IAWC Exhibit 7

ILLINOIS-AMERICAN WATER COMPANY

Direct Testimony

of

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

Concerning

Rate of Return

Illinois-American Water Company

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INTRODUCTION AND SUMMARY

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

A. My name is Paul Ronald Moul. My business address is Cherry Tree Corporate Center, 535 Route 38 East, Suite 200, Cherry Hill, New Jersey 08002-2953. I am Managing Consultant of the firm P. Moul & Associates, Inc., an independent, financial and regulatory consulting firm. My educational background, business experience and qualifications are provided in Appendix A that follows my direct testimony.

Q. What is the purpose of your testimony?

A. My testimony presents evidence and an analysis of the cost of equity that the Illinois Commerce Commission ("ICC" or "Commission") should consider when it determines the overall rate of return for Illinois-American Water Company ("IAWC"). My analysis and recommendation are supported by the detailed financial data set forth in Exhibit 7.1 that consists of thirteen (13) schedules.

Q. What overall rate of return has the Company requested in this proceeding?

A. As shown on Schedule 1 of Exhibit 7.1, the Company has requested an 8.88% overall rate of return that includes an 11.25% rate of return on common equity. The overall rate of return requires the selection of appropriate capital structure ratios and a determination of the appropriate cost rate for each capital component. The capital structure ratios and senior capital cost rates were developed by Mr. Fredrick L. Ruckman, the Company's Vice President and Treasurer, to arrive at the Company's 8.88% overall rate of return. My review of Mr. Ruckman's testimony indicates that these capital structure ratios and senior capital cost rates are reasonable for the Company. The overall rate of

return is the product of weighting the individual capital cost rates by the proportion of each respective type of capital. The resulting overall rate of return, when applied to the Company's rate base, will provide a compensatory level of return for the use of capital and provide the Company with the ability to attract capital.

Q. What background information concerning the Company have you considered as part of your testimony?

A. IAWC provides service to its customers through ten separate water supply districts organized in three divisions. These divisions are the Southern Division (Alton, Cairo and Interurban districts), Northern Division (Pekin, Peoria and Lincoln districts), and the Eastern Division (Champaign, Pontiac, Sterling, and Streator districts). IAWC provides water service to approximately 219,000 customers, consisting of: 87,000 in the Southern Division, 68,000 in the Northern Division and 64,000 in the Eastern Division. The Company's water sales are about equally dividend among the customer classes with about 32% residential, 19% commercial, 26% industrial, and 23% other water sales. The Company meets its customers needs through both surface and ground water supplies. Over the years, the Company has acquired a number of systems from other companies and has on-going discussions concerning the potential acquisition of additional systems. Through these acquisitions, the Company has taken a regional approach to water supply through consolidation. This strategy provides benefits to all of the Company's constituencies -- new customers benefit from the Company's management expertise which enhances service reliability and water quality of the acquired systems; existing customers benefit from the economies of scale derived from adding new customers; the Company's

employees benefit from a wider scope of responsibilities and opportunities for professional development; and investors benefit from the additional growth of the Company.

Q. What process have you used to analyze the cost of equity in this case?

A. I have analyzed capital market and financial data relied upon by investors when assessing the relative risk, and hence the cost of equity, for a water utility such as IAWC. My analysis uses four well recognized measures: the Discounted Cash Flow ("DCF") model, the Risk Premium ("RP") analysis, the Capital Asset Pricing Model ("CAPM"), and the Comparable Earnings approach. The DCF, RP and CAPM methods represent market-based measures of the cost of equity. By considering the results of a variety of approaches, the Company has selected a range of the cost of equity that is represented by 11.05% and 11.45%. From this range, the Company selected an 11.25% rate of return on common equity for the purpose of determining its revenue requirements in this case.

All of the common shares of IAWC are owned by American Water Works Company, Inc. ("AWW"). This means that the standard models of the cost of equity cannot be applied directly to the Company due to a lack of stock prices. The common shares of AWW are traded on the New York Stock Exchange and the other regional stock exchanges. Although the Parent Company is the source of new common stock equity for IAWC, the AWW market data has not been used directly to measure the cost of equity for the Company. This position has been taken because the determination of the cost of equity for an individual company has become increasingly problematic. For example, merger and acquisition ("M&A") activity has now made a determination of the cost of equity for an individual water company more tenuous. The implications of M&A activity for the water utility

business will be discussed throughout my testimony. M&A activity has implications for (i) the selection of barometer group companies, (ii) the dividend yield component of the DCF, and (iii) the growth component of the DCF.

Rather than rely upon the market-determined cost of equity for an individual company, stock market prices has been employed for a group of seven water companies covered in The Value Line Investment Survey including both its basic service and its Expanded Edition. I have eliminated from this group four firms -- Aquarion Company, E'Town Corporation, SJW Corporation, and United Water Resources -- which have announced proposed mergers with other companies. I will refer to these companies as the "Water Group" through my testimony. I have included AWW as part of the Water Group which has allowed for continued recognition of the relevance of the Parent Company's market data to the cost of equity for IAWC. By employing group average data, rather than individual company analysis, I have minimized the effect of any background "noise" in the market data for an individual company.

Q. Have you considered other evidence of the cost of common equity?

A. Yes. In addition to data for the Water Group, I have considered evidence from a group of companies engaged in other utility endeavors as a cross-check on the Water Group data. I have employed market evidence for a "Public Utility Group," which consists of seven utilities engaged in natural gas distribution and water service. I will discuss the selection criteria for these companies later in my testimony.

Q. Please summarize your evidence of the cost of equity.

A. I have presented below the results of the methods/models that I previously identified. In general, the use of more than one approach provides a superior foundation to arrive at the cost of equity. At any point in time, individual methods can provide an incomplete measure of the cost of equity depending upon extraneous factors which may influence market sentiment. The results of these methods/models will be described later in my testimony. The following table provides a summary of the indicated costs of equity using each of these approaches.

	Water Group
DCF	9.84%
Risk Premium (RP)	12.25%
CAPM	13.06%
Comparable Earnings	13.35%

I have summarized the results for two market determined models of the cost of equity. Those combinations are:

	Water Group
DCF and RP	11.05%
DCF and CAPM	11.45%

From these measures, the Company has elected to express its rate of return on common equity in the range of 11.05% to 11.45% which is represented by the average results of the DCF and RP approaches and the DCF and CAPM approaches for the Water Group. The midpoint of this range is 11.25%, which is the rate of return on common equity requested by the Company in this proceeding. I confirmed the Water Group results by reviewing comparable data for the Public Utility

Group as presented on Schedule 13. Generally, the data for the Public Utility Group indicate higher results as shown on that schedule.

Q. In your opinion, what factors should the Commission consider when setting the Company's cost of capital in this proceeding?

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

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

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

A fair rate of return must not only provide the utility with the ability to attract new capital, it must also be fair to existing investors. An appropriate rate of return which may have been reasonable at one point in time may become too high or too low at a subsequent point in time, based upon changing business risks, economic conditions, and alternative investment opportunities.

Q. How should these principles be applied in this case?

A. The end result of the rate of return determination by the Commission must cover the Company's interest and dividend payments, provide a reasonable level of earnings retention, recover the costs associated with securing capital, produce an adequate level of internally generated funds after payment of dividends to meet capital requirements, be commensurate with the risk to which the Company's capital is exposed, and support reasonable credit quality. I therefore tested what I determined to be the Company's overall cost of capital by reference to certain well-recognized credit quality benchmarks in order to satisfy the capital attraction and maintenance of credit standards of a fair rate

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

of return. It is important that the Commission provide the Company with a reasonable opportunity to achieve adequate credit quality so that its financial condition is commensurate with its public service obligation.

Q. What are some of the important factors that influence credit quality?

A. In this regard, the Company must have the financial strength to support its credit standing in the investment community. In this regard, IAWC must have the financial strength characteristics which would support the credit quality that is equivalent to the investment grade ratings employed in the private placement market as established by the designations of the National Association of Insurance Commissioners ("NAIC"). The Company's long-term debt carries a designation of "1" from the NAIC which would be equivalent to all of the A ratings by Standard & Poor's Corporation ("S&P") and Moody's Investors Service ("Moody's") -- both nationally recognized credit rating agencies. These ratings must be distinguished from the bond rating obtained by the Company through the purchase of insurance on specific debt obligations that serves as a credit enhancement. It is important, therefore, that the Commission provide the Company with an opportunity to experience an adequate rate of return so that its credit profile conforms with the standards for a strong A credit quality rating. In this regard, a variety of quantitative and qualitative measures must be considered when determining an appropriate rate of return on common equity. In quantitative terms, two of the measures of credit quality considered by the bond rating agencies include debt leverage and pre-tax interest coverage. In the area of coverage, the rate of return on common equity represents a critical component because

it is the equity return that provides the margin whereby an interest coverage multiple greater than one is realized.

Q. What credit quality measures are reflected in the Company's requested overall rate of return?

A. I have summarized the Company's requested overall rate of return on Schedule 1. Coverage of the Company's senior capital costs reveals the level of protection that it can supply for its fixed obligations. Interest coverage is measured on both a before- and after-income tax basis. Normally, before-income tax coverage is used to evaluate a company's debt interest coverage and overall after-income tax coverage is the measure employed with regard to the payment of interest charges and preferred stock dividends.

Interest coverage is not the only factor to be considered in testing the appropriate rate of return, but must be viewed in relation to an individual company's degree of financial leverage and cash flow benchmarks. Maintenance of a strong A bond rating financial profile is the appropriate regulatory objective and achievement of an AA bond rating should be encouraged. Strong credit quality is necessary to provide a utility with the highest degree of financial flexibility in order to attract capital on reasonable terms during all economic conditions. Customers also benefit from strong credit quality because the utility will be able to obtain lower financing costs that are passed on to customers in the form of a lower embedded cost of debt. The Commission should encourage higher levels of interest coverage for the water utilities with the need to attract capital in the future.

On Schedule 1, I have calculated the fixed charge coverage implicit in the Company's requested 8.88% overall rate of return. Using a 35.00% federal income tax rate, the pre-tax coverage of interest expense would be 3.05 times assuming the Company actually realized the 8.88% overall rate of return. Post-tax coverage of interest expense and preferred stock dividends would be 2.32 times.

The 3.05 times pre-tax interest coverage and 54.60% debt leverage shown on Schedule 1 should be viewed in the context of the S&P bond rating criteria that I will subsequently discuss. IAWC's has the equivalent corporate credit rating of an A rating and these measures of credit quality (e.g., coverage and leverage) are routinely considered by the institutional investors that purchase the Company's long-term debt. It is important to recognize that the benchmarks for an A rating that include pre-tax interest coverage of 2.8 to 3.4 times and debt leverage of 47.5% to 53.0% represent levels expected to be achieved, rather than the opportunity provided by the rate of return used in the ratesetting process.

RISK FACTORS

Q. One standard for determining a fair rate of return is that the utility's return must be commensurate with its risk. How does a firm's risk impact its cost of equity?

A. The rate of return required by investors is directly linked to the perceived level of risk. The greater the risk of an investment, the higher is the required rate of return necessary to compensate for that risk all else being equal. Because investors will seek the highest rate of return available, considering the

risk involved, the rate of return must at least equal the investor-required, market-determined cost of capital if public utilities are to attract the necessary investment capital on reasonable terms.

Q. How is the risk analyzed for a firm?

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

Q. What are the components that comprise the investment risk of a firm?

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

similar sources of capital with fixed payments) in its capital structure, i.e., financial leverage. Thus, if a firm did not employ financial leverage by borrowing any capital, its investment risk would be represented by its business risk.

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

Q. Please identify some of the risk factors which impact the water utility industry.

A. The business risk of the water utilities has been strongly influenced by water quality concerns. On August 6, 1996, the President of the United States signed the Safe Drinking Water Act Amendments of 1996 ("SDWA") which re-authorized the SDWA for the second time since its original passage in 1974. The 1996 amendments instituted policies and procedures governing water quality. Significant aspects of the 1996 Act provide that the Environmental Protection Agency ("EPA"), in conjunction with other interested parties, will develop a list of contaminants for possible regulation and must update that list every 5 years. From that list, EPA must select at least five contaminants and determine

whether to regulate them. This process must be repeated every five years. The EPA may bypass this process and adopt interim regulations for contaminants which pose an urgent health threat.

In the development of new regulations, the EPA will focus on those contaminants which pose the highest risk to human health and will implement regulation of those contaminants based upon an assessment of risk and a cost-benefit analysis. The focus of future regulations will be on a collaborative approach using sound economic and scientific approaches to water quality regulation.

Although the 1996 amendments established new procedures for future drinking water quality regulations, water utilities must continue to comply with previous regulations, including the Lead and Copper Rule, the Surface Water Treatment Rule, and other regulations concerning potentially hazardous substances, such as volatile organics, herbicides, pesticides and inorganics which require continued monitoring and remediation action when unacceptable concentrations of these substances occur. In May 1996, EPA issued the first rule addressing Disinfection/Disinfection By-Products ("DDBP") under the Enhanced Surface Water Treatment Rule ("ESWTR"). Also, the EPA must conduct rulemakings for the possible regulation of arsenic, radon, and sulfates. On November 2, 1999, the EPA released its proposed standards that set a maximum contaminant level ("MCL") and alternate MCL for radon levels. EPA is encouraging a multimedia mitigation program that provides a flexible approach by directing efforts toward the risks associated with indoor air, while also reducing risks from radon occurring in drinking water. In addition, concern has recently been expressed over ground and surface water contamination caused by the gasoline additive methyl tertiary butyl ether

("MTBE"). There is no known treatment for water that has been contaminated by MTBE, and the resolution of this threat to the nation's water supply remains in doubt.

The regulations which emanate from the EPA concerning certain potentially hazardous substances noted above, together with the Federal Clean Water Act and the Resource Conservation and Recovery Act, will bear upon the risk of all water utilities. Most of these regulations affect the entire water industry in contrast with certain regulations issued pursuant to the Clean Air Act, which may impact only selected electric utilities. This business risk factor, together with the important role which water service facilities represent within the infrastructure, underscores the public policy concerns which are focused on the water utilities.

Q. How do these measures impact the water utility industry?

A. Managers of water utilities have in the past and will in the future focus increased attention on environmental and related regulatory issues. Drinking water quality has also received heightened attention out of concern over the integrity of the source of supply which is often threatened by changing land use and the permissible level of discharged contaminants established by state and federal agencies. Moreover, water companies have experienced increased water treatment and monitoring requirements and escalating costs in order to comply with these increasingly stringent regulatory requirements noted above. Water utilities may also be required to expend resources to undertake research and employ technological innovations to comply with potential regulatory requirements. These factors are symptomatic of the changing business risk faced by water utilities. The importance of drinking water quality on public health reached headline proportions surrounding problems

encountered in Milwaukee, Wisconsin, New York City, and Washington, DC. These situations have increased the perceived risk of water utilities to investors.

Q. Are there other factors which influence the business risk of the water utilities?

A. Yes. Being the sole purveyor of potable water from an established infrastructure does not insulate a water utility's operations from general business conditions, regulatory policy, the influence of weather, and customers usage habits. It is also important to recognize that water utilities face higher degrees of capital intensity, more costly waste disposal requirements, as well as threats to their source of supply. The headlines surrounding MTBE contamination are a case-in-point.

Q. Are there other structural issues which affect the business risk of water utilities?

A. Yes. As noted above, the high fixed cost of water utilities makes earnings vulnerable to significant variations when usage fluctuates with weather, the economy, and customer conservation efforts. While the wise use of water is always the objective, the business risk of the water utility industry can be affected by increased customer awareness of conservation. Moreover, current building standards have mandated the use of fixtures which must comply with more stringent water use requirements.

Q. Please indicate some of the specific water utility risk factors which impact IAWC.

A. The Company must conform its operations to the requirements of the SDWA and ESWTR, which include monitoring and testing, compliance with the lead and copper rule, regulation of DDBP, and other contaminants. Moreover, the Company faces the high capital intensity typically found in the water utility business. As shown by the data on page 3 of Schedule 3, IAWC's investment in net plant was 3.16 times its revenue which is similar to the Water Group at 3.29 times. For the Public Utility

Group, the investment is substantially less at 1.85 times its revenue which signifies the highly capital intensive nature of the water utility industry. Further, the characteristics of water utility construction also bear upon the risk perceived by investors in IAWC and most other water utilities. Generally, water utilities allocate a significant portion of their investment budgets to many small non-revenue producing projects.

In certain aspects of its business, the Company is also threatened by competition. Large volume customers in the Company's Interurban District have proposed the construction of facilities to bypass the Company's supply in order to obtain alternate water service. In response, the Company has offered a competitive tariff that would match the cost associated with obtaining alternative sources of water. The lower margins associated with the competitive tariff rates shows the high risk associated with sales to large volume users that represent about one-quarter of the Company's water sales.

Q. Recently, legislation has been passed that would provide a procedure that would allow the Company to recover the capital costs associated with certain distribution system improvements. What impact would that mechanism have on your analysis of the Company's rate of return?

A. Based upon legislation that was passed in the third quarter of 1999, the Company is proposing an adjustment procedure which allows it to collect the capital costs associated with non-revenue producing investment in distribution facilities between rate cases. Implementation of the Infrastructure Maintenance Charge ("IMC") provides the following benefits to the Company:

- Signal of regulatory support by the Commission for water companies in Illinois

- Enhanced cash flow i.e., provides additional credit quality support which will help alleviate the low depreciation provisions for water companies

- Reduced regulatory lag, i.e., helps reduce the gap between achieved and authorized rates of return.

- Permits water utilities to phase-in rate increases for non-revenue producing investment, i.e., avoid rate shock

- Encourages water companies to maintain a viable infrastructure, i.e., make more timely replacements of an aging distribution system

- Promotes job growth and economic development

- Promotes less frequent base rate cases, i.e., lengthens the interval between rate cases and thereby lowers rate case expense

- Helps maintain high water quality and service reliability through improvements in water pressure, better water quality, and greater fire flows

There are, however, limitations to the proposed IMC. Those limitations include:

- It does not provide a cash return to the utility on qualifying investments during construction, i.e., the investment must meet the used and useful standard prior to capital recovery through the IMC

- It does not eliminate regulatory oversight because there is an annual reconciliation provision to the proposed IMC

- It does not substitute for base rate increases, it merely speeds up the process of capital recovery subject to annual reconciliation

Q. Does the proposed IMC reduce the Company's risk to the point where the cost of equity will be reduced?

A. No. As noted above, there are many benefits and limitations surrounding the proposed IMC. It is designed to provide the Company with the opportunity to achieve the returns that investors expect and

the rating agencies require in their credit rating analysis. The availability of the proposed IMC does not materially change the Company's risk to the point where there is a quantifiable change in the cost of equity. This is because the standard cost of equity models represent results which investors expect to achieve in the long run.[2]

Q. How have the bond rating agencies viewed the business risks facing water utilities?

A. S&P has established a risk-adjusted or matrix approach to the financial benchmarks used to assess the credit quality of all regulated public utilities, including water utilities. This risk evaluation has been expressed by business profile assignments that are intended to represent a specific level of business risk. Each regulated firm is assigned to a category on a scale of 1 (strong) to 10 (weak). In assigning a business profile, S&P has enumerated the key items it considers: regulation, markets, operations, competitiveness, and management.

According to S&P, the general breakdown of the water utility industry, as of December 1998, was:

Business Profile	Number of Water Companies	Percent of Industry
2	4	29%
3	8	57
4	2	14
Total	14	100%

S&P has assigned a "3" business profile to affiliates of the Company which have bond ratings.

[2] In addition, the IMC represents a company-specific risk characteristic which is not recognized in the CAPM determination of the cost of equity. Company-specific items, such as the IMC, are unsystematic risks which do not receive compensation in the CAPM.

Q. How is the Company's risk profile affected by its construction program?

A. The Company is engaged in a continuing capital expenditure program necessary to fulfill the needs of its customers and to comply with various regulations. For the future, the Company expects its construction expenditures to be:

	Capital Expenditures
2000	$ 54,073,000
2001	17,782,000
2002	18,244,000
2003	18,669,000
2004	19,004,000
Total	$127,772,000

Over the next five years, these capital expenditures will represent an approximate 27% ($127,772,000 ÷ $467,882,000) increase in total utility plant from the levels at December 31, 1999. It is estimated that external sources of funds will be required to finance about 55% of capital needs over the next several years. As previously noted, a fair rate of return for the Company represents a key to a financial profile that will provide the Company with the ability to raise the capital necessary to meet its capital needs on an ongoing basis.

Q. How should the Commission respond to the evolving business environment facing the Company?

A. The Company is faced with the requirement to invest in new facilities and to maintain and upgrade existing facilities in its service territory. Where a substantial ongoing capital investment is required to

meet the high quality of product and service that customers demand, supportive regulation is absolutely essential.

FUNDAMENTAL RISK ANALYSIS

Q. Is it necessary to conduct a fundamental risk analysis to provide a framework for a determination of the cost of equity?

A. In addition to considering the qualitative risk factors that I have already discussed, it is necessary to establish a company's relative risk position within its industry through a fundamental analysis of various quantitative and qualitative factors that bear upon investors' assessment of overall risk. The qualitative factors which bear upon the Company's risk have already been discussed. The quantitative risk analysis follows. For this purpose, I have compared the Company to the S&P Public Utilities, an industry-wide proxy group of electric and gas companies, the Water Group, and the Public Utility Group.

Q. What are the quantitative procedures for evaluating the relative risk of different enterprises?

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

expected earnings; operating ratios (the percentage of revenues consumed by operating expenses, depreciation, and taxes other than income tax), which are indicative of profitability; the quality of earnings, which considers the degree to which earnings are the product of accounting principles or cost deferrals; and the level of internally generated funds. Similarly, the proportion of senior capital in a company's capitalization is the measure of financial risk which is often analyzed in the context of the equity ratio (i.e., the complement of the debt ratio).

Q. What are the components of the S&P Public Utilities?

A. The S&P Public Utilities is a widely recognized index which at year end 1998 was comprised of twenty-eight electric power companies and eleven natural gas companies. These companies are identified on pages 3 and 4 of Schedule 5. I have used this group as a broad-based measure of regulated public utility endeavors.

Q. What criteria have you employed to assemble your group of water companies?

A. The Water Group includes the companies that are engaged in the water utility business that are covered in The Value Line Investment Survey and Value Line Investment Survey - Expanded Edition. The identities of the seven (7) companies comprising the group are shown on page 2 of Schedule 3. As noted previously, I have excluded from the group: Aquarion Company, E'Town Corporation, SJW Corporation and United Water Resources ("UWR"). Each of these companies will be acquired by another company in a business combination. In this regard, Kelda Group plc of Leeds, England completed its acquisition of Aquarion on January 7, 2000. On August 22, 1999, UWR announced that Suez Lyonnaise des Eaux would acquire the 70% of UWR that it does not already own. On

October 29, 1999 SJW Corporation announced that it would be acquired by AWW. And, E'Town Corporation announced on November 22, 1999 that it would be acquired by Thames Water P/c of London, England. In all of these planned acquisitions, premiums were offered by the acquiring companies (i.e., 19% in the case of Aquarion, 54% in the case of UWR, 20+% for SJW Corporation, and 36% in the case of E'Town) in order to obtain control of the target company and to induce existing stockholders to participate in the sale of their shares. It would be inappropriate to include these companies in the Water Group in this case because the stock prices of these companies have disconnected from the underlying fundamentals associated with each company. I will discuss this issue in further detail later in my testimony.

Q. What factors have influenced your decision in selecting the other companies for your Public Utility Group?

A. I have taken a regional approach to assemble a group of public utilities. I have also expanded the criteria to include utilities outside the water business. In this regard, the choices include companies doing business in the electric and natural gas sectors of the utility business. For a broader based Public Utility Group, I have elected to focus on the natural gas companies to supplement the market evidence for the water companies. I have taken this approach because the electric business is currently undergoing significant change due to the restructuring of its business which involves either outright divestiture of generating assets or a functional disaggregation that separates the deregulated generation of electricity from the transmission and distribution business that will continue to be regulated. As such, I have not included electric companies in the Public Utility Group, even though several electric

companies have pursued investments in water utilities. To date water utility investments by NI Source, Minnesota Power & Light, and DQU represent a small proportion of their overall business which includes many regulated and non-regulated investments.

Q. What specific criteria did you employ to assemble your Public Utility Group?

A. As noted above, due to the uncertainty surrounding the ultimate restructuring of the electric industry, I have not included electric companies in my Public Utility Group. Rather, I have used natural gas companies in conjunction with the water companies. I have not used natural gas transmission companies because of substantial dissimilarities in the regulation, mode of operation, and the degree of diversification that the pipelines have undertaken which would make those companies unsuitable for use in this case. Therefore, natural gas distribution companies provide the primary source of market data that will supplement the data that I have used for the water companies. In this regard, the specific criteria that I used to select the companies were: (i) they had to be either gas distribution or water companies covered in Value Line, (ii) they had to operate, at least in part, in the North Central region of the U.S., and (iii) they were not presently a target of another company seeking to acquire control. The identities of the seven companies comprising the group are shown on page 2 of Schedule 4. The group consists of five (5) gas distribution companies and two (2) water companies.

Q. Is knowledge of a utility's bond rating an important determinant in assessing its risk and cost of capital?

A. Yes. Knowledge of a company's credit quality rating is important because the cost of each type of capital is directly related to the associated risk of the firm. So while a company's credit quality risk

is directly shown by the rating and yield on its bonds, these relative risk assessments also bear upon the cost of equity. This is because a firm's cost of equity is represented by its borrowing cost plus a premium to recognize the higher risk of an equity investment compared to debt.

Q. How do the bond ratings compare for the Company, the Water Group, Public Utility Group, and the S&P Public Utilities?

A. As previously indicated, the Company has the equivalent of an A CCR from S&P. The CCR is a designation by S&P that focuses upon the credit quality of the issuer of the debt, rather than upon the debt obligation itself. In October 1997, S&P initiated a process that included an assessment of full recovery by investors in a post-default scenario. The incorporation of "ultimate recovery risk" associated with senior secured debt led to the "notching" process that now shows separate ratings on specific debt obligations of a company that may vary from its overall credit quality shown by its CCR. The Company's credit quality is fairly similar to that of the Water Group which has an average A+ bond rating from S&P and that of the Public Utility Group which has an average A bond rating from S&P. For the S&P Public Utilities, the average composite bond rating is A by S&P and A2 by Moody's.

Q. What factors influence the bond ratings assigned by the credit rating agencies?

A. The credit rating agencies consider various qualitative and quantitative factors in assigning grades of creditworthiness. On June 21, 1999, S&P modified its benchmark criteria with a focus on the relative business risk of a firm regardless of its industry-type. The new benchmarks replaced former criteria that were directed toward specific types of utilities. Now, each water company will be measured

against a uniform set of financial benchmarks applicable to all firms that are assigned to a specific business profile. S&P has indicated that no rating changes should be expected from the new financial targets because they were developed by integrating prior financial benchmarks and historical industrial medians. The financial benchmarks for a utility with a "3" business profile include:

Rating	Pre-Tax Interest Coverage	Debt Leverage	Funds from Operations Interest Coverage	Funds from Operations to Average Total Debt
AA	4.0-3.4×	42.0-47.5%	4.5-3.9×	31.5-26.0%
A	3.4-2.8	47.5-53.0	3.9-3.1	20.0-20.0
BBB	2.8-1.8	53.0-61.0	3.1-2.1	20.0-14.0
BB	1.8-1.1	67.0-74.0	2.1-1.3	14.0-9.5
B	1.1-0.3	67.0-74.0	1.3-0.5	9.5-4.0

Q. How do the financial data compare for the Company, the Water Group, the Public Utility Group and the S&P Public Utilities?

A. The broad categories of financial data that I will discuss are shown on Schedules 2, 3, 4 and 5. For the purpose of my fundamental analysis, I have combined the historical financial statements of IAWC with those of United Water Illinois and Northern Illinois Water Company. The important categories of relative risk are as follows:

Size. In terms of capitalization, IAWC is smaller than to the average size of the Water Group and the Public Utility Group. In contrast, the S&P Public Utilities are much larger than IAWC and either of the groups which I have considered. All other things being equal, a smaller company is riskier than a larger company, since a given change in revenue and expense has a proportionately greater impact on a small firm. Small firms can also encounter reduced liquidity for their securities which can

add to risk and increase capital costs. As I will demonstrate later, the size of a firm can significantly influence its cost of equity.

As previously noted, the capitalization of the water utilities should be considered in the context of the highly capital intensive nature of the water utility business. The comparisons of capital intensity are provided on page 3 of Schedule 3. As indicated on that schedule, the Water Group has invested $3.29 in net plant to produce a dollar of revenues, illustrating that the water industry is highly dependent upon capital investment to produce revenues. The Company's capital intensity is shown by its $3.16 of the net plant investment per dollar of revenues. For the Public Utility Group, the capital intensity is less as shown by its $1.85 of net plant per dollar of revenues. This reflects the lower capital intensity of the gas distribution companies that dominate the Public Utility Group.

Market Ratios. Historical market-based financial ratios, such as earnings/price ratios and dividend yields, provide a partial measure of the investor-required cost of equity. If all other factors are equal, investors will require a higher dividend yield for companies which exhibit greater risk as compensation for that risk.[3] Similarly, a firm that investors perceive to have higher risks will experience a lower price per share in relation to expected earnings; a high earnings/price ratio is thus indicative of greater risk.

Since IAWC's stock is not traded, there are no market ratios for the Company. On average, the earnings/price ratios were higher for the Water Group as compared to the Public Utility Group and

[3] For example, two otherwise similarly situated firms each paying $1.00 per share in annual dividends would have different market prices at varying levels of risk. That is to say, the firm with a higher level of risk will have a lower share value, while the firm with a lower risk profile will have a higher share value.

the S&P Public Utilities. The five-year average dividend yields were fairly close for the Water Group and the S&P Public Utilities, but higher than the Public Utility Group. The market-to-book ratios were higher for the Public Utility Group and the S&P Public Utilities as compared to the Water Group.

Common Equity Ratio. The level of financial risk is measured by the proportion of debt and other senior capital which is contained in a company's capitalization. Financial risk is also analyzed by comparing common equity ratios (the complement of the ratio of debt and other senior capital). That is to say, a firm with a high common equity ratio has low financial risk, while a firm with a low common equity ratio has high financial risk. The five-year average common equity ratio, based on permanent capital, was 45.1% for IAWC, 47.4% for the Water Group, 49.4% for the Public Utility Group, and 45.9% for the S&P Public Utilities. The Company's goal is to maintain an equity ratio (common and preferred) in the mid 40% range.

Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's earned returns signifies relative levels of risk, as shown by the coefficient of variation (standard deviation ÷ mean) of the rate of return on book common equity. The higher the coefficient of variation, the greater degree of variability. For the period 1994-1998, the coefficients of variation were 0.040 (0.5% ÷ 12.6%) for IAWC, 0.038 (0.4% ÷ 10.6%) for the Water Group, 0.076 (0.9% ÷ 11.9%) for the Public Utility Group, and 0.152 (1.6% ÷ 10.5%) for the S&P Public Utilities.

Operating Ratios. I have also compared operating ratios (the percentage of revenues consumed by operating expense, depreciation and taxes other than income).[4] For 1994-1998, the

[4] The complement of the operating ratio is the operating margin which provides a measure of

(continued...)

five-year average operating ratios were 64.9% for IAWC, 72.2% for the Water Group, 82.0% for the Public Utility Group and 80.5% for the S&P Public Utilities. The operating ratios for the water companies are understandably lower than other public utilities because of the higher capital intensity of the water companies.

Coverage. The level of fixed charge coverage (i.e., the multiple by which available earnings cover fixed charges, such as interest expense and preferred stock dividends) provides an indication of the earnings protection for creditors. Higher levels of coverage, and hence earnings protection for fixed charges, are usually associated with superior grades of creditworthiness. The five-year average pre-tax interest coverage (excluding AFUDC) was 3.2 times for IAWC, 3.1 times for the Water Group, 3.3 times for the Public Utility Group and 3.3 times for the S&P Public Utilities. These coverages show fairly similar levels of credit quality.

Quality of Earnings. Measures of earnings quality are usually revealed by the percentage of AFUDC related to income available for common equity, relative amounts of deferred costs, and the effective income tax rate. These measures of earnings quality usually influence a firm's internally generated funds, which I will subsequently discuss. Quality of earnings is usually not a major concern for water utilities unless major construction projects extend for a period of time.

Internally Generated Funds. Historically, the five-year average percentage of internally generated funds ("IGF") to capital was 49.0% for IAWC, 51.0% for the Water Group, 72.6% for the Public Utility Group, and 125.9% for the S&P Public Utilities. Low percentages of IGF to

[4](...continued)
profitability. The higher the operating ratio, the lower the operating margin.

construction are often encountered in the water industry because of the capital intensive nature of the business and low depreciation accrual rates.

Betas. The financial data I have been discussing relate primarily to company-specific risks. Market risk for firms with traded stock is measured by beta coefficients, which attempt to identify systematic risk, i.e., the risk associated with changes in the overall market for common equities. Merrill Lynch publishes such a statistical measure of a stock's relative historical volatility to the rest of the market.[5] A comparison of market risk is shown by the betas provided on page 2 of Schedule 3 (.42 for the Water Group), page 2 of Schedule 4 (.52 for the Public Utility Group), and page 4 of Schedule 5 (.56 for the S&P Public Utilities as an average and .52 for the S&P Public Utilities Index). The systematic risk percentage was 75% (.42 ÷ .56) for the Water Group and 93% (.52 ÷ .56) for Public Utility Group using the S&P Public Utilities' average beta as a benchmark. Alternatively, the systematic risk percentage for the Water Group was 81% (.42 ÷ .52) and for the Public Utility group was 100% (.52 ÷ .52) when using the beta of the S&P Public Utilities Index as the benchmark.

Q. Please summarize your risk evaluation.

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[5] The Merrill Lynch beta coefficient is derived from a straight regression based upon the percentage change in the price of an individual common stock and percentage change in the S&P Composite Index using monthly data over a five-year period. The raw historic beta is adjusted by Merrill Lynch for the measurement effect resulting in underestimates of low beta stocks and overestimates of high beta stocks. A common stock that has a beta less than 1.0 is considered to have less systematic risk than the market as a whole and would be expected to rise and fall more slowly than the rest of the market. A stock with a beta above 1.0 would have more systematic risk. Merrill Lynch also provides the coefficient of determination (R^2) which indicates the percent of price fluctuation in the stock which can be attributed to the fluctuation in the S&P Composite Index. Since the coefficients of determination are low (i.e., .03 for the Water Group, .05 for the Public Utility Group and .05 as the average for the S&P Public Utilities), it is apparent that the vast majority of the investment risk is unsystematic and hence not explained by the beta.

A. For the future, risk will remain high for the water utility industry, generally, due to the regulatory requirements associated with SDWA, to assure adequate supply, the need to rehabilitate infrastructure, high capital intensity, low rate of capital recovery, and relatively low percentages of IGF to construction. The risk of the Company parallels that of the Water Group in several respects. For example, the common equity ratio, variability of returns, pre-tax interest coverage, and IGF to construction expenditures show fairly similar risk traits. Compared to the Public Utility Group, the Company is smaller, has higher capital intensity, has greater financial risk, and a lower percentage of IGF to construction expenditures. The Public Utility Group will provide complementary evidence of the Company's cost of equity.

COST OF EQUITY--GENERAL APPROACH

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

A. While my fundamental financial analysis provides the required framework to establish the risk relationships among the Company, the Water Group, the Public Utility Group, and the S&P Public Utilities, the cost of equity must be measured by standard financial models.

Through a fundamental financial analysis, the relative risk of a firm must be established prior to the determination of its cost of equity. Differences in risk traits, such as size, business diversification, geographical diversity, regulatory policy, financial leverage, and bond ratings must be considered when analyzing the cost of equity. Any rate of return recommendation which lacks such a basis will inevitably fail to provide a utility with a fair rate of return except by coincidence. With a fundamental risk analysis as a foundation, standard financial models can be employed by using informed judgment.

The methods which have been employed to measure the cost of equity include: the Discounted Cash Flow model, the Risk Premium approach, the Capital Asset Pricing Model and the Comparable Earnings approach. It is also important to reiterate that no one method or model for determining the cost of equity can be applied in an isolated manner. Rather, informed judgment must be used to take into consideration the relative risk traits of the firm. It is for this reason that I have used more than one method to measure the Company's cost of equity.

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

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

This additional risk is, of course, attributable to the fact that the payment of interest and principal to creditors has priority over the payment of dividends and return of capital to equity investors. Hence, equity investors require a higher rate of return than the yield on long-term corporate bonds.

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

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

certain unrealistic and overly restrictive assumptions. Therefore, I favor considering the results from all methods which I have used.

DISCOUNTED CASH FLOW ANALYSIS

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

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

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

DCF theory is flexible and can be used to estimate value/price or the annual required rate of return under a wide variety of conditions. The theory underlying the DCF methodology can be easily illustrated by utilizing the investment horizon associated with a preferred stock not having an annual sinking fund provision. In this case, the investment horizon is infinite, which reflects the perpetuity of a preferred stock. If ***P*** represents price, ***Kp*** is the required rate of return on a preferred stock, and

D is the annual dividend (***P*** and ***D*** with time subscripts), the value of a preferred share is equal to the present value of the dividends to be received in the future discounted at the appropriate risk-adjusted interest rate, ***Kp***. In this circumstance:

$$P = \frac{D}{(1 + K_p)} + \frac{D}{(1 + K_p)} + \frac{D}{(1 + K_p)} + \ldots + \frac{D}{(1 + K_p)}$$

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

$$P = \frac{D}{K_p}$$

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

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

approaching infinity, and if ***Ks*** (the required rate of return on a common stock) is greater than ***g***, then the DCF equation can be reduced to:

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

which is the periodic form of the "Gordon" model.[6] Proof of the DCF equation is found in all modern basic finance textbooks. This DCF equation can be easily solved as:

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

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

Application of the Gordon model with market derived variables is straightforward. For example, using the most recent prior annualized dividend $(\boldsymbol{D_0})$ of $0.80, the current price $(\boldsymbol{P_0})$ of $10.00, and the investor expected dividend growth rate ***(g)*** of 5%, the solution of the DCF formula

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

provides a 13.4% rate of return. The dividend yield component in this instance is 8.4%, and the capital gain component is 5%, which together represent the total 13.4% annual rate of return required by investors. The capital gains component of the total return may be calculated with two adjacent future year prices. For example, in the eleventh year of the holding period, the price per share would be $17.10 as compared with the price per share of $16.29 in the tenth year which demonstrates the 5% annual capital gain yield.

Some DCF devotees believe that it is more appropriate to estimate the required return on equity with a model which permits the use of multiple growth rates. This may be a plausible approach to DCF, where investors expect different dividend growth rates in the near term and long run. If two growth rates, one near term and one long-run, are to be used in the context of a price (P_0) of $10.00, a dividend (D_0) of $0.80, a near-term growth rate of 5.5%, and a long-run expected growth rate of 5.0% beginning at year 6, the required rate of return is 13.57% solved with a computer by iteration.

Q. Are there limitations to the use of the DCF model in the ratesetting process?

A. Yes. In its simplest form, the DCF return on common stocks consists of a current cash (dividend) yield and future price appreciation (growth) of the investment. The cost of equity based on a combination of these two components represents the total return which investors can expect with regard to an equity investment. Among the limitations of the model, there is a certain element of circularity in the DCF when applied in rate cases. This is because investors' expectations for the future depend upon regulatory decisions. In turn, when regulators depend upon the DCF model to set the cost of equity, they rely upon investor expectations which include an assessment of how regulators will

decide rate cases. Due to this circularity, the DCF model may not fully reflect the true risk of a regulated company.

In addition, the DCF approach has certain limitations which diminish its usefulness when stock prices diverge significantly from book values in the ratesetting process. This situation is especially troublesome for measuring the cost of equity with the DCF model due to the M&A activity presently sweeping the water utility industry. Water companies have become the targets of acquisition by foreign utilities, domestic energy companies, and other water utilities that are in the process of "rolling-up" the industry. It has been reported that there are approximately 55,000 separate investor-owned and municipal water utility systems in the U.S. There are numerous examples of water utility acquisitions within recent memory. American Water Works Company, Inc. ("AWW") recently completed the $700 million acquisition of National Enterprises, Inc. and, late last year (i.e., October, 1999) announced plans to acquire the water utility assets of Citizens Utilities and SJW Corp. Philadelphia Suburban Corporation has completed the major acquisition of Consumers Water Company. Domestic energy companies have also become interested in entering the water utility business, as exemplified by the purchase of Indianapolis Water Company by NI Source, Minnesota Power's extensive water utility holdings in Florida and North Carolina, and DQE's water utility acquisitions through its AquaSource operations. Enron Corporation has formed Azurix to pursue water utility acquisitions globally; Kelda Group of Leeds England has acquired Aquarion; Thames Water has agreed to purchase E'Town Corporation, and Suez Lyonnaise des Eaux has agreed to purchase all of the remaining shares of UWR that it does not already own.

These acquisitions are being accomplished at premiums offered to induce stockholders to sell their shares -- the Aquarion acquisition was at a 19.3% premium, the E'Town acquisition was at a 20% premium, the SJW Corp. was at a 20+% premium, and the UWR acquisition was at a 54% premium. These premiums create a ripple affect on the stock prices of all water utilities, just like a rising tide lifts all boats. Due to M&A activity, there has been a significant run-up of the stock prices for the water companies. With these elevated stock prices, dividend yields fall, and without some adjustment to the growth component of the DCF model, the results become unduly depressed by reference to alternative investment opportunities -- such as public utility bonds.

Q. Can you demonstrate how the DCF model can produce results that fail to provide a fair rate of return in the ratesetting context?

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

This would result in a $.50 per share earnings shortfall which would deny the utility the ability to satisfy investor expectations.

As a consequence, a utility could not withstand these DCF results applied in a rate case and also sustain its financial integrity. This is because $1.00 of earnings per share and a 75% dividend payout ratio would provide earnings retention growth of just 3.125% (i.e., $1.00 x .75 = $0.75, and $1.00 - $0.75 = $0.25 ÷ $8.00 = 3.125%). In this example, the earnings retention growth rate plus the 6.25% dividend yield ($0.75 ÷ $12.00) would equal 9.375% (6.25% + 3.125%) as indicated by the DCF model. This DCF result is the same as the utility's rate of dividend payments on its book value (i.e., $0.75 ÷ $8.00 = 9.375%). This situation provides the utility with no earnings cushion for its dividend payment because the DCF result equals the dividend rate on book value (i.e., both rates are 9.375% in the example). Moreover, if the price employed in my example were higher than 150% of book value, a "negative" earnings cushion would develop and cause the need for a dividend reduction because the DCF result would be less than the dividend rate on book value. For these reasons, the usefulness of the DCF method significantly diminishes as market prices and book values diverge.

Further, there is no reason to expect that investors would necessarily value utility stocks equal to their book value. In fact, it is rare that utility stocks trade at book value. Moreover, high market-to-book ratios may be reflective of general market sentiment. Were regulators to use the results of a DCF model that fails to produce the required return when applied to an original cost rate base, they would harm a company with high market-to-book ratios. This clearly would penalize a regulated firm

and its investors that purchased the stock at its current price. When investor expectations are not fulfilled, the market price per share will decline and a new, different equity cost rate would be indicated from the lower price per share. This condition suggests that the current price would be subject to disequilibrium and would not allow a reasonable calculation of the cost of equity. This situation would also create a serious disincentive for management initiative and efficiency. Within that framework, a perverse set of goals and rewards would result, i.e., a high authorized rate of return in a rate case would be the reward for poor financial performance, while low rates of return would be the reward for good financial performance. As such, the DCF results should not be used alone to determine the cost of equity, but should be used along with other complementary methods.

Q. Are there means available to remedy the anomalous results presently being shown by the DCF model for the water companies?

A. Yes. There are three remedies available to deal with the anomalous DCF results for the water companies due to the high stock prices that can be traced to M&A activity. Those remedies are: (i) an adjustment to the DCF model to reflect the divergence of stock price and book value, (ii) the use of a growth component in the DCF model which is at the high end of the range, (iii) supplementing the DCF results with other measures of the cost of equity, and (iv) use of additional barometer groups to measure the cost of equity. My testimony employs each of these remedies in order to deal with the anomalous results of the DCF model for the water companies. When stock prices diverge from book values by a significant margin, the DCF method will lead to a misspecified cost of equity, unless an adjustment is made to accommodate a book value return that is different from the market value return.

If regulators rely upon the results of the DCF (which are based on the market price of the stock of the companies analyzed) and apply those results to a net original cost (book value) rate base, the resulting earnings will not produce the level of required return specified by the model when market prices vary from book value. That is to say, such distortions tend to produce DCF results that understate the cost of equity to regulated firms when using a book value rate base. As I propose later in my testimony, the DCF model can be modified to account for differences in risk attributed to the divergence of market prices and book values.

Q. Please explain the dividend yield component of the DCF analysis.

A. The DCF methodology requires the use of an expected dividend yield to establish the investor-required cost of equity. The historical annual dividend yields for the Water Group and the Public Utility Group are shown on Schedules 3 and 4. The 1994-1998 five-year average dividend yield was 5.1% for the Water Group and 4.7% for the Public Utility Group. The monthly dividend yields for the past twelve months are shown graphically on Schedule 6. For the twelve months ending January 2000, the average dividend yield was 3.57% for the Water Group and 4.70% for the Public Utility Group based upon a calculation using annualized dividend payments and adjusted month end stock prices. The dividend yields for the more recent six and three month periods were 3.30% and 3.31%, respectively, for the Water Group and 4.91% and 5.21%, respectively, for the Public Utility Group. I have used, for the purpose of my direct testimony, a representative dividend yield of 3.30% for the Water Group and 4.90% for the Public Utility Group. The dividend yield that I have used is reflective of the six-month averages as noted above. The use of a representative dividend yield will reflect

current capital cost rates while avoiding spot yields. These dividend yields reflect an adjustment to the month-end closing prices to remove the pro rata accumulation of the quarterly dividend amount since the last ex-dividend date.

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

Q. Have you adjusted these historical average dividend yields to position them in a forward-looking manner required by the DCF model?

A. Yes. The representative dividend yields based upon generally the six months averages have been used in the ratesetting process as explained above. These average dividend yields must be adjusted to reflect the prospective nature of the dividend payments, i.e., the higher expected dividends for the future rather than the recent dividend payment annualized. An adjustment to the dividend yield component, when computed with annualized dividends, is required based upon investor expectation of quarterly dividend increases.

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

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

The adjustment factor, based upon one-half the expected growth rate developed later in my direct testimony, will be 3.000% (6.00% × .5) for the Water Group, and 3.125% (6.25% × .5) for the Public Utility Group which assumes that two dividend payments will be at the expected higher rate during the initial investment period. Using the representative average dividend yield as a base, the prospective (forward) dividend yield would be 3.40% (3.30% × 1.03000) for the Water Group and 5.05% (4.90% × 1.03125) for the Public Utility Group.

Another DCF model that reflects the discrete growth in the quarterly dividend $(\boldsymbol{D_0})$ is as follows:

$$K = \frac{D_0(1+g)^{.25} + D_0(1+g)^{.50} + D_0(1+g)^{.75} + D_0(1+g)^{1.0}}{P_0} + g$$

This procedure confirms the reasonableness of the forward dividend yield previously calculated. The quarterly discrete adjustment provides a dividend yield of 3.42% (3.30% × 1.03723) for the Water Group and 5.09% (4.90% × 1.03877) for the Public Utility Group. The use of an adjustment is

required for the periodic form of the DCF in order to properly recognize that dividends grow on a discrete basis.

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

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

This DCF equation provides no further recognition of growth in the quarterly dividend. Combining discrete quarterly dividend growth with quarterly compounding would provide the following DCF formulation, stating the quarterly dividend payments ***(D_0)***:

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

A compounding of the quarterly dividend yield provides another procedure to recognize the necessity for an adjusted dividend yield. The unadjusted average quarterly dividend yield was 0.8250% (3.30% ÷ 4) for the Water Group and 1.2250% (4.90% ÷ 4) for the Public Utility Group. The compound dividend yield would be 3.39% (1.00837^4-1) for the Water Group and 5.07% (1.01244^4-1) for the

Public Utility Group, recognizing quarterly dividend payments in a forward-looking manner. These dividend yields conform with investors' expectations in the context of reinvestment of their cash dividend.

For the Water Group, a 3.40% forward-looking dividend yield is the average (3.40% + 3.42% + 3.39% = 10.21% ÷ 3) of the adjusted dividend yield using the form $D_0/P_0\,(1+.5g)$, the dividend yield recognizing discrete quarterly growth, and the quarterly compound dividend yield with discrete quarterly growth. For the Public Utility Group, the forward dividend yield would be 5.07% which is the average of the three adjusted dividend yields described above (5.05% + 5.09% + 5.07% = 15.21% ÷ 3).

Q. What are some of the considerations required to assess the growth rate component of a DCF?

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

liquidating dividend which can be discounted along with the annual dividend receipts during the investment holding period to arrive at the investor expected return.

Q. What data do investors employ in developing expectations of growth for a firm?

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

Investors consider both historical and projected data in the context of the expected growth rate for a firm. An investor can compute historical growth rates using compound growth rates or growth rate trend lines. Otherwise, an investor can rely upon published growth rates as provided in widely-circulated, influential publications. However, a traditional constant growth DCF analysis that is limited to such inputs suffers from the assumption of no change in the price-earnings multiple, i.e., that the value of a firm's equity will grow at the same rate as earnings. Some of the factors which actually contribute to investors' expectations of earnings growth and which should be considered in assessing those expectations, are: (i) the earnings rate on existing equity, (ii) the portion of earnings not paid out in dividends, (iii) sales of additional common equity, (iv) reacquisition of common stock

previously issued, (v) changes in financial leverage, (vi) acquisitions of new business opportunities, (vii) profitable liquidation of assets, and (viii) repositioning of existing assets. The realities of the equity market regarding total return expectations, however, also reflect factors other than these inputs. Therefore, the DCF model contains overly restrictive limitations when the growth component is stated in terms of earnings per share (the basis for the capital gains yield) or dividends per share (the basis for the infinite dividend discount model). In these situations, there is inadequate recognition of the capital gains yields arising from stock price growth which could exceed earnings or dividends growth.

As explained above, analysts' projections of future growth influence investor expectations of their growth within the DCF model. One influential publication is The Value Line Investment Survey which contains estimated future projections of growth. The Value Line Investment Survey provides growth estimates which are stated within a common economic environment for the purpose of measuring relative growth potential. The basis for these projections is the Value Line 3 to 5 year hypothetical economy. The Value Line hypothetical economic environment is represented by components and subcomponents of the National Income Accounts which reflect in the aggregate assumptions concerning the unemployment rate, manpower productivity, price inflation, corporate income tax rate, high-grade corporate bond interest rates, and Fed policies. Individual estimates begin with the correlation of sales, earnings and dividends of a company to appropriate components or subcomponents of the future National Income Accounts. These calculations provide a consistent basis for the published forecasts. Value Line's evaluation of a specific company's future prospects are considered in the context of specific operating characteristics that influence the published projections.

Of particular importance for regulated firms, Value Line considers the regulatory quality, rates of return recently authorized, the historic ability of the firm to actually experience the authorized rates of return, the firm's budgeted capital spending, the firm's financing forecast, and the dividend payout ratio. The wide circulation of this source and frequent reference to Value Line in financial circles indicate that this publication has an influence on investor judgment with regard to expectations of future growth.

Another source of forecast earnings growth is the Institutional Brokers Estimate System ("I/B/E/S"). The I/B/E/S service provides data on consensus earnings per share forecasts and five-year earnings growth rate estimates. The earnings estimates are obtained from financial analysts at brokerage research departments and from institutions whose securities analysts are projecting earnings for companies in the I/B/E/S universe of companies. The I/B/E/S forecasts provide the basis for the earnings estimates published in the S&P Earnings Guide which covers 3000 publicly traded stocks. Another service that tabulates earnings forecasts and publishes consensus forecasts in Zacks Investment Research. As with the I/B/E/S forecasts, Zacks provides consensus forecasts collected from analysts for over 6000 publically traded companies.

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

Although forecasts of future performance are investor influencing[7], equity investors may also rely upon the observations of past performance. Investors' expectations of future growth rates may be determined, in part, by an analysis of historical growth rates. It is apparent that any serious investor would advise himself/herself of historical performance prior to taking an investment position in a firm. Earnings per share and dividends per share represent the principal financial variables which influence investor growth expectations.

Other financial variables are sometimes considered in rate case proceedings. For example, a company's internal growth rate, derived from the return rate on book common equity and the related retention ratio, is sometimes considered. This growth rate measure is represented by the Value Line forecast "$B \times R$" shown on Schedule 8. Pages 3 and 4 of Schedule 7 provides historical values of internal growth. Internal growth rates are often used as a proxy for book value growth. Unfortunately, this measure of growth is often not reflective of investor-expected growth. This is especially important when there is an indication of a prospective change in dividend payout ratio, earned return on book common equity, change in market-to-book ratios or other fundamental changes in the character of the business. Nevertheless, I have also shown the historical and projected growth rates in book value per share and internal growth rates.

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

A. While some DCF devotees would advocate that mathematical precision should be followed when selecting a growth rate (i.e., precise input variables often considered within the confines of retention

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

growth), the fact is that investors, when establishing the market prices for a firm, do not behave in the same manner assumed by the constant growth rate models using accounting values. Rather, investors consider both company-specific variables and overall market sentiment (i.e., level of inflation rates, interest rates, economic conditions, etc.) when balancing their capital gains expectations with their current dividend yield requirements. Some regulatory agencies have also acknowledged that a blended approach which recognizes the preceding factors is required in the selection of the DCF growth rate. I have followed an approach that is not rigidly formatted, because investors do not behave in such a manner. Therefore, in my opinion, all relevant growth rate indicators using a variety of techniques should be evaluated when formulating a judgment of investor expected growth.

Q. Are there unusual factors that have an impact on investors' growth expectations for the water utility companies?

A. Yes. The M&A activity described earlier has a significant impact on investor expected growth, as reflected in the prices of the water utility stocks. As a consequence, there has been the run-up in stock prices related to M&A expectations, either announced or anticipated. This price action has fundamentally changed the investment horizon associated with investors' growth expectations for the water utilities. Investment horizons have shortened considerably in the context of prices offered in the proposed M&A transactions. In the usual application of the DCF model, investors expectations are sometimes considered in the context of an infinite number of growing future dividends. However, when a company is the target of an acquisition, such as Aquarion, E'Town, SJW, or UWR, a more defined number of cash flows is reflected in the stock price with particular emphasis being placed on

the acquisition price (i.e., the liquidating dividend) of the stock. That is to say, today's stock price is the product primarily of the buy-out price of the stock. As such, the long-term horizon of future dividend payments ceases to be the focus of investors. Rather, the acquisition price becomes the paramount consideration in the current stock price because the future value of the stock is established by reference to the acquisition price along with dividend payments that occur up to the time the company is acquired and its stock no longer trades.

When a premium is offered in order to obtain control of a target company and to induce existing stockholders to sell their shares, the stock price disconnects from the earnings forecasts made by securities' analysts when the target company operated independently. After the combination occurs in the merger/acquisition, the surviving company will be able to attain increased shareholder value through economics of scope and scale that increase productivity and profitability to the point where earnings growth will exceed that which was attainable by the pre-merger company. Synergies, such as those mentioned above, are the reasons that acquiring companies can offer premiums over pre-announcement stock prices and still anticipate that the acquisition will be accretive to earnings and add shareholder value. Otherwise, acquisitions at premiums would not be economically feasible. While the circumstances described above apply directly to target companies that have agreed to be acquired, similar expectations are reflected in the stock prices of other water utilities that represent potential candidates for acquisition. That is to say, the stock prices of many water utilities include some expectation that they may become the target of a takeover during the consolidation of the water utility industry.

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

A. I have considered both historical performance and analysts' forecasts to support my opinion of the growth expected by investors. The bar graph provided on Schedule 7 shows the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share. Value Line serves primarily as the source of the historical growth rates shown on Schedule 7. These growth rates have been supplemented with historical earnings per share growth published by Zacks which only publishes historical earnings per share growth rates. As shown on page 1 of Schedule 7, the historical earnings per share growth rates were in the range of 3.75% to 5.50% for the Water Group. As shown on page 2, the range of earnings per share growth for the Public Utility Group was 1.31% to 5.36%. The historical growth rates in earnings per share contain some instances of negative values for individual companies within the Water Group and Public Utility Group. Obviously, negative growth rates provide no reliable guide to gauge investor expected growth for the future, and as such the historical values shown on pages 1 and 2 of Schedule 7 understate investors' expectations for the future. Investor expectations always encompass long-term positive growth rates and, as such, could not be represented by sustainable negative rates of change. Stated simply, there is no reason for investors to expect that a utility will wind up its business and distribute its common equity capital to shareholders, which would be symptomatic of a long-term permanent earnings decline. Because in the long-run rational investors will always expect positive growth, the knowledge that negative growth and losses can occur does not alter the fact that they will hold cash rather than invest with the expectation of a loss.

Schedule 8 shows both long-run and short-run earnings per share growth rates taken from the forecasts provided in the I/B/E/S, Zacks, and Value Line publications. The I/B/E/S and Zacks forecasts are restricted to earnings per share growth, while Value Line makes projections of other financial variables. The Value Line forecasts of dividends per share, book value per share, and cash flow per share have also been included on pages 1 and 2 of Schedule 8.

Although long-run forecasts usually receive the most attention in the growth analysis for DCF purposes, present market performance has been strongly influenced by short-term earnings forecasts. Each of the major publications provide earnings forecasts for the current and subsequent years. As reported on pages 3 and 4 of Schedule 8, these short-term earnings forecasts receive prominent coverage, and indeed they dominate these publications. The short-term earnings forecasts indicate growth of 5.60% to 7.40% for the Water Group and 8.90% to 13.40% for the Public Utility Group. While the DCF model typically focuses upon long-run estimates of earnings, stock prices are clearly influenced by current and near-term earnings forecasts.

As to five year forecast growth rates, page 1 of Schedule 8 indicates that the projected earnings per share growth rates for the Water Group are 4.78% by Zacks, 5.40% by I/B/E/S and 7.25% by Value Line. For the Public Utility Group, the five year earnings per share growth rates are 5.89%, 6.57% and 8.64%, respectively, by Zacks, I/B/E/S and Value Line. The Value Line projections indicate that earnings per share will grow prospectively at a more rapid rate (i.e., 7.25% for the Water Group and 8.64% for the Public Utility Group) than dividends per share (i.e., 3.88% for the Water Group and 4.57% for the Public Utility Group) which indicates a declining dividend

payout ratio in the future. With no expected change in price-earnings multiple, the value of a firm's equity (i.e., its stock price) will grow at the same rate as earnings per share, thus producing a capital gains yield to investors at the higher earnings per share growth rate. In addition, the growth rates forecast for cash flow per share are 6.38% for the Water Group and 7.00% for the Public Utility Group.

Q. What conclusions have you drawn from these data?

A. Historical performance and published forecasts support my opinion that a company-specific growth rate of 6.00% is indicated for the Water Group and 6.25% is appropriate for the Public Utility Group. While the DCF growth rate cannot be established solely with a mathematical formulation, the prospective growth rate for the Water Group and Public Utility Group is within the array of growth rates shown by earnings per share, dividends per share, book value per share, retention growth, and cash flow per share.

In addition, market-wide factors also influence the capital gains expected by investors. As previously indicated, there are a wide variety of factors that influence investor-expected returns which are not linked specifically to company-specific performance. In an article in Standard & Poor's The Outlook (February 21, 1996), the relative valuation of common stocks was explained in part by qualitative factors (i.e., favorable psychology). Those factors which influence investor-expected growth include overall business conditions, monetary policy, fiscal and tax policy, the value of the dollar in foreign trade, the balance of trade, and the phase of the stock market (e.g., a bull or bear market), all of which I would categorize, at least from an investor's perspective, as qualitative

influences on investors' total return expectations. In addition, investors make independent valuation assessments based upon market sentiment which includes relative P/Es, dividend yields, interest rates, the supply of stocks, etc. The combination of both quantitative factors, as shown by company-specific variables, and qualitative factors, as shown by general investor sentiment, together form the foundation for the capital appreciation (i.e., capital gains yield) that investors expect from owning a common stock.

In addition, opportunities will surely develop for the water utility business beyond the five-year horizon typically considered by the analysts' forecasts. The expectations of investors in the water utility industry have been dominated by growth related to consolidation, privatization, and municipal operating contracts. Privatization and municipal operating contracts provide growth for the water industry through either direct acquisitions of municipal systems or through efficiencies obtained by the operation of municipal systems by investor-owned water companies. Moreover, expectations concerning merger and acquisition ("M&A") activities also impact stock prices. In that case, the traditional DCF calculation would understate the required cost of equity. This provides further justification for an adjustment to the simplified DCF cost rate. For the water utility industry, M&A activity has elevated stock prices based upon investors' expectations of enhanced market returns that arise from those combinations. M&A premiums that become embedded in stock prices usually result in a disconnection of those prices from the analysts' growth forecasts.

Q. In the development of a rate of return on common equity in the ratesetting context, should another component be included in the DCF model of the cost of equity?

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

	Water Group		Public Utility Group	
	Capitalization at Market Value/Fair Value	Capitalization at Carrying Amounts	Capitalization at Market Value/Fair Value	Capitalization at Carrying Amounts
Debt	35.40%	51.50%	33.26%	50.03%
Preferred Stock	0.98	1.43	0.50	0.78
Common Equity	63.62	47.07	66.24	49.19
Total	100.00%	100.00%	100.00%	100.00%

With regard to the capital structure ratios represented by the carrying amounts shown above, there are some variances from the ratios shown on Schedules 3 and 4. These variances arise from the use of balance sheet values in computing the capital structure ratios shown on Schedules 3 and 4, while the Carrying Amounts of the Financial Instruments according to FAS 107 were used in the calculations shown above (the Carrying Amounts were used in the table shown above to be comparable to the Fair Value amounts used in the comparison calculations).

Q. What are the implications of the capital structure ratios measured with the market value as compared to the book value of the capitalization?

A. The capital structure ratios of the Water Group and Public Utility Group measured at their carrying amounts (i.e., book value) show considerably more financial leverage, and hence higher risk, than the capitalization measured at their market values. This means that the cost of equity using market models, such as DCF and CAPM, reflect a level of financial risk that is different from that shown by the book capitalization. Hence, it is necessary to adjust the market-determined cost of equity upward to reflect the higher financial risk related to the book value capitalization used for ratesetting purposes. Failure to make this modification would result in a mismatch of the lower financial risk related to market value used to measure the cost of equity and the higher financial risk of the book value capital structure used in the ratesetting process. That is to say, the rate of return on common equity for the Water Group that is related to the 47.07% common equity ratio using book value has much higher financial risk than the 63.62% common equity ratio using market values. A similar situation exists for the Public Utility Group. Because the ratesetting process utilizes the book value capitalization, it is necessary to adjust

the market-determined cost of equity for the higher financial risk related to the book value of the capitalization.

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

A. In pioneering work, Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. As part of that work, Modigliani and Miller established that as the borrowing of a firm increases, the expected return on stockholders' equity also increases. This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect the increased risk associated with the higher financial leverage shown by the book value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk.

Q. How can the Modigliani and Miller theory be applied to calculate the rate of return on book common equity using the market derived cost of equity as a starting point?

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

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

Water Group 8.93% = 9.40% - (((8.93% - 7.74%).65) 35.40%/63.62%)-(8.93% - 6.62%) 0.98%/63.62%

Public Utility Group 10.42% = 11.32% - (((10.42% - 7.74%).65) 33.26%/66.24%)-(10.42% - 6.62%) 0.50% /66.24%

where ***ku*** = cost of equity for an all-equity firm, ***ke*** = market determined cost equity[8], ***i*** = cost of debt[9], ***d*** = dividend rate on preferred stock[10], ***t*** = income tax rate, ***D*** = debt ratio, ***P*** = preferred stock ratio, and *E* = common equity ratio. The formula shown above indicates that the cost of equity for a firm with 100% equity is 8.93% using with the market value of the Water Group's capitalization and 10.42% for the Public Utility Group.

Having determined that the cost of equity for the Water Group is 8.93% and 10.43% for the Public Utility Group when the equity ratio is 100%, I then calculated the rate of return on common equity using the book value capital structure. This provides:

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

Water Group 9.84% = 8.93% + (((8.93% -7.74%).65) 51.50%/47.07%) + (8.93% -6.62%) 1.43%/47.07%

Public Utility Group 12.25% = 10.42%+ (((10.42%-7.74%).65) 50.03%/49.19%) + (10.42%-6.62%)0.78%/49.19%

Hence the Modigliani and Miller theory shows that the cost of equity increases by 0.44% (9.84% - 9.40%) when the common equity ratio declines from 63.62% to 47.07% for the Water Group and by 0.93% (12.25% = 11.32%) when the common equity ratio declines from 66.24% to 49.19% for the Public Utility Group.

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

A. As previously explained, I have utilized a representative dividend yield ("D_1/P_0") adjusted in a forward-looking manner for my DCF calculation. This dividend yield is used in conjunction with the

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8 The market determined cost of equity in this instance is the sum of the dividend yield and growth rate (i.e., 3.40% + 6.00% = 9.40% and 5.07% + 6.25% = 11.32%)

9 The cost of debt is the twelve month average yield on Moody's A rated public utility bonds.

10 The cost of preferred is the twelve month average yield on Moody's "a" rated preferred stock.

growth rate ("***g***") previously developed. The DCF also includes the leverage modification ("***lev.***") to recognize that the book value equity ratio is used in the ratesetting process rather than the market value equity ratio related to the price of stock. The resulting DCF cost rate is:

	D_1/P_0	+	g	+	$lev.$	=	k
Water Group	3.40%	+	6.00%	+	0.44%	=	9.84%
Public Utility Group	5.07%	+	6.25%	+	0.93%	=	12.25%

I should note that the DCF results shown above do not contain a flotation cost adjustment factor that provides an additional increment to the rate of return on equity. Failure to recognize a flotation cost adjustment would not give a utility a realistic opportunity to earn to the return required by investors. The DCF result shown above also represents the simplified form of the model which contains a constant growth assumption. I should reiterate, however, that the DCF indicated cost rate provides an explanation of the rate of return on common stock market prices without regard to the prospect of a change in the price-earnings multiple. An assumption that there will be no change in the price-earnings multiple is not supported by the realities of the equity market since price-earnings multiples do not remain constant.

RISK PREMIUM ANALYSIS

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

A. The Risk Premium analysis of the cost of equity is represented by the combination of a firm's borrowing rate for long-term debt plus a premium that is required to reflect the additional risk associated with the equity of a firm. The cost of equity requires recognition of the higher risk of

common equity over the lower risk associated with long-term corporate debt. In the case of senior capital, a company contracts for the use of long-term debt at a stated coupon rate for a specific period of time and in the case of preferred stock at a stated dividend rate, usually with provision for redemption through sinking fund requirements. In the case of senior capital, the cost rate is known with a high degree of certainty because the payment for use of this capital is a contractual obligation, and the future schedule of payments is known. In essence, the investor-expected cost of senior capital is equal to the realized return over the entire term of the issue, absent default. Due to the senior nature of the long-term debt of a firm, its cost is lower than the cost of equity due to the prior claim which lenders have on the earnings and assets of a corporation.

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

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

$$k = i + R$$

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

Q. How should interest rate component of the Risk Premium model be analyzed?

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

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

Differences in interest rates in this regard can be traced to the credit quality ratings assigned by the bond rating agencies, such as Moody's Investors Service, Inc. and Standard & Poor's Corporation. Obligations of the United States Treasury are usually considered to be free of default risk, and hence reflect only the real rate of interest, compensation for expected inflation, and maturity risk. The Treasury has recently issued inflation indexed bonds which automatically provide compensation to investors for future inflation, thereby necessitating a lower current yield on this issue.

Q. What factors influence the level of interest rates?

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

As background to the recent levels of interest rates, history shows that the Fed began a series of moves toward lower short-term interest rates in mid-1990 -- at the outset of the last recession. Monetary policy was influenced at that time by (i) steps taken to reduce the federal budget deficit, (ii) slowing economic growth, (iii) rising unemployment, and (iv) measures intended to avoid a credit crunch. Thereafter, the Federal government initiated several bold proposals to deal with future borrowings by the Treasury. With lower expected federal budget deficits and reduced Treasury

borrowings, together with limitations on the supply of new 30-year Treasury bonds, long-term interest rates declined to a twenty-year low, reaching a trough of 5.78% in October 1993.

On February 4, 1994, the Fed began a series of increases in the Fed Funds rate (i.e., the interest rate on excess overnight bank reserves). The initial increase represented the first rise in short-term interest rates in five years. In a series of seven increases, the Fed Funds rate increased from 3% to 6%. The increases in short-term interest rates also caused long-term rates to move up, continuing a trend which began in the fourth quarter of 1993. The cyclical peak in long-term interest rates was reached on November 7 and 14, 1994 when 30-year Treasury bonds attained an 8.16% yield. Thereafter, long-term Treasury bond yields generally declined reaching a low of 5.96% achieved on January 3, 1996.

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

On March 25, 1997, the Fed decided to tighten monetary conditions through a one-quarter percentage point increase in the Fed Funds rate. This tightening increased the Fed Funds rate to 5.5%, although the discount rate was not changed and remained at 5%. In making this move, the Fed

stated that it was concerned by persistent strength of demand in the economy, which it feared would increase the risk of inflationary imbalances that could eventually interfere with the long economic expansion.

In the fourth quarter of 1997, the yields on Treasury bonds began to decline rapidly in response to an increase in demand for Treasury securities caused by a flight to safety triggered by the currency and stock market crisis in Asia. Liquidity provided by the Treasury market makes these bonds an attractive investment in times of crisis. This is because Treasury securities encompass a very large market which provides ease of trading and carry a premium for safety. During the fourth quarter of 1997, Treasury bond yields pierced the psychologically important 6% level for the first time since 1993.

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

In response to these events, the Fed cut the Fed Funds rate just prior to the mid-term Congressional elections. The Fed's action was based upon concerns over how increasing weakness in foreign economies would affect the U.S. economy. As recently as July 1998, the Federal Reserve had been more concerned about fighting inflation than the state of the economy. The initial rate cut was the first of three reductions by the Fed. Thereafter, the yield on long-term Treasury bonds reached a 30-year low of 4.70% on October 5, 1998. Long-term Treasury yields below 5% had not seen since 1967. Unlike the first rate cut that was widely anticipated, the second rate reduction by the Fed was a surprise to the markets. A third reduction in short-term interest rates occurred in November 1998 when the Fed reduced the discount rate to 4.5% and the Fed Funds rate to 4.75%.

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

The financial crisis that spread from Asia to Russia and to Latin America pushed nervous investors from stocks into Treasury bonds, thus increasing demand for bonds, just when supply was slowing. There was also a move from corporate bonds to Treasury bonds to take advantage of appreciation in the Treasury market. This resulted in a certain amount of exuberance for Treasury

bond investments that formerly was reserved for the stock market. Moreover, yields in the fourth quarter of 1998 became extremely volatile as shown by Treasury yields that fell from 5.10% on September 29 to 4.70 percent on October 5, and thereafter returned to 5.10% on October 13. A decline and rebound of 40 basis points in Treasury yields in a two week time frame is remarkable.

Beginning in 1999 and continuing to the present, the Fed reversed its interest rate reductions that were implemented in the fall of 1998. On June 30, 1999, August 24, 1999, November 16, 1999, February 2, 2000, and March 21, 2000, the Fed raised the Fed Funds rate in five 25 basis points increments lifting the rate to 6.00%. This rise in yields reflected a shift in concerns from the threat of a global financial collapse that existed during the second half of 1998, to new concerns that improvement in the emerging market economies and persistent strength in the U.S. economy could push inflation higher. Also, on August 24, 1999, November 16, 1999, February 2, 2000, and March 21, 2000, the Fed increased the discount rate to 5.50%. These actions were taken in response to more normally functioning financial markets, tight labor markets, and a reversal of the monetary ease that was required earlier in response to the global financial market turmoil. In taking its action on February 2, 2000, the Fed's Open Market Committee stated:

> "The Committee remains concerned that over time increases in demand will continue to exceed the growth in potential supply, even after taking account of the pronounced rise in productivity growth. Such trends could foster inflationary imbalances that would undermine the economy's record economic expansion.
>
> Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future."

In effect, the Fed Funds rate of 6.00% is now at its highest level since 1995. In addition, the Fed Funds rate is now 125 basis points higher than its low that occurred at the height of the Asian currency and stock market crisis.

Q. How have the policy decisions by the Fed impacted the yields on Treasury and public utility bonds?

A. During the four quarters ended December 1999, the yield on 30-year Treasury bonds was shown by the following measures of central tendency: 5.87% as the average, 5.98% as the median, and 5.78% as the midpoint of the highest (6.48%) and lowest (5.07%) daily yields. The associated distribution of the yields was: 16% of the daily yields were 5.00% to 5.49%, 35% of the daily yields were 5.50% to 5.99%, and 49% of the daily yields were over 6.00%. Indeed, the yield on 30 year Treasury bonds closed the year at 6.48%, a 1.39% increase over the year-end 1998 yield.

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

Pages 1 and 2 of Schedule 9 provide the recent history of long-term public utility bond yields for each of the "investment grades" (i.e., Aaa, Aa, A and Baa). The four rating categories shown on Schedule 9 are generally regarded as eligible for bank investments under commercial banking regulations. These investment grades are distinguished from "junk" bonds which have ratings of Ba and below.

A relatively long history of the spread between the yields on long-term A rated public utility bonds and long-term Treasury bonds is shown on page 3 of Schedule 9. There, it is shown that the spread in these yields declined after the 1987 stock market crash. Those spreads stabilized at about the one percentage point level for the years 1992 through 1997. With the aversion to risk and flight to quality described earlier, a significant widening of the spread in the yields between corporate (e.g., public utility) and Treasury bonds developed in 1998, after an initial widening that began in the fourth quarter of 1997. As shown on page 4 of Schedule 9, the spread in yields between A rated public utility bonds and 30-year Treasury bonds widened from about one percentage point to about one and three-quarters percentage points. The significant widening of spreads in 1998 was unexpected by some technically savvy investors, as shown by the debacle at the Long-Term Capital Management hedge fund. When Russia defaulted its debt on August 17, some investors had to cover short positions when Treasury prices spiked upward. Short-covering by investors that guessed wrong on the relationship between corporate and Treasury bonds also contributed to run-up in Treasury bond prices by increasing the demand for them. This helped to contribute to a widening of the spreads between corporate and Treasury bonds.

As indicated by the dynamics described earlier, there has been a realignment of the previous relationship between the yields on corporate debt and Treasury bonds. That is to say, the decline in Treasury bond yields in 1998 did not translated into similar declines for A rated public utility bonds because there has been a disproportionate change in those yields. In essence, the cost of corporate debt and equity reflects more risk than formerly existed by reference to the yields on long-term Treasury bonds.

For the four quarters ended December 1999, the average of the daily yields for A rated public utility bonds was 7.63% and the median was 7.72%. The overall range of yields was 8.28% to 6.92% which provided a midpoint yield of 7.60%. The distribution of the yields was: 6% of the daily yields were less than 7.00%, 31% of the daily yields were between 7.00% and 7.49%, 46% of the daily yields were between 7.50% and 7.99%, and 17% of the yields were over 8.00%. By year-end 1999, the yield on A rated public utility bonds was 8.26%, a 1.33% increase over the year-end 1998 yield.

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

A. I have recognized in my selection of a long-term public utility bond yield the present situation that shows that the spread between the yields of Treasury and corporate bonds has continued to persist above historical levels. Recognizing this fact, I have determined the forecast yields on A rated public utility debt by using the Blue Chip Financial Forecasts ("Blue Chip") along with the spread in yields that I describe above. The Blue Chip Financial Forecasts is published monthly and contains consensus forecasts of a variety of interest rates compiled from a panel of 45 banking, brokerage, and investment

advisory services. In early 1999, Blue Chip stopped publishing forecasts of yields on A rated public utility bonds because the Fed deleted these yields from its Statistical Release H.15. To independently project a forecast of the yields on A rated public utility bonds, I have combined the forecast yields on thirty-year Treasury bonds published by Blue Chip on March 1, 2000 and the yield spread of 1.75% that I describe above. For comparative purposes, I have also shown the Blue Chip Financial Forecasts of Aaa rated and Baa rated corporate bonds. These forecasts are:

	Blue Chip Financial Forecasts				
	Corporate bonds		30-Year	A-rated Utility	
Quarter	Aaa rated	Baa rated	Treasury	Spread	Yield
1st Qtr. 2000 7.7%	8.4%	6.4%	1.75	8.15%	
2nd Qtr. 2000	7.7	8.4	6.4	1.75	8.15
3rd Qtr. 2000 7.7	8.5	6.4	1.75	8.15	
4th Qtr. 2000 7.6	8.4	6.3	1.75	8.05	
1st Qtr. 2001	7.6	8.3	6.3	1.75	8.05
2nd Qtr. 2001	7.6	8.3	6.2	1.75	7.95

Given these forecasts an 8.00% yield on A rated public utility bonds represents a reasonable expectation.

In contrast, the historical yields for long-term public utility debt are shown graphically on page 1 of Schedule 9. For the twelve months ending January 2000, the average monthly yield on Moody's A rated index of public utility bonds was 7.74% as shown on page 2 of Schedule 9. As previously described, there was generally an upward trend in public utility bond yields throughout the period. Indeed, the yields increased from 7.09% in February 1999 to 8.35% in January 2000. As described above, there has been a disconnection in recent quarters, from the previous relationship of yields on Treasury bonds and public utility bonds. Currently, the yield spread has persisted at a level of about

1.75 percentage points even though most of the fundamentals, other than the shrinking supply of new Treasury issues, that original precipitated the widening of the spread has subsided.

Q. How have you determined the equity risk premium?

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

It is well recognized that the expected return on more risky investments will exceed the required yield on less risky investments. Neither the possibility of default on a bond nor the maturity risk detract from the risk analysis, because the common equity risk rate differential (i.e., the investor-required risk premium) is always greater than the return components on a bond. It should also be noted that the investment horizon is typically long-run for both corporate debt and equity, and that the risk of default (i.e., corporate bankruptcy) is a concern to both debt and equity investors. Thus, the required yield on a bond provides a benchmark or starting point with which to track and measure the cost rate of common equity capital.

Q. Does your choice of using corporate bond yields as a benchmark diminished the usefulness of your risk premium analysis?

A. No. My decision to use corporate bond yields provides a reasonable basis to implement the risk premium approach because corporate bond yields provide a consistent benchmark to measure the cost of equity. Moreover, the realignment of the yields on Treasury bonds and corporate bonds provides additional support for using the corporate bond interest rate benchmark. There is no need to segment the bond yield according to its components, because it is the total return demanded by investors that is important for determining the risk rate differential for common equity. This is because the complete bond yield provides the basis to determine the differential, and as such, consistency requires that the computed differential must be applied to the complete bond yield when applying the risk premium approach. To apply the risk rate differential to a partial bond yield would result in a misspecification of the cost of equity because the computed differential was initially determined by reference to the entire bond return.

Q. What measures have you used to determine the equity risk premium?

A. The risk rate differential between the cost of equity and the yield on long-term corporate bonds can be determined by reference to a comparison of holding period returns (here defined as one year) computed over long time spans. This analysis assumes that over long periods of time investors' expectations are on average consistent with rates of return actually achieved. Accordingly, historical holding period returns must not be analyzed over an unduly short period because near-term realized results may not have fulfilled investors' expectations. Moreover, specific past period results may not

be representative of investment fundamentals expected for the future. This is especially apparent when the holding period returns include negative returns which are not representative of either investor requirements of the past or investor expectations for the future. The short-run phenomenon of unexpected returns (either positive or negative) demonstrates that an unduly short historical period would not adequately support a risk premium analysis. It is important to distinguish between investors' motivation to invest, which encompass positive return expectations, and the knowledge that losses can occur. No rational investor would forego payment for the use of capital, or expect loss of principle, as a basis for investing. Investors will hold cash rather than invest with the expectation of a loss.

The risk rate differentials for all equities, as measured by the S&P Composite, are established by reference to long-term corporate bonds. For public utilities, the risk rate differentials are computed with the S&P Public Utilities as compared with public utility bonds. Page 1 of Schedule 10 provides the historical holding period returns for the S&P Public Utility Index which has been independently computed by me and the historical holding period returns for the S&P Composite Index which have been reported in Stocks, Bonds, Bills and Inflation published by Ibbotson & Associates. The tabulation begins with 1928 because January 1928 is the earliest monthly dividend yield for the S&P Public Utility Index. I have considered all reliable data for this study to avoid the introduction of a particular bias to the results. The measurement of the common equity return rate differential is based upon actual capital market performance using realized results. As a consequence, the underlying data for this risk premium approach can be analyzed with a high degree of precision. Informed professional

judgment is required only to interpret the results of this study, but not to quantify the component variables.

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

As previously noted, the arithmetic mean provides the appropriate point estimate of the risk premium. To supplement my analysis, I have also used the rates of return taken from the geometric mean and median for each series to provide the bounds of the range to measure the risk rate differentials. This further analysis shows that when selecting the midpoint from a range established with the geometric means and medians, the arithmetic mean is indeed a reasonable measure for the long-term cost of capital. For the years 1928 through 1999, the risk premiums for each series are:

	S&P Composite	S&P Public Utilities
Arithmetic Mean	7.07%	5.28%
Geometric Mean	5.46%	3.44%
Median	12.90%	6.90%
Midpoint of Range	9.18%	5.17%
Average	8.13%	5.23%

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

Q. Why have you used the S&P Public Utilities to measure the risk premium for a water utility rather than a broader market index?

A. The S&P Public Utility index contains companies that are more closely aligned with the water utility industry than some broader market index, such as the S&P 500 Composite index. Use of the S&P Public Utility index reduces the role of subjective judgment in establishing the risk premium for the water utilities. It should be recognized that the S&P Public Utility index is a subset of the overall S&P 500 Composite index. The S&P Public Utility index is intended to represent firms engaged in regulated activities and today is comprised of electric companies and gas companies. With the equity risk premiums developed for the S&P Public Utilities as a base, I derived the equity risk premium for the Water Group and the Public Utility Group.

Q. What equity risk premium for the S&P Public Utilities have you determined for this case?

A. To develop an appropriate risk premium, I analyzed the results for the S&P Public Utilities by averaging (i) the midpoint of the range shown by the geometric mean and median and (ii) the arithmetic mean. This procedure has been employed to provide a comprehensive way of measuring the central tendency of the historical returns. By taking this comprehensive approach, I have avoided overemphasizing any particular measure that many tend to provide a particular result (e.g., the geometric mean would understate the required return if it was used exclusively). Moreover, by considering a variety of measures of central tendency, the resulting risk premium can be viewed as a conservative representation of investor expectations (e.g., the risk premium that I have developed is lower than that shown by use of the arithmetic mean alone). As shown by the values indicated on page 2 of Schedule 10, the indicated risk premiums for the various time periods analyzed are 5.23% (1928-1999), 6.08% (1952-1999), 5.23% (1974-1999), and 5.31% (1979-1999).

Q. Can you further explain the time periods that you selected in your equity risk premium determination?

A. Yes. Specific historical periods were analyzed in order to match more closely historical fundamentals with current expectations. The results are provided on page 2 of Schedule 10. One of these sub-periods included the 48-year period, 1952-1999. These years follow the historic 1951 Treasury-Federal Reserve Accord which affected monetary policy and the market for government securities.

A further investigation was undertaken to determine whether a realignment has taken place subsequent to the historic 1973 Arab Oil embargo and during the deregulation of the financial markets.

In each case, the public utility risk premiums were computed by using the arithmetic mean, and the geometric means and medians to establish the range shown by those values. The time periods covering the more recent periods 1974 through 1999 and 1979 through 1999 contain events subsequent to the initial oil shock and the advent of monetarism as Fed policy, respectively. For the 48-year, 26-year and 21-year periods, the public utility risk premiums were 6.08%, 5.23%, and 5.31% respectively, as shown by the average of the specific point-estimates and the midpoint of the ranges provided on page 2 of Schedule 10.

Q. Does this process provide an objective way of analyzing these data?

A. Yes. The selection of specific periods taken from the entire historical series is designed to capture market performance that occurred subsequent to specific events. That is to say, the subperiods that I analyzed reflected market fundamentals that were influenced by landmark events that altered the basic framework of investor expectations on a going forward basis. The year 1952 represents the landmark Treasury-Federal Reserve Accord, 1974 was the year of the Arab oil embargo, and 1979 began the deregulation of the U.S. financial markets. These events were fixed in history and cannot be manipulated as later financial data becomes available. That is to say, using the Treasury-Federal Reserve Accord as a defining event, the year 1952 is fixed as the beginning point for the measurement period regardless of the financial results that subsequently occurred. After selecting the initial year that contained the defining event described above, all subsequent years were considered through the terminal year of my analysis which was represented by the most recent calendar year of data which was available at the time this testimony was prepared. Hence, all historical periods include data

through 1999. As such, additional data is merely added to the earlier results when it becomes available, clearly showing that the periods chosen were not driven by the desired results of the study.

Q. What conclusions have you drawn from these data?

A. Using the summary values provided on page 2 of Schedule 10, the 1928-1999 period provides the lowest indicated risk premium, while the 1952-1999 period provides the highest risk premium for the S&P Public Utilities. Within these bounds, a common equity risk premium of 5.27% (5.23% + 5.31% = 10.54% ÷ 2) is shown from the more recent data covering the periods 1974-1999 and 1979-1999. Therefore, 5.27% represents a reasonable risk premium for the S&P Public Utilities in this case.

As noted earlier in my fundamental risk analysis, differences in risk characteristics must be taken into account when applying the results for the S&P Public Utilities to the Water Group and Public Utility Group. I recognized these differences in the development of the equity risk premium in this case. I previously enumerated various differences in fundamentals including: size, market ratios, common equity ratio, return on book equity, operating ratios, coverage, quality of earnings, internally generated funds, and betas. In my opinion, these differences indicate that 4.25% represents a reasonable common equity risk premium for the Water Group. This represents approximately 81% (4.25% ÷ 5.27% = .81) of the risk premium of the S&P Public Utilities. Following the same procedure for the Public Utility Group indicates a somewhat higher 4.75% common equity risk premium. This represents approximately 90% (4.75% ÷ 5.27% = .88%) of the risk premium of the S&P Public Utilities.

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

A. The cost of equity (i.e., "***k***") is represented by the sum of the prospective yield for long-term public utility debt (i.e., "***i***") and the equity risk premium (i.e., "***RP***"). The Risk Premium approach provides a cost of equity of:

	i	+	***RP***	=	***k***
Water Group	8.00%	+	4.25%	=	12.25%
Public Utility Group	8.00%	+	4.75%	=	12.75%

Again, the cost rates have not been adjusted for common stock financing costs.

CAPITAL ASSET PRICING MODEL

Q. How have you used the Capital Asset Pricing Model to measure the cost of equity in this case?

A. I used the Capital Asset Pricing Model ("CAPM") in addition to my other methods, as each will complement the other and will provide a result which will alleviate the unavoidable shortcomings found in each method. The CAPM is based on modern portfolio theory which provides a theoretical explanation of expected returns on portfolios of securities. The Capital Asset Pricing Model ("CAPM") attempts to describe the way prices of individual securities are determined in efficient markets where information is freely available and is reflected instantaneously in security prices. The CAPM states that the expected rate of return on a security is determined by a risk-free rate of return plus a risk premium which is proportional to the non-diversifiable (or systematic) risk of a security.

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

The CAPM considers changing market fundamentals in a portfolio context. The CAPM specifically accounts for differences in systematic risk (i.e., market risk as measured by the beta) between an individual firm or group of firms and the entire market of equities. The balance of the investment risk, or that characterized as unsystematic, must be diversified. Some argue that diversifiable (unsystematic) risk is unimportant to investors. But this contention is not completely justified because the business risk of an individual company, including regulatory risk, are widely discussed within the investment community and therefore influence investors in regulated firms. In addition, I note that the CAPM assumes that through portfolio diversification, investors will minimize the effect of the unsystematic (diversifiable) component of investment risk. Because it is not known whether the average investor holds a well diversified portfolio, the CAPM must also be used with other models of the cost of equity.

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

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

As previously indicated, it is important to recognize that the academic research has shown that the security market line was flatter than that predicted by the CAPM theory and it had a higher intercept than the risk-free rate. These tests indicated that for portfolios with betas less than 1.0, the traditional CAPM will understate the return for such stocks. Likewise, for portfolios with betas above 1.0, these companies had lower returns than indicated by the traditional CAPM theory. Once again, CAPM assumes that through portfolio diversification investors will minimize the effect of the unsystematic (diversifiable) component of investment risk. Therefore, the CAPM must also be used with other models of the cost of equity, especially when it is not known whether the average public utility investor holds a well diversified portfolio. In contrast, my Risk Premium approach also considers industry- and company-specific factors because it is not limited to measuring just systematic risk. As a consequence, my Risk Premium approach is more comprehensive than the CAPM. In addition, the Risk Premium approach provides a better measure of the cost of equity because it is founded upon the yields on corporate bonds rather than Treasury bonds. Due to the disconnection of the yields on corporate and Treasury bonds, the Risk Premium approach is preferable at this time.

Q. What betas have you considered in the CAPM?

A. The beta coefficient is a statistical measure which attempts to identify the non-diversifiable (systematic) risk of an individual security and measures the sensitivity of rates of return on a particular security with general market movements. Under the CAPM theory, a security that has a beta of 1.0 should theoretically provide a rate of return equal to the return rate provided by the market. When employing stock price changes in the derivation of beta, a stock with a beta of 1.0 should exhibit a movement in price which would track the movements in the overall market prices of stocks. Hence, if a particular investment has a beta of 1.0, a one percent increase in the return on the market will result, on average, in a one percent increase in the return on the particular investment. An investment which has a beta less than 1.0 is considered to be less risky than the market.

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

Page 1 of Schedule 11 provides the adjusted betas published by Merrill Lynch and Value Line. By way of explanation, the Merrill Lynch beta coefficient is derived from a "straight regression" based upon the percentage change in the monthly price of common stock and the percentage change monthly of the S&P 500 Index using a five-year period. The raw historical beta is adjusted by Merrill Lynch for the measurement effect resulting in overestimates in high beta stocks and underestimates in low beta stocks. Value Line uses a similar approach and adjustment procedure to calculate its betas.

The primary difference in the Value Line approach involves the use of rounding, weekly prices, and the New York Stock Exchange Composite Average in place of the S&P 500 Composite Index. Neither Merrill Lynch or Value Line considers dividends in the computation of their betas. I initially considered an average of the Merrill Lynch and Value Line betas. As shown on page 1 of Schedule 11, the average beta is .48 for the Water Group and .56 for the Public Utility Group.

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

A. As noted previously with regard to the DCF measure of the cost of equity, the betas must be reflective of the financial risk associated with the ratesetting capital structure that is measured at book value. To develop a CAPM cost rate applicable to a book value capital structure, the average of the Merrill Lynch and Value Line betas have been unleveraged and releveraged for the common equity ratios using book values. This adjustment has been made with the formula[11]:

$$\$l \ ' \ \$u \ [1 \ \% \ (\ 1\&t \ ) \ D/E \ \% \ P/E]$$

where ***ßl*** = the leveraged beta, ***ßu*** = the unleveraged beta, *t* = income tax rate, ***D*** = debt ratio, ***P*** = preferred stock ratio, and ***E*** = common equity ratio. As shown on page 1 of Schedule 11, these betas have been calculated with the market price of stock and therefore are related to the market value capitalization that contains a 63.62% and 66.24% common equity ratio, respectively for the Water Group and the Public Utility Group. By using the formula shown above and the capital structure ratios measured at their market values, the betas would become .35 for the Water Group and .42 for the

[11] R. Morin, Regulatory Finance: Utilities' Cost of Capital (1994). Hamada, "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stocks," The Journal of Finance (May 1972).

Public Utility Group if they employed no leverage and were 100% equity financed. With the unleveraged beta, I have computed that the leveraged beta associated with the book value capital structure would be .61 for the Water Group and .70 for the Public Utility Group. A summary of the betas and their corresponding common equity ratios are:

	Market Values		Book Values	
	Beta	Common Equity Ratio	Beta	Common Equity Ratio
Water Group	.48	63.62%	.61	47.07%
Public Utility Group	.56	66.24%	.70	49.19%

The leveraged beta that I will employ in the CAPM cost of equity is .61 for the Water Group and .70 for the Public Utility Group.

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

A. The yield on long-term (i.e., 30-year) Treasury bonds represents the correct measure of the risk-free rate of return in the traditional CAPM. Regarding the risk-free rate of return, pages 2 and 3 of Schedule 11 provide the yields on the broad spectrum of Treasury Notes and Bonds. Some practitioners of the CAPM would advocate the use of short-term treasury yields (and some would argue for the yields on 91-day Treasury Bills). Other advocates of the CAPM would advocate the use of longer-term treasury yields as the best measure of a risk-free rate of return. As Ibbotson has indicated:

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

> regulated ratesetting. (Stocks, Bonds, Bills and Inflation - 1992 Yearbook, pages 118-119)

As indicated above, 30-year Treasury Bond yields represent the correct measure of the risk-free rate of return in the traditional CAPM. Very short term yields on Treasury bills should be avoided for several reasons. First, rates should be set on the basis of financial conditions that will exist during the effective period of the proposed rates. Second, 91-day Treasury Bill yields are more volatile than longer-term yields and are greatly influenced by Fed monetary policy, political, and economic situations. Moreover, Treasury Bill yields have been shown to be empirically inadequate for the CAPM. Some advocates of the theory would argue that the risk-free rate of return in the CAPM should be derived from quality long-term corporate bonds.

In this regard, I have considered the yields on 30-year Treasury Bonds using both historical and forecast data. As shown on page 2 of Schedule 11, I have provided the historical yields on 30-year Treasury bonds. The twelve month average yield on 30-year Treasury bonds was 5.99% as shown on page 3 of Schedule 11. Throughout 1999, Treasury yields moved generally higher. As noted previously, the strength of the U.S. economy, the apparent recovery of foreign economies, and concerns over future inflationary pressure have all contributed to rising interest rates. The Fed has reacted to these concerns by raising the Fed Funds rate five times since June 1999. In fact, the yield on 30-year Treasury bonds increased from 5.37% in February 1999 to 6.63% in January 2000.

As shown on page 4 of Schedule 11, forecasts published by Blue Chip Financial Forecasts on February 1, 2000 indicate that the yields on 30-year Treasury bonds are expected to be in the range of 6.4% to 6.2% during the next six quarters. To conform with the use of historical and forecast data

that I employed in my analysis, I have used a 6.25% yield for Treasury bonds as the risk-free rate of return in the CAPM.

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

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

With regard to the forecast data, I have relied upon the Value Line forecasts of capital appreciation and the dividend yield on the 1,700 stocks in the Value Line Survey. According to the February 4, 2000, edition of The Value Line Investment Survey Summary and Index, (see page 5 of Schedule 11) the total return on the universe of Value Line equities is:

	Dividend Yield	+	Median Appreciation Potential	=	Median Total Return
As of February 4, 2000	2.2%	+	15.83%[12]	=	18.03%

The tabulation shown above provides the dividend yield and capital gains yield of the companies followed by Value Line. With the 18.03% forecast market return and the 6.25% risk-free rate of return, an 11.78% (18.03% - 6.25%) market premium would be indicated using forecast market data.

[12] The estimated median appreciation potential is forecast to be 80% for 3 to 5 years hence. The annual capital gains yield at the midpoint of the forecast period is 15.83% i.e., $1.80^{.25}$ - 1).

With regard to the historical data, I provided the rates of return from long-term historical time periods that have been widely circulated among the investment and academic community over the past several years, as shown on page 6 of Schedule 11. These data are published by Ibbotson Associates in its Stocks, Bonds, Bills and Inflation ("SBBI"). From the data provided on page 6 of Schedule 11, I calculate a market premium using the common stock arithmetic mean returns of 13.3% less government bond arithmetic mean returns of 5.5%. For the period 1926-1999, the market premium was 7.8% (13.3% - 5.5%). I should note that the arithmetic mean must be used in the CAPM because it is a single period model. It is further confirmed by Ibbotson who has indicated:

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

For the CAPM, a market premium of 9.79% (7.8% + 11.78% = 19.58% ÷ 2) would be reasonable, which is the average of 7.8% using historical data and 11.78% using forecasts. The resulting market premium represents the average market premium using the historical SBBI data and the forecasts by Value Line.

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

A. Using the 6.25% risk-free rate of return, the leverage adjusted beta of .61 for the Water Group, and 0.70 for the Public Utility Group, and the 9.79% market premium developed above, the following CAPM result is indicated.

	Rf	**+**	***b***	***(Rm-Rf)***	**=**	***k***
Water Group	6.25%	+	.61	(9.79%)	=	12.22%
Public Utility Group	6.25%	+	.70	(9.79%)	=	13.10%

Again, these results do not reflect the modification for flotation costs.

Q. What rate of return is indicated from the CAPM?

A. The CAPM result is 12.22% for the Water Group and 13.10% for the Public Utility Group. I should note that there will be an understatement of a firm's cost of equity with the CAPM unless the size of a firm is considered. That is to say, as the size of a firm decreases, its risk, and hence its required return increases. Moreover, in his discussion of the cost of capital, Professor Brigham has indicated that smaller firms have higher capital costs then otherwise similar larger firms (see Fundamentals of Financial Management, fifth edition, page 623). Also, the Fama/French study (see "The Cross-Section of Expected Stock Returns"; The Journal of Finance, June 1992) established that size of a firm

helps explain stock returns. In an October 15, 1995 article in Public Utility Fortnightly, it was demonstrated that the CAPM could understate the cost of equity significantly according to a company's size. This was further demonstrated in the SBBI Yearbook which indicated that the returns for stocks in lower deciles (i.e., smaller stocks) had returns in excess of those shown by the simple CAPM. In this regard, the Water Group had an average market capitalization of its equity of $639 million which would place it in the sixth decile according to the size of the companies traded on the New York Stock Exchange. Therefore, the Water Group must be viewed as a portfolio of low-cap companies consisting of those in the 6th through 8th deciles with market capitalization between $215 million and $872 million. This would indicate a size premium of 0.84% above the CAPM cost rate for the low-cap companies according to the SBBI 1999 Yearbook. The CAPM results would be 13.06% (12.22% + 0.84%) with the size adjustment for the Water Group. For the Public Utility Group, their market capitalization was $1,196 million which places them in the mid-cap group consisting of the 3rd to 5th declines having a market capitalization between $872 million and $4,222 million. The adjustment for mid-cap stocks would provide a CAPM of 13.29% (13.10% + 0.19%) for the Public Utility Group. Absent such an adjustment, the CAPM would understate the required return unless the average size of the Water Group and Public Utilities Group is considered.

COMPARABLE EARNINGS APPROACH

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

A. In order to identify the appropriate return on equity for a utility, it is necessary to analyze returns experienced by other firms within the context of the Comparable Earnings standard. The firms selected

for the Comparable Earnings approach should be companies whose prices are not subject to cost-based price ceilings (i.e., non-regulated firms) so that circularity is avoided. Because regulated firms must compete with non-regulated firms in the capital markets, it is appropriate, if not necessary, to view the returns experienced by firms which operate in competitive markets. One must keep in mind that the rates of return for non-regulated firms represent results on book value actually achieved or expected to be achieved because the starting point of the calculation is the actual experience of companies that are not subject to rate regulation. As established in the Hope case:

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

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

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

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

To identify the comparable risk companies, the Value Line Data Base for Windows was used to screen for firms of comparable risks. The Value Line Data Base includes data on approximately 1700 firms. Excluded from the selection process were companies with a foreign exchange listing and master limited partnerships (MLPs).

Value Line's risk analysis of these firms includes a wide range of financial and market variables, including ten items available that provide ratings and estimates for each company. From these ten items, I removed two categories dealing with industry type because, under my approach, the particular business type is not significant. In addition, I removed, two categories dealing with estimates of earnings and dividends because they are not useful for comparative purposes. The remaining six categories provide relevant measures to establish comparability. The definitions for each of the six criteria (from the Value Line Investment Survey - Subscriber Guide) follows:

<u>Timeliness Rank</u>

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

Safety Rank

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

Financial Strength

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

Price Stability Index

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

Beta

A measure of the sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Average. A Beta of 1.50 indicates that a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Average. Use Beta to measure the stock market risk inherent in any diversified portfolio of, say, 15 or more companies. Otherwise, use the Safety Rank, which measures total risk inherent in an equity, including that portion attributable to market fluctuations. Beta is derived from a least squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the NYSE Average over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are periodically adjusted for their long-term tendency to regress toward 1.00.

Technical Rank

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

In order to implement the Comparable Earnings approach, these screening criteria were used to establish a range as defined by the rankings of the component companies in the Water and Public Utility Groups. The items considered were: Timeliness Rank, Safety Ranking, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The identities of companies comprising the Comparable Earnings group and their associated rankings within the ranges are identified on pages 1 through 3 of Schedule 12.

Value Line data was relied upon because it provides a comprehensive basis for evaluating the risks of the comparable firms. As to the returns calculated by Value Line for these companies, there is some downward bias in the figures shown on pages 4 through 6 of Schedule 12 because Value Line computes the returns on year-end rather than average book value. If average book values had been employed, the rates of return would have been slightly higher. Nevertheless, these are the returns considered by investors when taking positions in these stocks. Finally, because many of the comparability factors, as well as the published returns, are used by investors for selecting stocks, and to the extent that investors rely on the Value Line service to gauge their returns, it is, therefore, an appropriate data base for measuring comparable return opportunities. To implement the Comparable

Earnings approach, I have used both historical realized returns and forecast returns for non-utility companies. It is appropriate to consider a relatively long measurement period in the Comparable Earnings approach in order to cover conditions over an entire business cycle. A ten year period (5 historical years and 5 projected years) is sufficient to cover an average business cycle[13]. The results of the Comparable Earnings method can be applied directly to an original cost rate base because the nature of the analysis relates to book value. Hence, Comparable Earnings does not contain the potential misspecification contained in market models when prices and book values diverge significantly.

Q. What are the results of your Comparable Earnings approach?

A. As shown on page 6 of Schedule 12, the historical rate of return on book common equity was 15.8% using the average measure of central tendency and 12.7% using the median value. The forecast rate of return as published by Value Line is shown by the 15.7% average and 14.0% median value also provided on page 6 of Schedule 12.

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

A. The average of the historical and forecast median rates of return is 13.35% (12.7% + 14.0% = 26.7% ÷ 2) and represents the Comparable Earnings result for this case.

CONCLUSION

[13] For example, since 1854, there have been 30 business cycles having an average length of 51 months measured from trough to trough and 54 months measured from peak to peak. Hence, a 10-year measurement period in the Comparable Earnings approach is more than adequate to cover an average business cycle.

Q. How should the Commission approach the issue of the cost of equity for the Company in this case?

A. In reaching a determination of the cost of equity, the Commission should consider the results of a variety of methods/models. In addition, it is important to recognize that M&A activity is providing a distorted measure of the cost of equity for water companies when using the DCF model. Finally, the Commission should recognize that the market-based measures of the cost of equity when applied to a book value rate base must be adjusted in order to provide the Company with a fair rate of return that reflects its risks.

Q. Does this conclude your prepared direct testimony?

A. Yes.

EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE AND QUALIFICATIONS

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

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

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

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

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

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

My studies and prepared direct testimony have been presented before twenty-eight (28) federal, state and municipal regulatory commissions, consisting of: the Federal Energy Regulatory Commission; state public utility commissions in Alabama, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Tennessee, Pennsylvania, South Carolina, Virginia, and West Virginia; and the Philadelphia Gas Commission. My testimony has been offered in over 200 rate cases involving electric power, natural gas distribution and transmission, resource recovery, solid waste collection and disposal, telephone, wastewater, and water service utility companies. While my testimony has involved principally fair rate of return and financial matters, I have also testified on capital allocations, capital recovery, cash working capital, income taxes, factoring of accounts receivable, and take-or-pay expense recovery. My testimony has been offered on behalf of municipal and investor-owned public utilities and for the staff of a regulatory commission. I have also testified at an Executive Session of the State of New Jersey Commission of Investigation concerning the BPU regulation of solid waste collection and disposal.

I was a co-author of a verified statement submitted to the Interstate Commerce Commission concerning the 1983 Railroad Cost of Capital (Ex Parte No. 452). I was also co-author of comments submitted to the Federal Energy Regulatory Commission regarding the Generic Determination of Rate of Return on Common Equity for Public Utilities in 1985, 1986 and 1987 (Docket Nos. RM85-19-000,

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

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

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

I am a member of the Society of Utility and Regulatory Financial Analysis (formerly the National Society of Rate of Return Analysts) and have attended several Financial Forums sponsored by the

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

My lecture and speaking engagements include:

Date	Occasion	Sponsor
February 2000	The Sixth Annual FERC Briefing	Exnet and Bruder, Gentile & Marcoux, LLP
March 1994	Seventh Annual Proceeding	Electric Utility Business Environment Conference
May 1993	Financial School	New England Gas Assoc.
April 1993	Twenty-Fifth Financial Forum	National Society of Rate of Return Analysts
June 1992	Rate and Charges Subcommittee Annual Conference	American Water Works Association
May 1992	Rates School	New England Gas Assoc.
October 1989	Seventeenth Annual Eastern Utility Rate Seminar	Water Committee of the National Association of Regulatory Utility Commissioners Florida Public Service Service Commission and University of Utah
October 1988	Sixteenth Annual Eastern Utility Rate Seminar	Water Committee of the National Association of Regulatory Utility Commissioners, Florida Public Service Commission and University of Utah
May 1988	Twentieth Financial	National Society of

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