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October 10, 2001

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Florida Public Service Commission
2540 Shumard Oak Boulevard
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Tallahassee, Florida 32399-0850

HAND DELIVERY

Re: Docket No. 010006-WS

Dear Ms. Bayo:

Enclosed herewith for filing in the above-referenced docket on behalf of Florida Waterworks Association ("FWA") are the original and fifteen copies of Florida Waterworks' Rebuttal Testimony of Dr. Roger A. Morin.

Please acknowledge receipt of these documents by stamping the extra copy of this letter "filed" and returning the copy to me.

Thank you for your assistance with this filing.

Sincerely,

J. Stephen Menton

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Water and wastewater industry annual reestablishment of authorized range of return on on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.	)))))))	Docket No. 010006-WS

REBUTTAL TESTIMONY

OF

DR. ROGER A. MORIN

ON BEHALF OF

FLORIDA WATERWORKS ASSOCIATION

Q. PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.

A. My name is Dr. Roger A. Morin. My business address is Georgia State University, Robinson College of Business, University Plaza, Atlanta, Georgia, 30303. I am Professor of Finance at the College of Business, Georgia State University and Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University. I am also a principal in Utility Research International, an enterprise engaged in regulatory finance and economics consulting to business, regulators, and government.

Q. ARE YOU THE SAME DR. R. A. MORIN WHO HAS FILED RATE OF RETURN TESTIMONY IN THIS PROCEEDING?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. This testimony is in rebuttal to Mr. Cicchetti's (Office of the Public Counsel), and Mr. Lester's (Florida Public Service Commission Staff) cost of capital testimonies.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized in two parts, dealing with Mssrs. Cicchetti's and Lester's cost of capital testimonies, respectively. The majority of my comments are directed at Mr. Cicchetti, as I am in large agreement with several elements of Mr. Lester's methodology in determining cost of

common equity capital for the typical Florida water and wastewater utility ("FWU").

I. COMMENTS ON MR. CICCHETTI'S TESTIMONY.

Q. PLEASE SUMMARIZE MR. CICCHETTI'S RATE OF RETURN RECOMMENDATION.

A. In determining the cost of common equity capital for the typical FWU, Mr. Cicchetti applies a multi-stage DCF test to a very small group of publicly-traded water utility companies using the "retention growth" approach in order to specify the long-term growth component of the DCF analysis. He also applies a DCF-based risk premium test to a sample of natural gas distribution utilities. Curiously, he does not apply the DCF test to the latter group, nor does he apply the risk premium test to the water utility group. Based on the results of these two tests and an additional risk premium to recognize the higher relative risk of FWUs, he recommends a return of only 9.71% on common equity capital.

Q. DO YOU HAVE ANY GENERAL COMMENTS ON MR. CICCHETTI'S TESTIMONY?

A. Yes. Before I engage in specific criticisms of Mr. Cicchetti's testimony, I should set forth my general reaction to his testimony. His testimony is extremely narrow in scope, relying exclusively on the DCF approach and on one particularly fragile variant of the DCF approach, namely, the retention growth approach.

Mr. Cicchetti's cost of equity recommendation is not a reliable estimate of the FWUs' cost of common equity capital given **his sole reliance on one particular and very fragile cost of equity methodology which requires him to assume the answer before he even begins to implement the methodology**. This very narrow approach stands in sharp contrast with the practices of investment analysts, finance experts, corporate analysts, and finance professionals. It is dangerous and inappropriate to rely on only one method as Mr. Cicchetti has done. In addition, as I discuss later, the variant he utilizes (the retention growth method) is extremely fragile conceptually and of questionable validity empirically.

I also find that Mr. Cicchetti's recommended 9.7% cost of equity for FWUs to be outside any zone of reasonableness and outside the zone of currently authorized rates of return for regulated utilities in the United States. Mr. Cicchetti's cost of equity recommendation of 9.7%, if ever adopted, would result in one of the lowest, if not the lowest, rate of return award for any utility in the country.

Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO MR. CICCHETTI'S COST OF EQUITY TESTIMONY?

A. Mr. Cicchetti's recommendation is highly unreliable as it hinges entirely on one variant of one particular methodology. Moreover, the one methodology that supports Mr. Cicchetti's recommendation is logically circular and

empirically suspect. A proper application of cost of capital methodologies would give substantially higher results.

Q. PLEASE SUMMARIZE YOUR SPECIFIC CRITICISMS OF MR. CICCHETTI'S TESTIMONY.

A. I have the following specific criticisms:

1. **Unreliable estimate.** Mr. Cicchetti's cost of equity recommendation is unreasonably low, and is not a reliable estimate of FWUs' cost of common equity capital given his sole reliance on one particular and very fragile cost of equity methodology.

2. **Allowed returns**. Mr. Cicchetti's recommended return is well outside the zone of currently allowed rates of return for electric utilities in the United States. The average allowed return for utilities is in excess of 11%, which is significantly higher than his 9.7% recommendation for FWUs.

3. **DCF Retention Growth Method**. Mr. Cicchetti's recommendation rests entirely on the retention growth DCF method, and there are serious logical inconsistencies in this particular method because **Mr. Cicchetti is forced to assume the answer to implement the method**. This method is the least valid, both empirically and theoretically.

4. **DCF Analysts' Growth Forecasts.** Mr. Cicchetti fails to use analysts' growth forecasts in his DCF analysis, even though the stock price he uses in his DCF analysis is predicated on such forecasts. Investors expect

substantially higher growth rates for utilities than what Mr. Cicchetti employs in his DCF analysis.

5. **Risk Premium.** Mr. Cicchetti's risk premium analysis of natural gas distribution utilities is merely a disguised version of his DCF result, and does not constitute an independent stand-alone methodology. As is the case for his retention growth DCF analysis, the DCF-driven risk premium method he has employed is highly circular. Mr. Cicchetti did not implement any of the traditional risk premium methodologies, such as the Capital Asset Pricing Model or historical Risk Premium analysis.

I will now discuss each criticism in turn. Because the crux of Mr. Cicchetti's testimony lies in his retention growth DCF analysis, a great deal of my remarks are devoted to his implementation of that particular method.

1. UNRELIABLE ESTIMATE

Q. MR. CICCHETTI HAS LIMITED THE COST OF EQUITY ESTIMATION PROCESS TO ONE METHODOLOGY, NAMELY THE DCF METHOD. DOES THIS AFFECT THE RELIABILITY OF HIS RESULTS?

A. Yes, it does. The major problem in his testimony is the lack of corroborating evidence. There is simply no objective cross check on the result. The 9.7% cost of equity recommended by Mr. Cicchetti is unreasonably low, and is not a reliable estimate of FWUs' cost of equity capital.

Q. DO YOU THINK THAT THE COST OF EQUITY SHOULD BE ESTIMATED BY THE DCF MODEL ALONE?

A. No, it should not, and especially not with the retention growth version of the DCF approach. Some analysts estimate the cost of common equity capital by relying heavily, and sometimes exclusively, on the DCF approach. The major difficulty of relying exclusively on the DCF methodology is the lack of corroborating evidence.

There are four broad generic methodologies available to measure the cost of equity: DCF, Risk Premium, CAPM, which are market-oriented, and Comparable Earnings, which is accounting-oriented. Each generic market-based methodology in turn contains several variants. Mr. Cicchetti has chosen to rely on only one of the four methods, namely a variation of the DCF method known as the two-stage DCF model which he implements with the retention growth approach.

When measuring equity costs, which essentially deals with the measurement of investor expectations, no one single methodology provides a foolproof panacea. Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate the theory. It follows that more than one methodology should be employed in arriving at a judgment on the cost of equity and that these methodologies should be applied across a series of comparable risk companies.

There is no single model that conclusively determines or estimates the expected return for an individual firm. Each methodology possesses its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises which cannot be validated empirically. Investors do not necessarily subscribe to any one method, nor does the stock price reflect the application of any one single method by the price-setting investor. Absent any hard evidence as to which method outdoes the other, all relevant evidence should be used and weighted equally, in order to minimize judgmental error, measurement error, and conceptual infirmities. I submit that the Commission should rely on the results of a variety of methods applied to a variety of comparable groups. There is no guarantee that a single DCF result is necessarily the ideal predictor of the stock price and of the cost of equity reflected in that price, just as there is no guarantee that a single CAPM or Risk Premium result constitutes the perfect explanation of that stock price.

Q. DOES THE FINANCIAL LITERATURE SUPPORT THE USE OF MORE THAN A SINGLE METHOD?

A. Yes. The financial literature strongly supports the use of multiple methods.

2. ALLOWED RETURNS

Q. IS MR. CICCHETTI'S RATE OF RETURN RECOMMENDATION COMPATIBLE WITH CURRENTLY ALLOWED RETURNS IN THE UTILITY INDUSTRY?

A. No, it is not. Allowed returns, while certainly not a precise indication of a company's cost of equity capital, are nevertheless important determinants of investor growth perceptions and investor expected returns. They also serve to provide some perspective on the validity and reasonableness of Mr. Cicchetti's recommendation.

The average allowed return in the electric utility industry, as reported by C.A. Turner Reports dated September 2001 was 11.8%, 11.70%, and 10.6% for electric, natural gas, and water utilities, respectively. More recent orders indicate allowed returns in the 11.00% to 11.25% range. This far exceeds Mr. Cicchetti's recommended 9.7% for FWUs. In short, Mr. Cicchetti's recommendation is outside the mainstream of currently allowed rates of return and would be among the lowest in the country.

3. DCF RETENTION GROWTH RATES

Q. CAN YOU COMMENT ON MR. CICCHETTI'S GROWTH ESTIMATES IN THE DCF MODEL?

A. There are at least four techniques to estimate expected growth in the DCF model: (1) historical growth rates in earnings per share, dividends per share, and book value per share, (2) analysts' growth forecasts, (3) growth implied in investors' required return, and (4) retention growth method. In the latter method, the growth rate is based on the equation g = b x ROE, where b is the percentage of earnings retained and ROE is the expected earned rate of return on book equity. In his DCF analysis, Mr. Cicchetti estimates the long-term

growth component using only the last method, which is highly inappropriate for regulated utilities because of its inherent circularity.

A single technique to estimate investor growth expectations is likely to contain a high degree of measurement error and may be distorted by short-term aberrations. A regulatory authority's hands should not be bound to one single estimate of growth in the DCF determination of equity costs. The advantage of using several different approaches in estimating growth is that the results of each one can be used to check the others. Moreover, the method chosen by Mr. Cicchetti is inherently circular and empirically unfounded.

Q. PLEASE DESCRIBE MR. CICCHETTI'S IMPLEMENTION OF THE RETENTION GROWTH METHOD.

A. First, It should be pointed out that the retention growth estimate exerts a much stronger influence on Mr. Cicchetti's final DCF result than the intermediate growth rate assumed for the first four years, since it captures the effects of growth from the fourth year into perpetuity. It is therefore imperative that it be estimated accurately if the DCF results are to be reliable.

To apply the retention ratio growth method in his DCF analysis, Mr. Cicchetti multiplies the utility's expected retention ratio ("b") by the expected return on equity, "ROE":

$$g = b \times ROE$$

Mr. Cicchetti then assumes that investors obtain all their data from Value Line. The investor's expected ROE is proxied by Value Line's forecast of ROE for 2004-2006, which is 12.25% for his sample of water utilities. He does not report the expected ROE data used in his DCF-based risk premium analysis of natural gas utilities.

To compute the retention ratio, he takes the retention ratio forecast by Value Line as he did for the expected ROE. Mr. Cicchetti does not recognize any growth stemming from external financing through common stock issues in developing his retention growth estimate. As shown on Exhibit MAC-3 page 1 the average long-term growth rate for his sample of water utilities is 5.8%.

Q. DO YOU HAVE ANY OBJECTIONS TO THE RETENTION GROWTH ESTIMATES USED BY MR. CICCHETTI?

A. Yes, I have several. Since Mr. Cicchetti's entire testimony and his 9.7% cost of equity recommendation hinge on the retention growth cornerstone, it is important to point out the dangers and flaws of this method. There are three fundamental problems with Mr. Cicchetti's retention growth methodology.

Q. PLEASE DISCUSS THE FIRST PROBLEM WITH MR. CICCHETTI'S RETENTION GROWTH ESTIMATES.

A. Mr. Cicchetti's retention growth method contains a fatal logical flaw: the method requires an estimate of ROE to be implemented. In other words, his method requires him to assume the ROE answer to start with. But if the ROE

input required by the model differs from the recommended return on equity, a fundamental contradiction in logic follows.

Mr. Cicchetti's recommended 9.7% return on equity is far removed from the ROE's he uses in the retention growth method. On his Exhibit MAC-3 page 1, he uses an average expected return ("ROE") of 12.25%, which is well above Mr. Cicchetti's recommended 9.7% return:

Mr. Cicchetti is assuming in effect that the water companies will earn a ROE exceeding his recommended cost of equity forever, but he is recommending that a different rate be granted by the Commission. While this scenario may be imaginable for an unregulated company with substantial market power that can earn more than its cost of capital, it is ***implausible for a regulated company whose rates are set so that they will earn a return equal to their cost of capital.*** I consider this logical flaw extremely damaging and sufficient to reject Mr. Cicchetti's results produced by the method, the crux of his testimony. In essence, ***Mr. Cicchetti is using an ROE that differs from his final recommended cost of equity, and is requesting the Commission to adopt two different ROEs.*** For regulated utilities, **the return on book equity is set equal to the cost of capital by virtue of the regulatory ratemaking process itself.**

I am extremely perplexed as to why Mr. Cicchetti assumes that water utilities are expected to earn 12.25% forever, but yet he recommends only 9.7%. The only way that water utilities can earn an ROE of 12.25% each and

every year forever is that rates be set so that they will in fact earn 12.25%. So, how can the cost of equity be any different from 12.25%?

Q. PLEASE DISCUSS THE SECOND PROBLEM WITH MR. CICCHETTI'S RETENTION GROWTH ESTIMATES.

A. The second problem is that the empirical finance literature demonstrates that the retention growth method is a poor explanatory variable of value and is not significantly correlated to measures of value, such as stock price and price/earnings ratios. I discuss this point more fully below.

Q. PLEASE DISCUSS THE THIRD PROBLEM WITH MR. CICCHETTI'S RETENTION GROWTH ESTIMATES.

A. The third difficulty with Mr. Cicchetti's retention growth approach is that the forecasts of the expected return on equity published by Value Line are based on end-of-period book equity rather than on average book equity. The following formula, discussed and derived in Chapter 5 of my book, Regulatory Finance, adjusts the reported end-of-year values so that they are based on average common equity, which is the common regulatory practice:

$$r_a = r_t \frac{2B_t}{B_t + B_{t-1}}$$

Where: r_a = return on average equity

r_t = return on year-end equity as reported
B_t = reported year-end book equity of the current year
B_{t-1} = reported year-end book equity of the previous year

The result of this error is that Mr. Cicchetti's DCF estimates are understated by some 10-20 basis points, depending on the magnitude of the book value growth rate.

Q. DID YOU NOTICE ANY OTHER ANOMALIES IN MR. CICCHETTI'SGROWTH RATES?

A. Yes, I did. Mr. Cicchetti never clarifies why a two-stage two-growth rate DCF model was selected as opposed to the constant growth rate DCF model. It is not at all clear why Mr. Cicchetti assumes that the water utilities in his sample will experience an anemic growth rate of only 2.83% over the next four years and a sudden quantum increase in growth profile to 5.84% thereafter[1]. Such a drastic shift in retention policy (dividend policy) is unrealistic and completely unjustified by the economics of the water utility industry.

4. ANALYSTS' GROWTH FORECASTS

Q. WHAT DOES THE PUBLISHED ACADEMIC LITERATURE SAY ON THE SUBJECT OF GROWTH RATES IN THE DCF MODEL?

A. Mr. Cicchetti's retention growth estimates in his DCF analysis fly in the face of the financial research on the relationship between growth rates and stock prices. Published studies in the academic literature demonstrate that growth forecasts made by security analysts are reasonable indicators of investor

[1] From Mr. Cicchetti's Exhibit MAC-3, water utility dividends are assumed to grow from $1.00 to $1.11 from 2001 to 2005. The implied compound growth rate is 2.83%.

expectations, and that investors rely on analysts' forecasts. Cragg and Malkiel, "Expectations and the Structure of Share Prices", Chicago: University of Chicago Press, 1982, present detailed empirical evidence that the average analysts' expectation is more similar to expectations being reflected in the marketplace than are historical growth rates, and represents the best possible source of DCF growth rates. Cragg and Malkiel show that historical growth rates do not contain any information that is not already impounded in analysts' growth forecasts. A study by Professors Vander Weide and Carleton, "Investor Growth Expectations: Analysts vs. History", The Journal of Portfolio Management, Spring 1988, also confirms the superiority of analysts' forecasts over historical growth extrapolations. Another study by Timme & Eiseman, "On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities," Financial Management, Winter 1989, produces similar results.

Q. WHAT DCF RESULTS WOULD MR. CICCHETTI HAVE OBTAINED HAD HE SIMPLY USE THE CONSENSUS ANALYSTS' GROWTH FORECASTS?

A. The average growth forecast of analysts from Zacks for Mr. Cicchetti's water company sample is 6.6% for American Water and 6.3% for Philadelphia Suburban for an average of 6.43%. No analyst growth forecasts are available for American States and California Water. The average long-term growth forecast of 6.43% exceeds Mr. Cicchetti's estimate of 5.8% (Exhibit MAC-3

Page 1). The difference between the two estimates translates into a 70 basis points downward bias of FWUs' cost of equity from that source alone. Allowing for that bias would raise his ROE recommendation from 9.7% to 10.4% from that correction alone.

Q. DO YOU SEE ANY DANGERS IN RELYING ON VALUE LINE AS AN EXCLUSIVE SOURCE OF GROWTH FORECASTS IN APPLYING THE DCF MODEL?

A. I am perplexed as to why Mr. Cicchetti has relied exclusively on the Value Line growth forecasts. Mr. Cicchetti's sole reliance on Value Line growth forecasts runs the risk that such forecasts are not representative of investors' consensus forecast. One would expect that averages of analysts' growth forecasts such as those contained in IBES or Zacks, rather than one particular firm's forecast, are more reliable estimates of the investors' consensus expectations likely to be impounded in stock prices. As discussed earlier, the empirical finance literature has shown that such consensus analysts' growth forecasts are reflected in stock prices, possess a high explanatory power of equity values, and are used by investors.

Q. DID MR. CICCHETTI APPLY THE SAME DCF ANALYSIS TO HIS SAMPLE OF NATURAL GAS DISTRIBUTION UTILITIES?

A. No, he did not. Curiously, he performs a annual risk premium analysis on a sample of natural gas utilities which is totally DCF-driven, using the very same DCF method he employed for water utilities to obtain the cost of

common equity. However, he chooses not to report the DCF results for his sample of natural gas utilities which would presumably be far more reliable than the results obtained from his very small sample of only four water utilities, one of which (California Water) is going through very difficult times, compliments of the California energy crisis.

Q. WHAT RESULTS DO YOU OBTAIN IF YOU APPLY A PLAIN VANILLA DCF ANALYSIS TO MR. CICCHETTI'S SAMPLE OF NATURAL GAS UTILITIES.

A. The table below shows the consensus analysts' growth forecasts obtained from Zacks Investment Research's Web site for Mr. Cicchetti's sample of six natural gas utilities. The average growth is 7.2%. The next column shows the Value Line growth forecasts. The average growth is 7.9% from that source.

ANALYSTS' GROWTH FORECASTS
NATURAL GAS DISTRIBUTION UTILITIES

	COMPANY	Zacks	Value Line
1	AGL Resources	6.9	7.5
2	KeySpan Corp.	10.1	n.a.
3	Laclede Gas	7.5	6.5
4	Northwest Nat. Gas	6.3	8.5
5	Peoples Energy	6.8	8,5
6	WGL Holdings Inc.	5.9	8.5
	AVERAGE	**7.2**	**7.9**

Source: Zacks Investment Research
Value Line Survey for Windows 9/2001

As shown on the table below, adding these growth rates to the 4.6% current dividend yield of the group reported in Value Line produces equity costs of 11.8% and 12.5%. Those raw DCF estimates, which do no include flotation costs, the expected dividend yield versus spot dividend yield adjustment, and the liquidity risk adjustment, far exceed Mr. Cicchetti's 9.7% recommendation.

Mr. Cicchetti's Natural Gas Utilities
Plain DCF Estimates

dividend yield	4.6	4.6
expected growth	7.2	7.9
cost of equity	**11.8**	**12.5**

There is no reasonable justification to disregard the DCF results as Mr. Cicchetti has done for his sample of natural gas utilities.

Q. CAN YOU SUMMARIZE YOUR COMMENTS ON MR. CICCHETTI'S DCF GROWTH RATES?

A. In summary, Mr. Cicchetti's retention growth rate methodology, which assumes the ROE answer to begin with, contains serious conceptual, empirical, and methodological flaws, and should be disregarded. Given that his rate of return recommendation relies primarily on that one method, his recommendation must be viewed with extreme caution and skepticism.

5. RISK PREMIUM ANALYSIS

Q. PLEASE DISCUSS MR. CICCHETTI'S RISK PREMIUM ANALYSIS.

A. Mr. Cicchetti's risk premium analysis is merely a replication of his DCF analysis over several years. His risk premium analysis consists of subtracting the yield on long-term Treasury bonds from his DCF estimate for each and every year over the period 1991-2000, and averaging the annual result. He then adds the current yield on long-term Treasury bonds to the DCF-derived average risk premium to arrive at his risk premium estimate. Mr. Cicchetti's risk premium method is nothing more than his DCF estimate under a different disguise and is therefore subject to the same above criticisms as above, especially the inherent circularity of the technique.

Q. WHAT DO YOU CONCLUDE FROM MR. CICCHETTI'S COST OF CAPITAL TESTIMONY?

A. There are very serious problems with Mr. Cicchetti's methods and concepts. My general conclusions are that his DCF analysis hinges solely on the "retention growth" method, only one of several methods traditionally used in regulatory proceedings, and certainly the most fragile method. His application of the method is questionable and contains a serious logical trap because it requires that its user assume the answer to begin with. It is difficult to accept Mr. Cicchetti's claim that investors are expecting 9.7% when his own ROE data indicate that investors are expecting 12.25%.

II. COMMENTS ON MR. LESTER'S TESTIMONY.

Q. PLEASE SUMMARIZE MR. LESTER'S COST OF EQUITY RECOMMENDATION.

A. In determining the cost of equity applicable to the FWUs, Mr. Lester applies a two-stage DCF analysis and a CAPM analysis to a group of 4 water utilities and to a group of 11 natural gas distribution utilities. The results of his DCF analysis show that the cost of equity is 9.01% for the water group and 10.71% for the gas group. The results of his CAPM analysis indicate a cost of equity of 8.98% for both groups. He then adjusts these estimates upward in recognition of the FWUs' higher business risk, smaller size, and lack of liquidity relative to the publicly-traded water and gas utilities used in developing the estimates and recommends a cost of equity range of 9.69% to 10.80%. From this estimated range, Mr. Lester recommends an amended leverage formula as follows:

$$k_e = 8.95\% + 0.738 / ER$$

where k_e is the cost of equity and ER is the common equity ratio.

Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO MR. LESTER'S COST OF EQUITY TESTIMONY?

A. Mr. Lester understates the FWUs cost of equity capital by a minimum of 100 basis points.

Q. PLEASE SUMMARIZE YOUR COMMENTS ON MR. LESTER'S TESTIMONY.

A. My comments are necessarily brief, given that some of my earlier criticisms of Mr. Cicchetti are also applicable to Mr. Lester's testimony and given that I agree with several of Mr. Lester's views and procedures. I agree with 1) his two samples of utility companies, although I am somewhat concerned with the statistical reliability of a four-company sample of water utilities; 2) his stock price in the DCF analysis; 3) his inclusion of a flotation cost allowance; 3) his estimate of the risk-free rate in the CAPM analysis; 4) his beta estimates in the CAPM analysis; 5) his risk adjustments, including a bond yield differential, a private placement premium, and a size premium in the calculation of the recommended leverage formula.

I respectfully disagree with Mr. Lester concerning: 1) the use of the retention growth approach to estimate the growth component of the DCF model because of its inherent circularity; 2) the exclusive use of Value Line growth forecasts as opposed to the consensus analysts' growth forecast in the DCF analysis; 3) the market risk premium component of the CAPM analysis; 4) the plain vanilla version of the CAPM; and 5) the capital structure assumption inherent in the leverage formula. I shall treat each point in turn. Since I have already discussed at length my sentiments on the capital structure issue in my direct testimony, I shall not repeat those concerns here. I also have some cautionary remarks with regards to capital market

conditions following the tragic events of September 11th, particularly with respect to the bond yield differentials between investment grade and non-investment grade utility bonds.

1. GROWTH ESTIMATE

Q. CAN YOU COMMENT ON MR. LESTER'S GROWTH ESTIMATES IN THE DCF MODEL?

A. In his DCF analysis, Mr. Lester estimates the intermediate growth term component of his two-stage DCF model using Value Line's forecast dividends for the next four years. He estimates the second stage long-term growth component using the retention growth method. Again, I point out that the long-term retention growth estimate exerts a much stronger influence on the final DCF result than the intermediate growth rate assumed for the first four years since it captures the effects of growth from the fourth year into perpetuity.

Q. DO YOU HAVE ANY OBJECTIONS TO THE RETENTION GROWTH METHOD?

A. I voiced my objections to the retention growth method in my earlier critique of Mr. Cicchetti's testimony, and I reiterate those concerns here. The retention growth method contains a logical trap: the method requires an estimate of ROE to be implemented. But if the ROE input required by the model differs from the recommended return on equity, a fundamental contradiction in logic follows. Mr. Lester's recommended return on equity

is lower than the ROEs he uses in the retention growth method. Column 7 of his Exhibit PL-17 pages 1 and 2 show Value Line's expected ROE's used in the retention growth computation for the water and natural gas utilities. The average expected ROE is 12.4% and 12.6% for the water and gas group, respectively, which is in excess of his recommended return. The only way that these companies can earn ROEs of 12.4% - 12.6% is that rates are set by the Commission so as to produce these ROEs.

Q. WHAT GROWTH RATES ARE INVESTORS EXPECTING FOR GAS DISTRIBUTION UTILITIES?

A. The evidence shows that investors are expecting growth rates above both Mr. Lester's intermediate-term growth estimate of about 2.83% for the next four years and his long-term growth estimate of 6.3% (see his Exhibit PL-17 columns 8 and 9). As shown on the table below, the average consensus long-term growth rate for the 11 gas companies in Mr. Lester's comparable group is 7.1%, which exceeds Mr. Lester's long-term growth estimate of 6.3%. Thus, the evidence indicates that investors expect growth rates which are at least 80 basis points higher than Mr. Lester's estimate. The table also shows Value Line's long-term earnings growth estimate which is 9.6%, again considerably above Mr. Lester's 6.3%

ANALYSTS' GROWTH FORECASTS
NATURAL GAS DISTRIBUTION UTILITIES

	COMPANY	Zacks	Value Line
1	AGL Resources	6.9	7.5
2	Atmos Energy	6.3	13.5
3	Cascade Natural Gas	6.0	8.5
4	Energen	12.2	19.0
5	Laclede Gas	7.5	6.5
6	Northwest Nat. Gas	6.3	8.5
7	Peoples Energy	6.8	8.5
8	Piedmont Natural Gas	7.3	7.5
9	SEMCO Energy	8.3	13.5
10	Southwest Gas	4.3	4.0
11	WGL Holdings	5.9	8.5
	AVERAGE	**7.1**	**9.6**

Source: Zacks Investment Research
Value Line Survey for Windows 9/2001

2. VALUE LINE FORECASTS

Q. DO YOU SEE ANY DANGERS IN RELYING ON VALUE LINE AS AN EXCLUSIVE SOURCE OF FORECASTS IN APPLYING THE DCF MODEL?

A. Yes. Consistent with my earlier comments regarding Mr. Cicchetti's testimony, I believe that Mr. Lester's exclusive reliance on Value Line as a source of analysts' growth forecasts in his DCF analysis runs the risk of being unrepresentative of investors' consensus forecast. One would expect that averages of analysts' growth forecasts such as those contained in IBES or Zacks are more reliable estimates of the investors' consensus expectations likely to be impounded in stock prices.

3. MARKET RISK PREMIUM

Q. DO YOU AGREE WITH MR. LESTER'S ESTIMATE OF THE MARKET RISK PREMIUM?

A. Mr. Lester's estimate of the market risk premium of approximately 5.2% (Exhibit PL-18) rather than the more conventional 8% estimate reported by Ibbotson Associates in their 2001 Yearbook is too low. According to the widely-used Ibbotson compilation of historical returns, over the past 75 years the observed historical market risk premium over long time periods is between 7% and 8%, and closer to the latter.

Incorporating a more realistic market risk premium of 7% rather than 5.2% increases Mr. Lester's CAPM estimate of the FWUs' cost of equity by about 50 basis points (beta of 0.61 times 7.0% rather than beta times 5.2%).

4. CAPM VS EMPIRICAL CAPM

Q. DOES MR. LESTER'S VERSION OF THE CAPM UNDERESTIMATE THE APPROPRIATE COST OF CAPITAL?

A. Yes, it does. I do not agree with Mr. Lester's use of the raw form of the CAPM. I believe that the CAPM estimate should be supplemented with an estimate from the empirical version of the CAPM. There have been countless empirical tests of the plain vanilla CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The

contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. In other words, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well-known results in the academic finance literature. Based on the empirical evidence, a CAPM-based estimate of the cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities. The plain vanilla version of the CAPM underestimates water utilities' equity costs by about 50-60 basis points from this bias alone as shown by a comparison of my CAPM and ECAPM results in my prefiled direct testimony.

Q. WHAT CHANGES SHOULD MR. LESTER IMPLEMENT IN DEVELOPING AN AMENDED LEVERAGE FORMULA?

A. Over and above the changes that I recommended in my direct testimony with regards to capital structure and the cost of debt, I recommend that the following changes be implemented in developing the cost of common equity component of the leverage formula: 1) that the constant growth DCF model rather than the two-stage DCF model be applied to the water and gas groups employed by Mr. Lester; 2) that the growth component of the DCF analysis be proxied by the consensus analysts' long-term earnings growth forecast contained in Zacks rather than the circular retention growth method; 3) that the market risk premium of the CAPM analysis be measured as the average between the historical arithmetic risk premium reported in Ibbotson

Associates Annual Valuation Yearbook and the prospective market risk premium; 4) that the latter be measured as Mr. Lester has proposed except that only the Value Line earnings growth forecast be employed rather than the average of the dividend and earnings growth forecast in measuring the growth component of the DCF market return; and 5) that the CAPM analysis be supplemented by the empirical version of the CAPM as described in my direct testimony.

Q. HOW HAVE THE RECENT EVENTS OF SEPTEMBER 11TH INFLUENCED CAPITAL MARKET CONDITIONS?

A. In the weeks following the tragic events of September 11th, 2001, short-term interest rates have declined markedly to the 2%-3% level in response to an expansive monetary policy by the Federal Reserve, while long-term Treasury yields have only declined modestly. The cost of long-term money for corporate issuers, however, has remained unchanged and has even escalated slightly. Capital markets have become extremely quality conscious. Any corporate issuer rated less than single A has experienced difficulty in raising capital at any cost in that period. Below investment grade companies have experienced extreme difficulty in raising debt funds in a quality-conscious market. Yield spreads over long-term Treasury bonds have reached the very high level of 320 basis points and 360 basis points for A-rated and BAA-rated utility bonds, respectively. This is a significant consideration for the

Commission given that the marginal cost of debt to a FWU is assumed to equal the yield on Moody's bonds rated Baa3 plus 50 basis points.

Q. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.