moul's testimony. The final column of numbers on this table is the "Projected 2006-08." However, what he labels as the projected 2006-08 return is actually the return on book equity that Value Line forecasts, not the return that Value Line projects investors will receive on their investment as a result of purchasing the common stock at current prices. According to Mr. Moul's schedule the total return expected by Value Line on the book equity of these industrial companies is between a negative return and a high of 58.0%, for an average of 15.6%, and a median of 13.5%.

Q. IS THIS METHOD VALID?

A. No. Mr. Moul has attempted to determine the cost of equity that would be demanded by investors on the market price of a company comparable to SJG by comparing it to the historic and projected returns on book equity of a selection of industrial companies. Leaving aside the problems with actually being able to select companies that are comparable, the overriding problem with Mr. Moul's comparable earnings analysis is that it did not address the cost of equity at all. It simply considered the returns on book equity that were achieved, and are expected to be achieved by Value Line in the next 3 to 5 years. **The earned return on book equity is an entirely different concept from the cost of equity.** For example, one of the companies selected by Mr. Moul is WD-40 Company. According to the most recent Value

Line report (October 10, 2003). WD-40 earned 27.8% on its common equity in its F/T 2003 and is expected to earn 23.0% on its book common equity in 2006-2008. However, the actual projected 3-5 year total return that Value Line forecasts for WD-40 is between 5% and 14%[27], for a mid-point expected total return of 9.5%. This is less than half of the 23% forecasted return on book equity that Mr. Moul confuses with a cost of equity.

Q. HOW CAN VALUE LINE EXPECT AN ANNUAL RETURN ON INVESTMENT OF BETWEEN 5% AND 14% FOR WD-40 AT THE SAME TIME IT EXPECTS WD-40 TO EARN 23.0% ON ITS BOOK INVESTMENT?

A. To see why there is such a large difference between the earned return on book and the return on the investment achievable by investors, it is first essential to recognize that investors who want to own a share of WD-40 must purchase the common stock of WD-40 at the market price, not at book value. In the October 10, 2003 issue of Value Line, Value Line shows that the market price of WD-40 was $32.06, but the book value was only $6.34. In other words, investors were so desirous of obtaining a piece of these extremely high earnings that the stock price was bid up to the point where it is trading in excess of 500% of book.

F. Miscellaneous Inaccurate Statements in Mr. Moul's Direct Testimony

[27] Value Line Investment Survey, October 10, 2003, p. 958.

Q. ON PAGE 16 OF HIS TESTIMONY, MR. MOUL DISCUSSES THE VARIABILITY OF EARNINGS AS MEASURED BY THE COEFFICIENT OF VARIATION. HE USES THIS AS AN INDICATOR OF RISK FOR SJG. PLEASE COMMENT.

A. The coefficient of variation of earnings measures the individual volatility of a company, but does not measure risk as it impacts the cost of equity. The fact that the coefficient of variation is not an indicator of the risk that impacts the cost of equity is explained in a textbook chapter that has been relied upon by Mr. Moul in past cases. That textbook response (*Fundamentals of Financial Management*, by Eugene F. Brigham, Fifth Edition, 1989) states:

> Diversifiable risk is not important to rational, informed investors, because they will eliminate its effects by diversifying it away. The really meaningful risk is nondiversifiable risk – this risk is bad in the sense that it cannot be eliminated … (p. 104).

This textbook then goes on to show that overall risk (diversifiable and nondiversifiable risk) can be computed by using the coefficient of variation. But, when it comes time to determine the cost of equity, then the diversifiable risk needs to be eliminated. On page 125, the textbook states:

> Thus, since a stock's beta measures its contribution to the riskiness of a portfolio, beta is a theoretically correct measure of a stock's riskiness.

Furthermore, Mr. Moul does not properly compare the coefficient of variation of SJG to the coefficients of variation in his barometer group. The very nature of diversification means that as more companies are added to a portfolio, diversification effects are felt. The diversification has the effect of driving down the riskiness of the overall portfolio. Because of

diversification effects, an investment in Mr. Moul's comparative group is less risky than a single investment in any one of the companies in his group. Instead, he compared the coefficient of variation of SJG to the aggregate data of his comparative group. It is likely that the coefficient of variation for most if not all of the individual companies in the barometer group is larger than the coefficient of variation for the entire group.

G. Conclusion

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF MR. MOUL'S TESTIMONY.

A. Mr. Moul recommends that the Company be allowed a return on equity of 12.0%. This is his recommendation even though the numbers behind his DCF analysis support a cost of equity 10.0%. To exaggerate his DCF indicated cost rate, Mr. Moul had to overstate the dividend yield by making inappropriate adjustments to the actual returns and by arbitrarily selecting a growth rate substantially higher than the one indicated by his own data. His Risk Premium method was developed based upon an improper mathematical approach to quantifying historic actual returns, an invalid assumption that what investors expect will be the earned return in the future is equal to the returns realized in the past. Mr. Moul did not consider basic changes in either federal income tax laws or federal reserve policies. His CAPM method is premised on an erroneous assumption that long term treasury bond investments are risk free and that Value Line's expectations for each stock is exactly consistent with what are expected in aggregate by investors. His Comparable Earnings method is not really an equity costing method at all as no consideration was given to investor's reactions to the earned returns on book equity.

VII. CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS IN THIS CASE.

A. The overall cost of capital that should be allowed to SJG in this proceeding is 7.22%. This 7.22% overall cost of capital is based upon a cost of equity of 9.50% and a capital structure based upon the average capital structure for SJG for the year ending 2004. In computing this overall cost of capital, I used the company requested cost of debt of 6.78% for long-term debt, and the company requested cost of preferred stock of 8.03%. However, I recommend using the actual cost for short-term debt of 1.695% instead of the Company's requested cost rate of 2.90%. The 1.695% I chose is similar to what is generally being incurred as a cost for short-term debt in the current financial marketplace I also conclude that Mr. Moul's cost of equity recommendation should be rejected. His DCF method is unreliable because the growth rate he used was subjectively selected from a wide array of largely irrelevant growth rate indicators and because he made improper upward adjustments to the dividend yield. His risk premium method overstates the cost of equity because he gave weight to the arithmetic average of historic returns and because he ignored the pronounced, widely recognized, downtrend in risk premiums that has occurred in recent decades. His CAPM approach not only repeats the errors Mr. Moul made in his risk premium method, but introduces an additional error by using a Value Line short-term forecast for stock price appreciation as an indicator of the "risk premium". Mr. Moul's "comparable earnings" method is not an equity costing method at all. It merely examines expected returns on book equity without any consideration of whether or not

the expected returns are consistent with the return rate required by equity investors to be willing to buy common stock.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

APPENDIX A - IMPLEMENTATION OF BOTH THE DCF METHOD AND THE RISK PREMIUM/CAPM METHOD

I. DCF METHOD

Q. HOW IS THE DCF METHOD USUALLY IMPLEMENTED?

A. The DCF method is usually implemented in utility rate proceedings using the constant growth version. It is applied by implementing the following formula:

cost of equity = dividend yield + future expected growth

Where growth refers to the future sustainable growth rate in dividends, earnings, book value and stock price.

Q. IS THE DCF MODEL WIDELY USED IN UTILITY RATE PROCEEDINGS?

A. Yes. The DCF model has been widely used for many years. From my experience, the constant growth form of the DCF model is more widely used than any other approach to determining the cost of equity.

Q. IS THE DCF MODEL COMMONLY IMPLEMENTED IN A CONSISTENT MANNER?

A. No. The DCF model is widely used and widely abused. Most implementations of the DCF model in utility rate proceedings start out with the same D/P +g, or dividend yield plus growth formula. Also, most generally agree that the growth rate "g" must be representative of the constant future growth rate anticipated by investors for dividends, earnings, book value, and stock price. However, all too often, this important principle is forgotten when it comes time to implement the constant growth DCF formula. Such carelessness causes substantial,

unnecessary error when implementing the constant growth version of the DCF model.

Q. WHY IS IT SO IMPORTANT FOR THE GROWTH RATE USED IN THE CONSTANT GROWTH VERSION OF THE DCF MODEL TO BE REPRESENTATIVE OF THE CONSTANT GROWTH RATE FOR DIVIDENDS, EARNINGS, BOOK VALUE AND STOCK PRICE?

A. The derivation of the constant growth formula is based upon the principle that investors buy stock solely for the right to future cash flows obtained as a result of that ownership. The cash flows are obtained through dividend payments and/or stock price appreciation. The constant growth version of the DCF formula will accurately quantify investors' expectations only if investors expect the dividend yield (defined as dividend payment divided by stock price) and the growth in dividends to best be estimated at one constant growth rate for many years into the future. The dividend yield and growth rate that are used in the constant growth formula must be selected carefully. Consider what happens if the expected growth rates are not all equal:

1. DIFFERENT GROWTH RATE FOR EARNINGS AND FOR DIVIDENDS.

Both dividends and the ability for a company to grow dividends in the future are directly derived from earnings. The dividend yield, or D/P, portion of the constant growth DCF formula quantifies the investor-derived value from the portion of earnings paid out as a dividend and the "g" portion of the constant growth DCF formula quantifies the value of the portion of earnings retained in the business. If dividends are quantified using the current dividend rate, but an earnings forecast is used to quantify "g" that is based upon a future environment in which earnings are expected to grow more rapidly than dividends, an ever-increasing portion of the total return expected by investors will be attributable to growth and a smaller portion will be attributable to dividends. Under these conditions, other things being equal, the constant growth version of the DCF model would overstate the cost of equity because the decrease in the payout ratio that results from a more rapid earnings growth rate than dividend growth rate would shift a

greater portion of the earnings from dividends to earnings growth. The result of this is that the higher future earnings growth rate would cause the portion of earnings available for dividends to be lower, and therefore the dividend yield would be lower. Conversely, if future earnings growth were expected to be less than dividend growth, the constant growth form of the DCF model would understate the cost of equity. Every time a dividend payment is scheduled, the board of directors of a company decides what portion of earnings to pay out as a dividend and what portion of earnings to re-invest, or "retain" in the business. It is this re-investment of earnings that causes sustainable growth. Both dividends and growth therefore compete for the same dollars of earnings. The higher the portion of earnings allocated to the payment of dividends, the smaller the amount of earnings left over for re-investment and therefore the lower the future growth rate. The relationship between the portion of earnings paid out as a dividend and the portion re-invested in the business is commonly referred to as either the dividend "payout" ratio (which is computed by dividing dividends by earnings), or the "retention rate" (which is computed by dividing the portion of earnings re-invested in the business by earnings). The sum of the payout ratio and the retention rate is 1.0, or 100% because 100% of earnings are either paid out as a dividend or retained in the business. The constant growth version of the DCF formula uses a specific dividend rate to compute the "D/P" term of its formula. This specific dividend rate has a specific earnings "retention rate" associated with it. This specific "retention rate" provides for one and only one percentage of earnings that remains to cause the growth that is quantified in the second term of the equation. This is because the portion of earnings paid out as a dividend and the portion not paid out as a dividend must remain equal to total earnings. Consider what happens if the dividend "payout ratio" or the earnings "retention" ratio are not constant. If they are not constant, the portion of earnings available for growth and the portion available for dividends will continue to shift over time, but under such conditions the constant growth formula produces an erroneous

result because it is incapable of properly accounting for this change.

2. EARNINGS PER SHARE GROWTH RATE DIFFERENT FROM STOCK PRICE GROWTH RATE.

When earnings per share growth rates are measured over a relatively short time period such as the five-year consensus growth rates compiled by services such as Zacks and I/B/E/S, it is likely that investors expect materially different growth rates in earnings per share and stock price. This is because the earnings per share growth rate as reported in such services is simply the compound annual growth rate in the earnings per share from the most recently completed fiscal year to the earnings per share forecast for five years into the future. Presumably, an earnings per share forecast for five years into the future is sufficiently far off that analysts' forecasts for that time period must be based upon an expectation of normal conditions. Five years into the future is too far off to forecast abnormal economic conditions, abnormal weather conditions, or any abnormal operating problems that could impact earnings. However, the base year from which earnings are forecast is likely to contain some abnormalities that have an impact on earnings. To the extent this abnormality exists, the forecast of earnings per share growth from the base year to a period five years in the future will be equal to the sustainable growth rate plus or minus the impact of any abnormalities. Growth that is required to bring earnings up to or down to normally expected conditions is not sustainable growth and therefore it is not the kind of growth that would be mirrored in the stock price growth rate.

3. DIFFERENT GROWTH RATE FOR EARNINGS AND FOR BOOK VALUE.

The return on book equity is computed by dividing earnings by book value. This is an important number for several reasons: a) for a regulated utility company, the allowed cost of equity is the return on book equity that a utility commission intends for a company to earn on the regulated portion of its business, and b) unregulated companies attempt to earn the highest risk adjusted returns on equity that are possible. If earnings

per share grow more rapidly than book value per share, the return on equity increases. Conversely, if earnings per share grow more slowly than book value per share, the return on equity decreases. While increases and/or decreases in the earned return on equity can and do occur, it is not credible to forecast a sustained change in the return on equity for the many years into the future that are required in the constant-growth DCF model. A forecasted continuation of a decrease in the earned return on equity would eventually drive the earned return on equity to near zero – a condition that is not credible for a regulated business providing a needed service. Similarly, a forecasted continuation of an increase in the earned return on equity would eventually drive the earned return on equity to an extremely high number – a condition that would not form the basis for a credible growth rate forecast for a regulated business because of the regulatory constraints on the authorized return. Similarly, an earnings per share growth rate higher than the book value per share growth rate is not credible for a competitive business because, as returns would go higher and higher, more and more competitors would be attracted. If a growth rate based upon an earning per share forecast higher than the forecast book value per share growth rate were used in a constant-growth form of the DCF model, then the constant-growth version of the DCF model would contain an upward bias. Conversely, if an earnings per share forecast that is lower than the book value per share growth rate, then the constant-growth form of the DCF model would contain a downward bias.

Q. ARE FIVE-YEAR EARNINGS PER SHARE FORECASTS OF THE TYPE AVAILABLE FROM SOURCES SUCH AS ZACKS, I/B/E/S, AND VALUE LINE SUITABLE AS A PROXY FOR LONG-TERM SUSTAINABLE GROWTH IN THE CONSTANT-GROWTH FORM OF THE DCF MODEL?

A. No. For the above reasons, it is improper to directly use a five-year earnings per share forecast as a proxy for long-term sustainable growth in the constant-growth DCF model. No attempt is

made for these earnings per share forecasts to be representative of the anticipated growth rate in dividends per share, book value per share, or stock price. Therefore, these sources can be used to develop a sustainable growth rate in the context of a constant-growth DCF model, but if used directly as a proxy for long-term growth they are no more accurate than it would be to forecast the height of a human at age 60 based upon a reasonable forecast of annual growth for the five years starting at age 12. These earnings per share forecasts are generally different from the anticipated growth in dividends, book value, and stock price because they include the often substantial impact of bringing earnings up or down to a normal earned return on equity from whatever return on equity was achieved in the most recently completed fiscal year. Additionally, such analysts' growth rates tend to be overstated because of the well-documented propensity for analysts to be optimistic.[28] The combined effect of the habitual optimism and the required movement over a relatively short five-year time period to bring earnings per share up to the optimistic levels causes five-year analysts' growth rates to commonly overstate the future sustainable growth rate. As noted earlier, an October 4, 2001 report issued by Credit Suisse First Boston noted that analysts' estimates "… have on average been 6% too optimistic 12 months prior to a reporting date."[29] As a result, DCF approaches that rely upon the direct use of analysts' five-year growth rates repeatedly overstate the cost of equity.

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[28] While there are many sources that have shown this optimism to exist, one noteworthy source is a statement by Arthur Levitt, former chairman of the U.S. Securities and Exchange Commission. The following appeared on page 4 of the 5/31/99 issue of Barrons:

ARTHUR LEVITT MAY BE THE best chairman of the SEC since Joe Kennedy. And no accident, really: Like Kennedy, Levitt spent enough time in the Street to develop a fine nose for good stocks and bad people.

Back in April, Levitt delivered some cogent remarks on analysts (in the sacred order of being, they're somewhat lower than angels) and their innate bullishness (solely the product of their sunny natures).

As he observed, sell recommendations make up 1.4% of all analysts' recommendations, while buys represent 68%.

By way of explanation for this strange imbalance, he offers the possibility of a "direct correlation between the content of an analyst's recommendation and the amount of business his firm does with the issuer."

Analysts, he grouses are too eager to see every frog of a stock as a prince. What the world needs, he laments, are analysts who call a frog a frog.

[29] *Weekly Insights*, "Global Strategy Perspectives", October 4, 2001, page 58.

Q. HOW IS IT POSSIBLE TO ENSURE THAT THE GROWTH RATE USED IN THE CONSTANT-GROWTH VERSION OF THE DCF MODEL WILL RESULT IN A CONSTANT GROWTH RATE INDICATOR FOR DIVIDENDS, EARNINGS, BOOK VALUE, AND STOCK PRICE?

A. The most straight-forward and most accurate way to make this computation is to use the formula "b x r + sv" formula, where b= the earnings retention rate, r=the future expected return on book equity, and sv is a factor that accounts for sustainable growth caused by the sale of new shares of common stock. The mathematics in support of the derivation of the DCF model show that the "b x r + sv" formula should be used to quantify sustainable growth. Common mistakes with this formula include using historic values of "b x r" and/or of "sv" rather than future expected values, and most importantly by failing to realize that in order for the formula to be applied properly, the retention rate value, "b" must be determined in a manner that is consistent with the other values input into the DCF model. This is a critical step necessary to ensure that the portion of the future expected earnings that has been allocated to dividends is consistent with the future expected earnings level that is used to compute growth. This is the way to be sure that the retention rate used to compute the dividend yield portion of the constant-growth portion of the DCF model is the same as the retention rate used to compute growth. If the two are not equal, then the total amount of future expected earnings allocated in aggregate to dividends and to growth will be something other than 100% of earnings. An approach that accounts for something other than 100% of earnings in the cost of equity computation will result in an invalid result.

The way to ensure the consistency necessary for a valid result from the implementation of the constant-growth form of the DCF model is to compute the retention rate "b" based upon the inputs used for the dividend rate "D" and the future expected return on equity, "r". This computation is straight-forward. By definition the retention rate "b" is equal to the portion of dividends not paid out as a dividend divided by earnings. The earnings consistent with the value

used for "D" is computed by multiplying book value as of the time of the determination of "D" by the value of "r". The result is the future expected rate of earnings that is consistent with the value used for "D". By subtracting "D" from the future expected earnings consistent with the value used for "r" and dividing that amount by the earnings consistent with the value chosen for "r" results in a retention rate that contains the necessary consistency. If any other value for "b" is used, such as a forecasted value for "b" in some future time period, then the result from the constant-growth DCF computation would be invalid.

Q. HOW DID YOU APPLY THE DCF MODEL IN THIS CASE?

A. I applied the DCF method two different ways. One way is a single-stage, or constant growth DCF model in which I added a growth rate that was carefully constructed to meet the rigorous requirements of the constant growth formula. The second DCF analysis is a multi-stage method. Both approaches to the DCF method are dependent upon an estimate of what common equity investors expect for future cash flow. Any company creates a future cash flow for its equity investors by investing funds in assets that are needed by its business. The future cash flow rate is therefore dependent upon the rate at which the funds invested by the equity investors is able to earn. The rate at which they are able to earn is referred to as the return on book equity.

Q. HOW DID YOU DETERMINE THE FUTURE RETURN ON BOOK EQUITY ANTICIPATED BY INVESTORS?

A. I examined both the historic actual returns earned on average by the comparative groups of electric companies, the future return on equity forecast by Value Line, and the return on equity required to achieve the consensus growth rate compiled by Zacks.

Q. YOU SAID THAT ANALYSTS' ESTIMATES ARE WELL KNOWN TO HAVE A TENDENCY TO BE HIGH. PLEASE PROVIDE YOUR BASIS FOR THAT CONCLUSION.

A. In addition to the statements from former Securities Exchange Commission chairman Arthur Levitt, and the statements in a recent report from Credit Suisse First Boston that I have referenced earlier in this testimony, other noteworthy sources include an article that appeared on the first page of the September 3, 2001 issue of the *Financial Times*. The following article, entitled "HSBC shakes up research" begins by saying:

> HSBC is radically restructuring its investment research in a sign that banks are responding to criticism of the quality of equity analysis.
>
> The bank's analysts will be required to publish as many "sell" recommendations on stocks as "buys" and HSBC will invest its own money in its best research ideas. The move is in response to criticism that investment banks' analysts are too positive about companies in the hope of generating lucrative corporate finance work.
>
> Criticism has been particularly strong in the US, where many banks continued to talk up technology shares at the peak of the market. The banks are facing a wave of litigation from investors who lost money by following analysts' recommendations. Merrill Lynch recently paid $400,000 to a client to drop an action against Henry Blodget, its star internet analyst.
>
> Banks have also been attacked by US regulators and politicians.

An article appeared in the November 18, 2001 edition of the *New York Times*, on the first page of the Sunday business section 3. This article, entitled "Telecom's Pied Piper: Whose Side Was He On?" is an article about Salomon Smith Barney telecommunications analyst Jack Benjamin Grubman, "… one of Wall Street's highest-paid analysts…". The article then says:

> Anyone can make mistakes, but Dr. Grubman's cheerleading epitomizes the conflict-of-interest questions that

> have dogged Wall Street for two years: Even as he rallied clients of Salomon Smith Barney, a unit of **Citigroup**, to buy shares of untested telecommunications companies and to hold on to the shares as they lost almost all of their value, he was aggressively helping his firm win lucrative stock and bond deals from these same companies.
>
> Since 1997, Salomon has taken in more investment banking fees from telecom companies than any other firm on the Street. Because of Dr. Grubman's power and prominence, and because his compensation is based in part on fees the company generated with his help, a part of those fees went to him.

The demise of Enron has served to substantially reinforce investors' mistrust of analysts. Consider the impact on investors when they read the article entitled "The Analyst Who Warned About Enron" that appeared on pages C1 and C17 of the 1/29/02 edition of the *Wall Street Journal*. The article explains that "Financial Analysts who tracked Enron Corp. have taken a pounding for being company 'shills' and for failing to concede they didn't fully understand the Houston energy-trading concern's complex finances." Then, the article explains one exception was bond analyst Daniel Scotto who told clients back in August that Enron securities "should be sold at all costs and sold now" Instead of his accurate recommendation resulting in him getting a promotion, it resulted in his being fired. As the article explains:

> Dr. Scotto's experience highlights one of the oldest pressure points on Wall Street involving financial analysts, who traditionally act as a filter between investors and the financial markets. During the past decade, Wall Street securities firms increasingly have pushed their research analysts to actively trumpet stocks and bonds, not impartially analyze them.
>
> The side benefits to the securities firms can be enormous: If an analyst touts a company's securities, the securities firm stands a greater chance at becoming an adviser to that company, and garnering the fees that will follow. Nowadays, analysts can be stars, receiving bonuses of several hundred thousand dollars for helping their firm to win big underwriting deals. Bash the securities of a corporate client, though, and the securities firm could be shut out of lucrative deals. Enron issued billions of dollars worth of securities in

recent years, generating huge fees for its financial advisers and bankers.

Because of articles like these, others that have appeared over the years, and knowledge gained from personal experience, knowledgeable investors know that analysts' forecasts have a strong tendency to be overly optimistic.

A. Implementation of Single-stage DCF

Q. HOW DID YOU IMPLEMENT THE SINGLE-STAGE OR CONSTANT GROWTH DCF IN THIS CASE?

A. I started by taking the current quarterly dividend rate for each company examined[30] and multiplying it by 4 to arrive at the current annual rate. This number was then converted to a dividend yield by dividing it by the stock price of each company. The stock price used was determined two different ways. One way was to take the actual stock price as of December 31, 2003. The second way was to take the average of the high and low stock price for the year ended December 31, 2003. Then, the dividend yield was increased by adding one-half the future expected growth rate. This upward adjustment to the dividend yield is necessary because the DCF formula specifies that the dividend yield to be used is equal to the dividends expected to be paid over the next year divided by the market price. After this adjustment to increase the dividend yield, the yield is equal to an estimate of dividends over the next year. To each dividend yield result, I added one-half the future expected growth rate. After the adjustment, the yield is equal to an estimate of dividends over the next year.[31]

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[30] The group of companies were selected by the company witness.

31 The complex version does not directly use dividend yields. Instead, it determines the present value of each dividend payment as a discounted cash flow.

Q. HOW DID YOU OBTAIN THE GROWTH RATES YOU USED IN THE CONSTANT GROWTH, OR k= D/P + G, VERSION OF THE DCF METHOD?

A. I derived the growth rates from the internal, or retention growth rate, or "b x r" method where "b" represents the future expected retention rate and "r" represents the future expected earned return on book equity. In addition to the "b x r" growth caused by the retention of earnings, I added an amount to recognize that growth is also caused by the sale of new common stock in excess of book value. *A critical requirement in the implementation of the simplified version of the DCF model is that the estimate of the future expected growth rate be a growth rate that is expected to be sustained, on average, for many years into the future.* Stock analysts and textbooks recognize that generally the most accurate way to estimate the sustainable growth rate in a constant growth DCF method is to use what is usually referred to as the retention growth, or "b x r" method. In this approach, the future expected retention rate "b" is multiplied by the future expected return on book equity "r" in order to obtain a sustainable growth rate. Other methods to estimate future sustainable growth are sometimes used. However, those methods are generally more subjective, and even if used with extreme care, do not have the same potential for accuracy that a properly applied "b x r" estimate has. The reason for this is, in order to produce a meaningful result, those methods must be adjusted to eliminate factors which would otherwise cause them to include non-recurring influences on growth and/or growth rates that are not equally representative of the future average expected growth in earnings, dividends, book value, and stock price.

The "b x r" method is best implemented by multiplying the *future expected* return on book equity by the retention rate that is consistent with both the future expected return on book equity and the dividend rate used to compute the dividend yield. Also, future sustainable growth should include an increment of growth to allow for the impact of sales of new common stock above book value.

The "b x r" growth rate computation, unless adjusted, does not account for sustainable growth that is caused by the purchase or sale of common stock above book value. Therefore, I

modified the "b x r" growth rate to account for this additional growth factor. This additional growth factor, which is a standard part of the DCF computation, is sometimes referred to as the "SV" growth.

An accurate estimate for the future sustainable value of "r" (return on equity) when multiplied by a value for "b" (retention rate) that is consistent with the selection of the dividend rate and the expected return on book equity, produces a growth rate that is constant and sustainable.

Q. DO STOCK ANALYSTS USE THE "b x r" METHOD?

A. Yes. In the textbook, Investments, by Bodie, Kane and Marcus (Irwin, 1989) at page 478, expected growth rate of dividends is described as follows:

> How do stock analysts derive forecasts of *g*, the expected growth rate of dividends? Usually, they first assume a constant dividend payout ratio (that is, ratio of dividends to earnings), which implies that dividends will grow at the same rate as earnings. Then they try to relate the expected growth rate of earnings to the expected profitability of the firm's *future* investment opportunities.
>
> The exact relationship is
>
> g= b X ROE
>
> where *b* is the proportion of the firm's earnings that is reinvested in the business, called the **plowback ratio** or the **earnings retention ratio,** and ROE is the rate of return (return on equity) on new investments. If all of the variables are specified correctly, [the] equation . . . is true by definition, . . .

Q. HOW DID YOU COMPUTE "g"?

A. As previously stated, I used the "b x ROE" method specified in the above textbook quote, although I refer to it in this testimony as the "b x r" method. In the above equation, ROE has the same meaning as "r". I recognized that investors have both historical and forecasted information available to determine the future return on book equity expected by investors. Forecasted data

includes not only specific data for a company being evaluated, but also includes overall industry forecasted data. In addition to "b x r" growth, I included a factor to allow for growth caused by the sale of new common stock at a price other than book value.

I have reflected the impact on growth caused by the sale or repurchase of common stock in my recommended growth rate.

Q. THERE ARE COST OF CAPITAL WITNESSES WHO CLAIM THAT THE "b x r" METHOD IS SOMEHOW CIRCULAR. THIS IS BECAUSE THE FUTURE EARNED RETURN ON BOOK EQUITY THAT YOU USE TO QUANTIFY GROWTH IS USED TO DETERMINE THE COST OF EQUITY, AND THE COST OF EQUITY IS THEN USED TO DETERMINE THE FUTURE RETURN ON EQUITY THAT WILL BE EARNED. IS THIS CIRCULAR?

A. No. Those who erroneously claim that the method is circular confuse the definition of "r" and the definition of "k". While "r" is defined as the future return on **book** equity anticipated by investors, "k" is the cost of equity, or the return investors expect on the **market price** investment. Since the market price is determined based upon what investors are willing to pay for a stock, and the book value is based upon the net stockholders' investment in the company, "r" usually has a different value than "k". In fact, the proper application of the DCF method relates a specific stock market price to a specific expectation of future cash flows that is created by future earned return ("r") levels. For example, assume investors are willing to pay $10 a share for a company when the expectations are that the company will be able to earn 12% on its book equity in the future. If events would cause investors to re-evaluate the 12% return expectation, the stock price should be expected to change. If investors' expectations of the future return on book equity change from 12% to 10%, and there is no corresponding change in the cost of equity, the stock price would decline. The cost of equity, however, would not decline simply because an event might occur that would cause investors to lower their estimate for "r". The cost of equity is equal to the sum of both the dividend yield and growth. Investors'

estimate of “r” influences the investors’ estimate for growth. Changes in growth expectations cause investors to change the price they are willing to pay for stock. A change in the stock price can cause a change in the dividend yield that offsets the change in expected growth. In this way, a higher dividend yield would offset by the lower expected growth rate and leave the cost of equity, “k”, unchanged.

B. Determination of the Future Return on Equity “r”

Q. HOW DID YOU DETERMINE THE VALUE OF "r" THAT YOU USED IN YOUR RETAINED EARNINGS GROWTH COMPUTATIONS?

A. My estimate for “r” for the comparative group of gas companies covered by value line is 11.00%. The value of “r” used for companies chosen by the company witness was also 11.00%. The value of “r” that is required in the DCF formula is the one that is sustainable into the future for much longer than 5 years.

C. Determination of Retention Rate, "b"

Q. HOW HAVE YOU DETERMINED THE VALUE OF THE FUTURE EXPECTED RETENTION RATE "b" THAT YOU USED IN YOUR SIMPLIFIED DCF ANALYSIS?

A. I have recognized that the retention rate, "b", is merely the residual of the dividend rate, "D", and the future expected return on book equity, "r." Since, by definition, "b" is the fraction of earnings not paid out as a dividend, the only correct value to use for "b" is the one that is consistent with the quantification of the other variables when implementing the DCF method. The formula to determine "b" is:

b= 1- (D/E), where

b = retention rate

D = Dividend rate

E = Earnings rate

However, "E" is equal to "r" times the book value per share. Book value per share is a known amount, as is "E", consistent with the future expected value for "r", and the "D" used to compute dividend yield. Therefore, to maximize the accuracy of the DCF method, quantification of the value of "b" should be done in a manner that recognizes the interdependency between the value of "b" and the values for "r" and "D". I directly computed the value of "b" based upon the values of "D", and "r".

Q. WHAT RETENTION RATES DID YOU USE IN THE SINGLE-STAGE DCF METHOD?

A. Based upon the above formula, I used a retention rate of 36.26% to 38.81% based on the companies covered by Value Line and 35.36% to 37.63% based on the companies chosen by Mr. Moul. See JAR-4, pp.1, 2.

D. Implementation of Multi-stage DCF

Q. HOW DID YOU IMPLEMENT THE MULTI-STAGE DCF METHOD?

A. The first stage of the model is based upon Value Line*'s* estimates of dividends per share and earnings per share for 2003 through 2007[32] for the companies examined. Value Line does not show a specific earnings and dividend projection for every year from 2003 to 2007.

[32] The estimate for 2007 is shown by Value Line as its estimate from 2006-2008.

Projections for years skipped by Value Line were made by extrapolation from the available data. When implementing this method, I mechanically used Value Line's projections for the period in which the projections were available.

I determined future earnings in the second stage of the non-constant DCF model by multiplying the future book value per share by the future expected earned return on book equity. For the purposes of this case, I used two future return on book equity estimates; a high end of range and a low end of range. Projected book value equals the beginning book value plus the current year's earnings minus the current year's dividends. Book value growth projections also include the effect of sales of new common stock. The projections in the second stage of the DCF model were made for 40 years into the future. Events longer than 40 years into the future have a minimal present value.[33]

My projections have relied on a constant dividend payout ratio for the second stage[34].

I derived the estimated future stock price from the projected book value using the same market-to-book ratio at the time of sale as exists today. The only cash outflow is the price paid for the stock. The non-constant version of the model uses both the spot stock price and the average stock price over one year to be representative of the price paid.

The retention rate used in the second-stage was computed by projecting the continuation of dividend growth at the same percentage change as occurred between the next-to-the last and the last year of the first stage into the first year of the second stage. The resulting retention rate for this first year of the second stage was then determined by relating the resultant dividend rate to the earnings per share projected for the first year of the second stage. For

[33] For example, a change in an assumption that the selling market-to-book would be 0.1 lower or higher than as of the time of purchase would introduce a potential inaccuracy in the indicated cost of equity of plus or minus about 25 basis points in a 30-year analysis, but a similar change in the market-to-book ratio expectation would introduce only plus or minus about 15 basis points in a 40 year analysis. If longer than 40 years were used, the result would be even less sensitive to the future market-to-book ratio expectation.

[34] As in the case of the future expected earned return on equity assumption, if there were evidence to support the use of varying payout ratios instead of a constant payout ratio, the same model could still be used to accurately quantify the cost of equity. Unlike the simplified DCF model, this model specifically accounts for the fact that a change in the payout ratio has an impact on the book value, and therefore has an impact on the earnings rate achieved in the future.

years subsequent to the first year of the second stage, the retention rate was held constant at the second stage first-year amount.

The results for the complex, or multi-stage DCF are shown on JAR-5, pp. 1, 2.

Q. WHAT COST OF EQUITY IS INDICATED BY THE IMPLEMENTATION OF THE DCF METHOD IN THIS CASE?

A. As shown on Schedule JAR-2, the cost of equity indicated by the DCF method was estimated to be between 9.13% and 9.97%, depending upon the group of companies and the time period examined.

II. RISK PREMIUM/CAPM METHOD

Q. PLEASE EXPLAIN THE RISK PREMIUM/CAPM METHOD.

A. As explained earlier in my testimony, the risk premium/CAPM method estimates the cost of equity by analyzing the historic difference between the cost of equity and a related factor such as the rate of inflation or the cost of debt.

One critically important fact to understand when implementing the risk premium method is that risk premiums have declined in recent years. As mentioned earlier in this testimony, Federal Reserve Chairman Alan Greenspan made a speech on October 14, 1999 entitled "Measuring Financial Risk in the Twenty-first Century". The text of the speech is available at http://www.bog.frb.fed.us/boarddocs/speeches/1999/19991014.htm. In the speech, Chairman Greenspan says:

> That equity risk premiums have generally declined during the past decade is not in dispute. What is at issue is how much of the decline reflects new, irreversible technologies, and what part is a consequence of a prolonged business expansion without a significant period of adjustment. The business expansion is, of course, reversible, whereas technological advancements presumably are not.

Q. IS CHAIRMAN GREENSPAN'S VIEW OF THE REDUCTION IN RISK PREMIUMS CONSISTENT WITH WHAT INVESTORS NOW GENERALLY EXPECT?

A. Yes. One good source to confirm that the financial community shares Chairman Greenspan's conclusion is an article that appeared in the April 5, 1999 issue of *Business Week*:

> The risk premium is the difference between the risk-free interest rate, usually the return on U.S. Treasury bills, and the return on a diversified stock portfolio. Over more than 70 years, the return to stocks averaged 11.2%, and T-bills, just 3.8%. The

> difference between the two returns, 7.4%, is the risk premium. Economists explain this extra return as an investors' reward for taking on the greater risk of owning stocks. **Most market watchers believe that in recent years, the premium has fallen to somewhere between 3% and 4% because of lower inflation and a long business upswing that makes corporate earnings less variable.**
> [Emphasis added.]

On October 4, 2001, the previously referenced report from Credit Suisse First Boston concluded that the equity risk premium over treasury bonds is 3.7%, and the equity risk premium over Baa rated corporate bonds is now 1.9%.[35]

A. Inflation Risk Premium Method.

Q. HOW HAVE YOU APPLIED THE INFLATION PREMIUM METHOD?

A. I implemented the inflation premium method by adding investors' current expectation for inflation to the long-term rate earned by common stocks net of inflation. This result was modified, based upon beta, to obtain a result that was compatible with the risk of the average electric distribution utility.

[35] Weekly Insights, "Global Strategy Perspectives", October 4, 2001, Credit Suisse First Boston, pages 55 and 61.

Q. WHAT IS THE BASIS FOR THE INFLATION PREMIUM METHOD?

A. A book entitled *Stocks for the Long Run*[36] examined the real returns achieved by common stocks from 1802 through 1997. The conclusion in the book is that equity returns in excess of the inflation rate have been very similar in all major sub-periods between 1802 and 1997, while the risk premium in between bonds and common stocks has been erratic. Page 11 of this book says:

> Despite extraordinary changes in the economic, social, and political environment over the past two centuries, stocks have yielded between 6.6 and 7.2 percent per year after inflation in all major subperiods.

The book then says on page 12:

> Note the extraordinary stability of the real return on stocks over all major subperiods: 7.0 percent per year from 1802-1870, 6.6 percent from 1871 through 1925, and 7.2 percent per year since 1926. Ever since World War II, during which all the inflation in the U.S. has experienced over the past two hundred years has occurred, the average real rate of return on stocks has been 7.5 percent per year. This is virtually identical to the previous 125 years, which saw no overall inflation. This remarkable stability of long-term real returns is a characteristic of mean reversion, a property of a variable to offset its short-term fluctuations so as to produce far more stable long-term returns.

Continuing on page 14, *Stocks for the Long Run* says:

> As stable as the long-term real returns have been for equities, the same cannot be said of fixed-income assets. Table 1-2 reports the nominal and real returns on both short-term and long-term bonds over the same time periods as in Table 1-1.

[36] *Stocks for the Long Run* by Jeremy J. Siegel, Professor at Wharton. McGraw Hill, 1998. According to the book cover, Professor Siegel was "… hailed by *Business Week* as the top business school professor in the country…"

> The real returns on bills has dropped precipitously from 5.1 percent in the early part of the nineteenth century to a bare 0.6 percent since 1926, a return only slightly above inflation.
>
> The real return on long-term bonds has shown a similar pattern. Bond returns fell from a generous 4.8 percent in the first sub period to 3.7 percent in the second, and then to only 2.0 percent in the third.

The book explains some of the reasons why bond returns have been especially unstable. Page 16 says:

> The stock collapse of the early 1930's caused a whole generation of investors to shun equities and invest in government bonds and newly-insured bank deposits, driving their return downward. Furthermore, the increase in the financial assets of the middle class, whose behavior towards risk was far more conservative than that of the wealthy of the nineteenth century, likely played a role in depressing bond and bill returns.
>
> Moreover, during World War II and the early postwar years, interest rates were kept low by the stated bond support policy of the Federal Reserve. Bondholders had bought these bonds because of the widespread predictions of depression after the war. This support policy was abandoned in 1951 because low interest rates fostered inflation. But interest rate controls, particularly on deposits, lasted much longer.

The book then provides a conclusion on page 16 that:

> Whatever the reason for the decline in the return on fixed-income assets over the past century, it is almost certain that the real returns on bonds will be higher in the future than they have been over the last 70 years. As a result of the inflation shock of the 1970's, bondholders have incorporated a significant inflation premium in the coupon on long-term bonds.

Q. IS IT POSSIBLE TO ACCURATELY QUANTIFY INVESTORS' CURRENT EXPECTATIONS FOR INFLATION?

A. Yes. It has recently become possible to analytically determine investor's expectations for inflation. The U.S. government has issued inflation-indexed treasury bonds. The total return received by investors in these bonds is a fixed interest rate plus an increment to the principal based upon the actual rate of inflation that occurs over the life of the bond. These bonds pay a lower interest rate simply because investors know that in addition to the interest payments, they will receive the allowance for inflation as part of the increment to the principal. This is in contrast to conventional U.S. treasury bonds. The principal amount of a conventional bond does not change over the life of the bond. Therefore, whatever allowance for inflation investors believe they need can only be obtained through the interest payment. By comparing the interest rate on conventional U.S. treasury bonds with the interest rate on inflation-indexed U.S. treasury bonds, the future inflation rate anticipated by investors can be quantified.

Q. WHAT IS THE CURRENT INFLATION EXPECTATION OF INVESTORS?

A. As of November, 2003, the inflation expectation of investors was estimated to be about 3.00%. See JAR-9. This was obtained by observing that long-term inflation-indexed treasury securities were yielding 2.24%, while long-term non inflation-indexed treasury securities were yielding 5.07%. The difference between 5.07% and 2.24% is 2.83%. Adding this 3.00% inflation expectation to the 6.6% to 7.0% range produces an inflation risk premium indicated cost of equity of 9.60% to 10.00% for an equity investment of average risk.

B. Debt Risk Premium Method

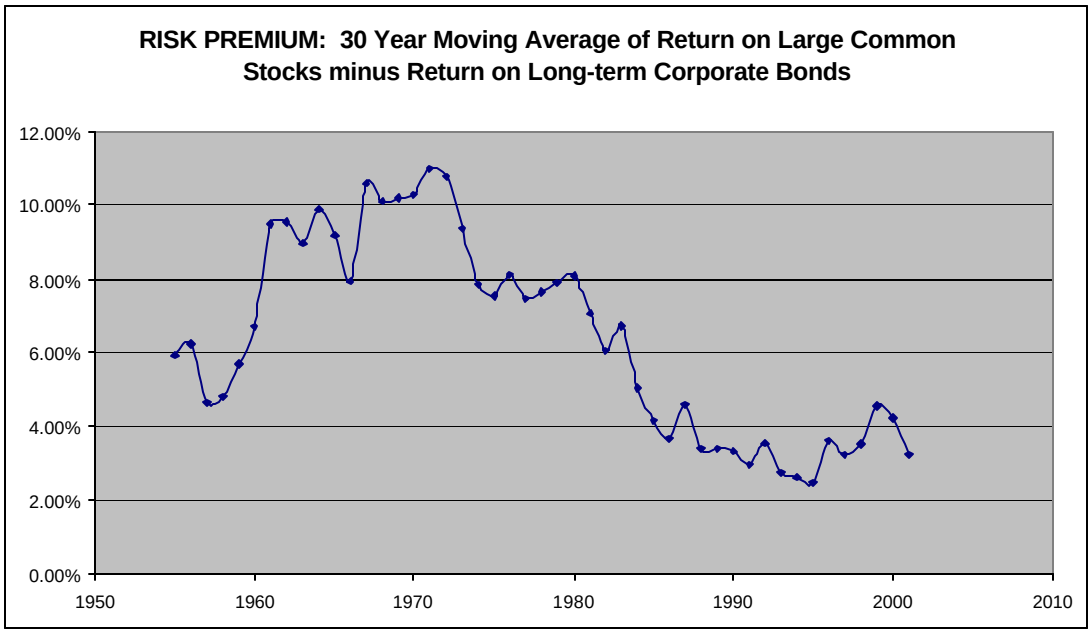
Q. HOW DID YOU DETERMINE THE COST OF EQUITY USING THE DEBT RISK PREMIUM METHOD?

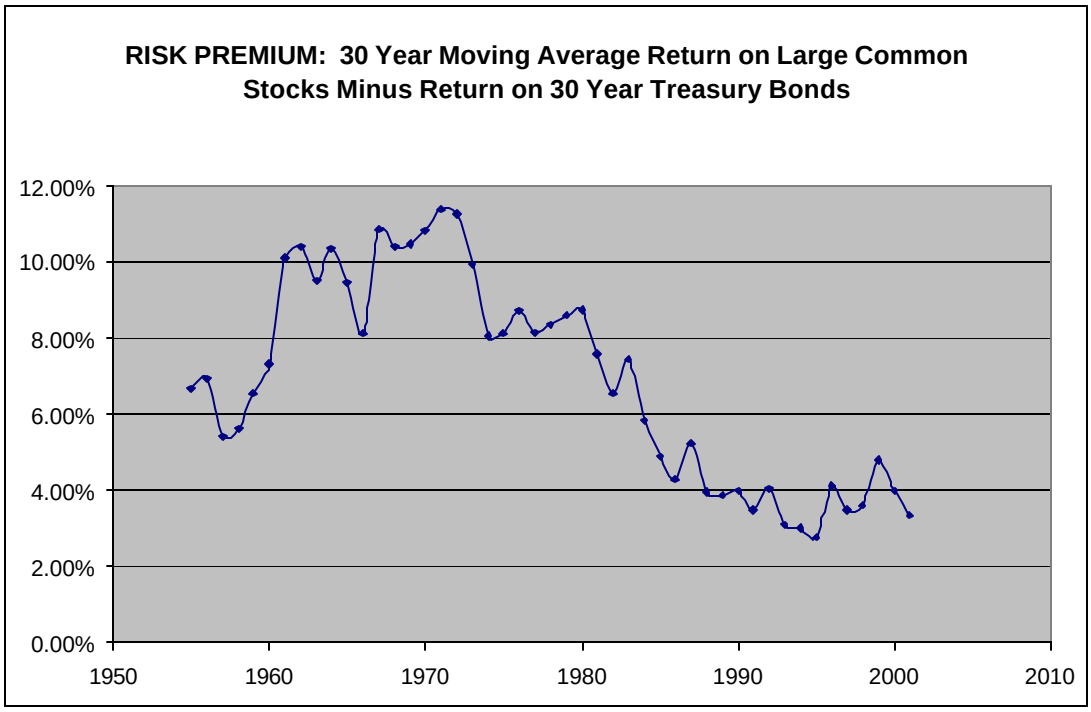
A. As shown on JAR-10, pp. 1,2, I separately determined the proper risk premium applicable to long-term treasury bonds, long-term corporate bonds, intermediate-term treasury bonds and short-term treasury bills. In this way, the debt risk premium method I present considers a wide

array of data points across the yield curve. In this way, the results are less impacted by a temporary imbalance that may exist in the debt maturity "yield curve".

Q. EARLIER IN THIS SECTION OF YOUR TESTIMONY, YOU SHOWED THAT FEDERAL RESERVE CHAIRMAN GREENSPAN NOTED THAT THE FACT THAT EQUITY RISK PREMIUMS HAVE DECLINED "… IS NOT IN DISPUTE." YOU ALSO PROVIDED SOURCES FROM FINANCIAL LITERATURE CONCLUDING THAT THE RISK PREMIUM IS NOW LESS THAN 4%. DO YOU HAVE ANALYTICAL SUPPORT TO SHOW THAT THE STATEMENTS BY CHAIRMAN GREENSPAN AND FROM THE OTHER SOURCES YOU HAVE QUOTED ARE CORRECT?

A. I examined the historic actual earned returns on common stocks and bonds from 1926 through 2000. But, rather than merely making one simplistic computation that examined the entire time period with only one return number over the entire period, I examined a 30-year moving average of the earned returns. 30 years is long enough to see if indeed there is a trend to the earned returns, but not so short as to be overly influenced by the natural volatility in earned returns that generally occurs over just a year or a few years. As shown in the following graphs, the decline in the risk premiums is persistent and undeniable.



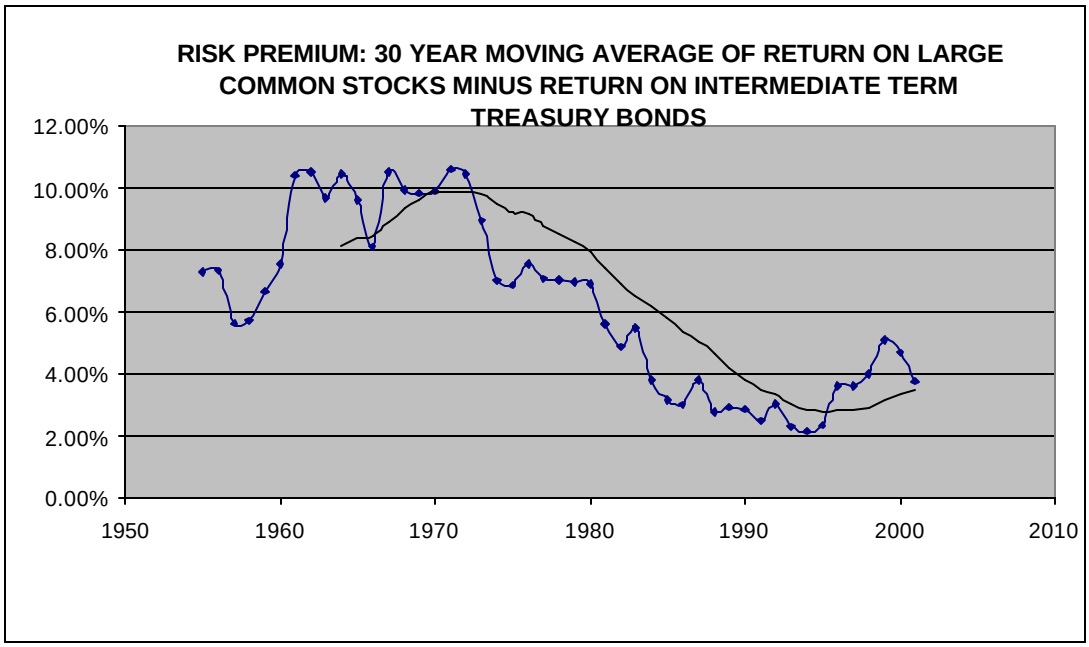


An examination of the above graphs confirms that a risk premium over 30 year treasuries in the 3 to 4% range is appropriate. For my equity cost computations, I used the conservatively high estimate of 4.0% as the risk premium appropriate to add to U.S. treasuries

when determining the cost of equity for an industrial company of average risk. For applying the appropriate risk premium to interest rates other than U.S. treasuries, I determined the average historic risk spread between long-term treasuries and the other interest rate categories I examined. See Schedule JAR-10, p. 2. This 4% risk premium was increased or decreased as warranted by the historic data when applied to each of the separate interest rate categories to which I applied the risk premium method.

Q. WHY HAVE YOU CHOSEN 30 YEARS TO SHOW THE DOWNTREND IN THE RISK PREMIUM RATHER THAN A SHORTER TIME PERIOD SUCH AS 10 YEARS?

A. Ten years is far too short a time period to be able to observe the actual risk premium based upon realized historic returns. The reason that realized returns over a short time are not helpful at quantifying the risk premium is as follows. If the equity risk premium declines, this means by definition that equity investors are willing to settle for a lower risk premium component of the total return they are demanding. If they are willing to settle for a lower return and if other things remain equal, this means that investors are willing to pay a higher stock price for the same future expected cash flow. What this means is that the initial reaction to a lowering of the equity risk premium is for the stock price to rise. A rise in the stock price results in a higher historic earned return at the same time the higher stock price means the investor would expect a lower future return. Unless enough years are used in the historic analysis to diminish the misleading impact of the initial response to a reduction in the risk premium, the historic earned returns will not be helpful. I am especially encouraged by the relative consistency of the trend in the lowering of the risk premium as shown in the 30-year data. This reinforces the likelihood that the risk premium has declined as Federal Reserve Chairman Greenspan and many others have observed.



Q. ARE THERE REASONS WHY THE RISK PREMIUM HAS BEEN ON A MULTI-DECADE DECLINE?

A. Yes. One important reason is a lowering of the U.S. capital gains income tax rate. Investors are concerned about the total after-tax return earned. The majority of the return earned by an investor on a long-term bond (and in many cases all of the return earned by a long-term bond investor) is the interest income. Interest income is fully taxed at regular income tax rates. This is in contrast to an investor in common stocks. An investor in the average large common stock has received the majority of their total return in the form of stock price, or capital appreciation. Capital appreciation is not taxed at all until the stock is sold. Then, it is taxed at the long-term capital gains rate if the stock has been owned long enough to be eligible for such treatment. Currently, long-term capital gains are subject to a federal income tax of no more than 20%. This is a considerably lower rate on long-term capital gains than prevailed in prior decades.

Another important reason why the risk premium demanded by common stock investors versus bond investors has declined is because enough years have now passed since the Great Depression that a greater proportion of investors are more comfortable owning common stocks

than was the case when the memory of the Great Depression was forefront in the minds of most investors.

Yet another factor is the proliferation of mutual funds. While it is debatable whether the popularity of mutual funds is proof that the risk premium has declined (because more investors are comfortable investing in common stock) or is the reason that the risk premium declined (because mutual fund marketing has increased the availability of investment funds for equity), it is nevertheless a relevant factor.

Q. WHAT COST OF EQUITY IS INDICATED BY THE IMPLEMENTATION OF THE RISK PREMIUM/CAPM METHOD IN THIS CASE?

A. As shown on JAR-2, the cost of equity indicated by the risk premium/CAPM method is 9.23 %.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

Yes.

APPENDIX B - TESTIFYING EXPERIENCE OF JAMES A. ROTHSCHILD

Testifying Experience of James A. Rothschild
TESTIFYING EXPERIENCE OF JAMES A. ROTHSCHILD
THROUGH DECEMBER 1, 2003

ALABAMA

Continental Telephone of the South; Docket No. 17968, Rate of Return, January, 1981

ARIZONA

Southwest Gas Corporation; Rate of Return, Docket No. U-1551-92-253, March, 1993
Sun City West Utilities; Accounting, January, 1985

CONNECTICUT

Connecticut American Water Company; Docket No. 800614, Rate of Return, September, 1980
Connecticut American Water Company, Docket No. 95-12-15, Rate of Return, February, 1996
Connecticut Light & Power Company; Docket No. 85-10-22, Accounting and Rate of Return, February, 1986
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Connecticut Light & Power Company, Docket No. 97-05-12, Rate of Return, September, 1997
Connecticut Light & Power Company, Docket No. 98-01-02, Rate of Return, July, 1998
Connecticut Light & Power Company, Docket No. 99-02-05, Rate of Return, April, 1999
Connecticut Light & Power Company, Docket No. 99-03-36, Rate of Return, July, 1999
Connecticut Light & Power Company, Docket No. 98-10-08 RE 4, Financial Issues, September 2000
Connecticut Light & Power Company, Docket No. 00-05-01, Financial Issues, September, 2000
Connecticut Light & Power Company, Docket No. 01-07-02, Capital Structure, August, 2001
Connecticut Light & Power Company, Docket No. 03-07-02 , Rate of Return, October, 2003
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Connecticut Natural Gas; Docket No. 830101, Rate of Return, March, 1983
Connecticut Natural Gas; Docket No. 87-01-03, Rate of Return, March, 1987
Connecticut Natural Gas, Docket No. 95-02-07, Rate of Return, June, 1995
Connecticut Natural Gas, Docket No. 99-09-03, Rate of Return, January, 2000
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Southern Connecticut Gas, Docket No. 99-04-18, Rate of Return, September, 1999
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United Illuminating Company; Docket No. 99-02-04, Rate of Return, April, 1999
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United Illuminating Company, Docket No. 01-10-10-DPUC, Rate of Return, March 2002

DELAWARE

Artesian Water Company, Inc.; Rate of Return, December, 1986
Artesian Water Company, Inc.; Docket No. 87-3, Rate of Return, August, 1987
Diamond State Telephone Company; Docket No. 82-32, Rate of Return, November, 1982
Diamond State Telephone Company; Docket No. 83-12, Rate of Return, October, 1983
Wilmington Suburban Water Company; Rate of Return Report, September, 1986
Wilmington Suburban Water Company; Docket No. 86-25, Rate of Return, February, 1987

FEDERAL ENERGY REGULATORY COMMISSION (FERC)

Koch Gateway Pipeline Company, Docket No. RP97-373-000 Cost of Capital, December, 1997
Maine Yankee Atomic Power Company, Docket No. EL93-22-000, Cost of Capital, July, 1993
New England Power Company; CWIP, February, 1984. Rate of return.

New England Power Company; Docket No.ER88-630-000 & Docket No. ER88-631-000, Rate of Return, April, 1989
New England Power Company; Docket Nos. ER89-582-000 and ER89-596-000, Rate of Return, January, 1990
New England Power Company: Docket Nos. ER91-565-000, ER91-566-000 , FASB 106, March, 1992. Rate of Return.
Philadelphia Electric Company - Conowingo; Docket No. EL-80-557/588, July, 1983. Rate of Return.
Ocean State Power Company, Ocean States II Power Company, Docket No. ER94-998-000 and ER94-999-000, Rate of Return, July, 1994.
Ocean State Power Company, Ocean States II Power Company, Docket No ER 95-533-001 and Docket No. ER-530-001, Rate of Return, June, 1995 and again in October, 1995.
Ocean State Power Company, Ocean State II Power Company, Docket No. ER96-1211-000 and ER96-1212-000, Rate of Return, March, 1996.
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FLORIDA

Alltel of Florida; Docket No. 850064-TL, Accounting, September, 1985
Florida Power & Light Company; Docket No. 810002-EU, Rate of Return, July, 1981
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Florida Power & Light Company; Docket No. 830465-EI, Rate of Return and CWIP, March, 1984
Florida Power & Light Company, Docket No. , Rate of Return, March 2002
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Florida Power Corp.; Docket No. 870220-EI, Rate of Return, October, 1987
Florida Power Corp; Docket No. 000824-EI, Rate of Return, January, 2002
GTE Florida, Inc.; Docket No. 890216-TL, Rate of Return, July, 1989
Gulf Power Company; Docket No. 810136-EU, Rate of Return, October, 1981
Gulf Power Company; Docket No. 840086-EI, Rate of Return, August, 1984
Gulf Power Company; Docket No. 881167-EI, Rate of Return, 1989
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Gulf Power Company; Docket No.010949-EI, Rate of Return, December 2001
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Southern Bell Telephone Company; Docket No. 880069-TL, Rate of Return, January, 1992
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Southern States Utilities, Docket No. 950495-WS, Rate of Return, April, 1996
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United Telephone of Florida; Docket No. 891239-TL, Rate of Return, August, 1990
Water and Sewer Utilities, Docket No 880006-WS, Rate of Return, February, 1988.

GEORGIA

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ILLINOIS

Ameritech Illinois, Rate of Return and Capital Structure, Docket 96-0178, January and July, 1997.
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Central Telephone Company of Illinois, ICC Docket No. 93-0252, Rate of Return, October, 1993.
Commonwealth Edison Company; Docket No. 85CH10970, Financial Testimony, May, 1986.
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Commonwealth Edison Company; ICC Docket No. 87-0057, Rate of Return and Income Taxes, April 3, 1987.
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Commonwealth Edison Company; ICC Docket Nos. 87-0169, 87-0427,88-0189,880219,88-0253 on Remand, Financial Planning Testimony, August, 1990.
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MAINE

Bangor Hydro-Electric Company; Docket No. 81-136, Rate of Return, January, 1982.
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MARYLAND

C & P Telephone Company; Case No. 7591, Fair Value, December, 1981

MASSACHUSETTS

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MINNESOTA

Minnesota Power & Light Company; Docket No. EO15/GR-80-76, Rate of Return, July, 1980

NEW JERSEY

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Elizabethtown Water Company, Docket No. BRC WR93010007, OAL No. PUC 2905-93, Regulatory treatment of CWIP. May, 1993.
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Elizabethtown Water Company, BPU Docket No. WR060307511, Cost of Capital, December 2003.
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Hackensack Water Company; AFUDC & CWIP, June, 1979
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NEW HAMPSHIRE

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NEW YORK

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Generic Financing Case for Electric & Gas Companies; Case No. 27679, May, 1981
Long Island Lighting Company; Case No. 27136, Accounting and Rate of Return, June, 1977
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