

State of Florida



Public Service Commission  
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TALLAHASSEE, FLORIDA 32399-0850

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COMMISSION CLERK

**DATE:** DECEMBER 5, 2001

**TO:** DIRECTOR, DIVISION OF THE COMMISSION CLERK & ADMINISTRATIVE SERVICES (BAYÓ)

**FROM:** DIVISION OF ECONOMIC REGULATION (D. DRAPER) *DR*  
DIVISION OF LEGAL SERVICES (JAEGER) *ALM*

**RE:** DOCKET NO. 010006-WS - WATER AND WASTEWATER INDUSTRY ANNUAL REESTABLISHMENT OF AUTHORIZED RANGE OF RETURN ON COMMON EQUITY OF WATER AND WASTEWATER UTILITIES PURSUANT TO SECTION 367.081(4) (f), F.S.

**AGENDA:** 12/17/01 - POST HEARING DECISION - PARTICIPATION IS LIMITED TO COMMISSIONERS AND STAFF

**CRITICAL DATES:** ORDER MUST BE ISSUED BY DECEMBER 31, 2001

**SPECIAL INSTRUCTIONS:** NONE

**FILE NAME AND LOCATION:** S:\PSC\ECR\WP\010006.RCM

CASE BACKGROUND

Section 367.081(4)(f), Florida Statutes, authorizes the Commission to establish, not less than once each year, a leverage formula to calculate a reasonable range of return on equity (ROE) for water and wastewater (WAW) utilities. In Docket No. 000006-WS, the Commission established the current leverage formula by Proposed Agency Action (PAA) Order No. PSC-00-1162-PAA-WS, issued June 26, 2000, which was made final by Consummating Order No. PSC-00-1299-CO-WS, issued on July 18, 2000.

For the year 2001 (Docket No. 010006-WS), staff filed its May 3, 2001 recommendation to establish the new leverage formula. That recommendation was considered at the May 15, 2001 Agenda Conference. In that recommendation, staff presented primary and alternative proposals.

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The primary recommendation proposed that the leverage formula be based on recent returns on equity which the Commission had set in gas rate cases. The alternative staff recommendation proposed that the Commission continue the existing leverage formula methodology, which uses returns on equity from financial models. However, the alternative recommendation did include one minor correction and one minor modification to the existing methodology. These were as follows:

1. A 3% flotation cost allowance in the calculation of the market return in the CAPM model. The existing CAPM model does not have a flotation cost allowance.
2. An addition of 10 basis points to the market return in the CAPM model to allow for the quarterly compounding of dividends. This adjustment is appropriate for non-regulated firms. Most of the firms used to calculate the market return are non-regulated.

Upon consideration of these proposals, and other proposals presented by interested persons, the Commission approved the alternative staff recommendation. Accordingly, the Commission issued Proposed Agency Action (PAA) Order No. PSC-01-1226-PAA-WS on June 1, 2001, which approved the above-noted modifications and approved a range of ROE from 9.14% at 100% equity to 10.24% at 40% of equity (or less). However, that PAA Order was timely protested by the Florida Waterworks Association (FWA) and the matter was set for hearing on November 5, 2001. Subsequent to the above-noted protest, the Office of Public Counsel (OPC) served notice of its intervention. Intervention was acknowledged by Order No. PSC-01-1727-PCO-WS, issued August 24, 2001.

A prehearing conference was held on October 22, 2001, and the Prehearing Order, Order No. PSC-01-2139-PCO-WS, was issued on November 2, 2001. Also, the formal hearing was held as scheduled on November 5, 2001. J. Stephen Menton, Esq., of the law firm of Rutledge, Ecenia, Purnell & Hoffman, appeared on behalf of the FWA, and Stephen C. Burgess, Deputy Public Counsel, appeared for the OPC on behalf of the Citizens of the State of Florida.

This recommendation addresses the issues and evidence presented at the November 5, hearing. The Commission has jurisdiction pursuant to Section 367.081(4)(f), Florida Statutes.

STIPULATIONS

The Prehearing Order set forth four stipulations that were agreed to by the parties and staff. These stipulations were considered and approved by the full Commission at the hearing. The stipulations are as follows:

1. This docket should remain open to allow staff to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.
2. The depositions taken on October 23, 2001 and November 1, 2001, of Dr. Roger A. Morin, and all exhibits thereto, shall be admitted as an exhibit at the hearing and shall be in lieu of cross-examination of that witness by the parties.
3. The direct and rebuttal testimony of Dr. Roger A. Morin shall be inserted into the record as though read at the appropriate time, and the exhibits attached to that testimony shall be admitted into the record at the hearing.
4. Dr. Roger A. Morin shall be allowed to attend the hearing by telephone, and he shall be excused if the Commission determines that there are no cross-examination questions for him.

DISCUSSION OF ISSUES

ISSUE OF FACT

ISSUE 1: What is the most appropriate model or method to estimate a fair and reasonable return on a water and wastewater utility's common equity capital?

RECOMMENDATION: With the adjustments set forth in Issue 4, the existing methodology for determining the ROE leverage formula is appropriate. Based on the record in this proceeding the most appropriate models to estimate a fair and reasonable ROE for a water and wastewater utility for inclusion in the leverage formula is the Discounted Cash Flow model (DCF) and the Capital Asset Pricing Model (CAPM). (D. DRAPER)

POSITION OF THE PARTIES

FWA: No individual model or approach provides a dependable level of accuracy. Several different approaches should be utilized to cross-check results. A diversified, comprehensive analysis results in a range of returns significantly higher than contained in the PAA Order.

OPC: The most appropriate model is that which is used in the PAA [PSC-01-1226-PAA-WS]. With occasional modifications, this model has been used for many years and clearly has proven to result in ROEs that attract capital investment to the industry.

STAFF ANALYSIS:

SUMMARY OF WITNESSES' TESTIMONY

Witness Dr. Roger A. Morin, testifying on behalf of FWA, employed several variants of three distinct market-based ROE models: (1) CAPM, (2) Risk Premium, and (3) DCF. (TR 26) Witness Morin's overall analysis includes two studies applying a CAPM and an empirical approximation of the CAPM using current market data. He also performed four risk premium analyses based on historical and allowed risk premium data from both the electric and natural gas distribution industries. Finally, witness Morin performed a DCF analyses on three surrogates for the WAW industry: a group of large water utilities, a group of transmission and distribution (T&D) electric utilities, and a group of natural gas distribution

utilities. The results of his financial analyses and the application of his professional judgment, including an assessment of the risk circumstances of the industry, led witness Morin to conclude that a just and reasonable range of returns on common equity for the Florida WAW industry of 10.2% to 12.7% with a midpoint of 11.5% for a typical Florida utility with an average capital structure. (TR 13, EXH 2)

As for the use of the Commission's leverage formula, witness Morin generally endorsed the notion of a generic mechanistic approach for the determination of a fair ROE. (TR 71) Although not specifically recommending a different approach to the Commission's leverage formula, witness Morin did mention the possibility of allowing the cost of debt in the formula to vary depending on the level of equity. (TR 71) Furthermore, witness Morin discussed using an average of five formal relationships between the cost of capital and leverage as explained by Modigliani and Miller's theory of financial leverage. (TR 71) Witness Morin believed that the current equity allowance level of 40% to 100% could be relaxed to 30% to 100%. (TR 73)

Witness Mark A. Cicchetti, appearing on behalf of OPC, testified that the assumptions and conclusions contained in Order No. PSC-01-1226-PAA-WS (PAA Order) were reasonable and appropriate for determining allowed returns on common equity for WAW utilities in Florida. (TR 120) Witness Cicchetti determined the appropriateness of the allowed return on common equity incorporated in PAA Order by applying a DCF model on an index of WAW utilities and a risk premium analysis on an index of natural gas distribution companies. (TR 124) The PAA Order resulted in a range of ROE from 9.14% at 100% equity to 10.24% at 40% equity.

Witness Pete Lester, testifying on behalf of the Commission staff, determined the cost of equity for the leverage formula using a DCF model and a CAPM. Witness Lester applied these two models to an index of water utilities and to an index of natural gas distribution utilities. (TR 197) Witness Lester's analysis resulted in a range of ROE from 9.69% at 100% equity to 10.80% at 40% equity. (TR 180)

#### STAFF ANALYSIS OF WITNESSES' TESTIMONIES

All three witnesses employed some version of the DCF model in their analysis. Witness Morin and witness Lester employed versions

of the CAPM in both of their analyses. (TR 26, 197) Although witness Cicchetti did not perform a CAPM analysis, his analysis implicitly endorses the use of the CAPM by supporting the protested PAA Order. Witness Cicchetti and witness Lester used the existing leverage formula methodology for determining the ROE for Florida's WAW utilities. (TR 120, 180)

Witness Morin suggested amending the leverage formula to allow the cost of debt to vary in relationship to the equity ratio. (TR 71) In addition, witness Morin discussed using an average of five formal relationships between the cost of capital and leverage as explained by Modigliani and Miller's (M&M) theory of financial leverage. The five formal relationships M&M described in their theory of financial leverage are M&M Leverage with no tax, M&M Leverage with tax, Miller with personal and corporate tax, CAPM and Empirical CAPM (ECAPM). (TR 69)

Witness Cicchetti stated that prior to recommending the leverage formula for use before the Commission, the staff of the Commission thoroughly analyzed the relevant theories related to the effects of leverage on the cost of equity. (TR 250) In witness Cicchetti's opinion, it would be:

. . . inappropriate to average the five hypotheses cited by witness Morin and use the result in the leverage formula. Because some of the hypotheses do not account for the impacts of regulation, the legitimacy of the result would be compromised. (TR 252)

Staff agrees with witness Cicchetti that it would be inappropriate to average the five hypotheses cited by witness Morin. The leverage formula was developed over the years through workshops and hearings in order to provide a flexible and useful tool for determining the ROE for the more than 300 WAW utilities regulated by this Commission. The simplicity of the leverage formula allows for greater efficiencies in setting a utility's ROE. In addition, staff believes, as do witness Cicchetti and witness Lester, that limiting the low end of the equity ratio to 40% provides an incentive to the companies to avoid imprudent amounts of debt. (TR 123, 208)

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CONCLUSION AND RECOMMENDATION

Based on an analysis of this issue and a review of the witnesses' testimonies, staff believes that with the adjustments set forth in Issue 4, the existing leverage formula methodology used to determine the ROE for Florida's WAW utilities is appropriate. In addition, staff recommends that the Discounted Cash Flow model (DCF) and the Capital Asset Pricing Model (CAPM) are the most appropriate models in which to estimate a fair and reasonable return for Florida's WAW utility's common equity.

**MIXED ISSUE OF LAW AND POLICY**

**ISSUE 2:** Should the Commission, as a matter of law or policy, establish a leverage formula that systematically results in an allowed equity return that is either higher or lower than the actual measured cost of equity for an average water and wastewater utility at the corresponding equity?

**RECOMMENDATION:** No. Staff believes it is appropriate for the Commission to base its decision on the evidence contained in the record. (JAEGER, D. DRAPER)

**POSITION OF THE PARTIES**

**FWA:** Section 367.081(4)(f), Florida Statutes, does not limit the Commission to consideration of any single model for determining the cost of equity. The Commission should consider and evaluate the testimony and evidence regarding various approaches for estimating the cost of equity in determining the appropriate range of returns.

**OPC:** No. Sound public policy as well as Section 367.081(4)(f), F.S., contemplates the establishment of authorized equity returns that equal - not systematically exceed - the actual cost of equity.

**STAFF ANALYSIS:** Staff believes it is appropriate to base its recommendation on the evidence contained in the record. The record is the basis of staff's recommendation and it is incumbent upon the parties and staff involved to provide relevant testimony and facts in order for the Commission to base its decision upon a complete record. Section 367.081(4)(f), Florida Statutes, authorizes the Commission to establish, not less than once each year, a leverage formula to calculate a reasonable range of ROE for WAW utilities. Determining the appropriate ROE is a subjective process based on forecasted information and professional judgement. The witnesses in this proceeding recommended the use of generally accepted financial models and the use of specific industry information concerning investors' perception of risk for WAW investments. Based on the information provided in this proceeding, staff believes that the current Commission leverage formula methodology, with the adjustments set forth in Issue 4, is the most appropriate method to use in setting the ROE for Florida's 300 WAW utilities.

**ISSUE OF POLICY**

**ISSUE 3:** Is there justification for utilizing a leverage formula methodology that yields a lower return on equity for water and wastewater utilities as compared to other rate-based regulated industries in Florida and elsewhere?

**RECOMMENDATION:** Pursuant to Section 367.081(4)(f), Florida Statutes, the Commission must establish a leverage formula which reasonably reflects the "range of returns on common equity for an average water or wastewater utility." Staff believes that using the methodologies in Issue 1, and allowing for placement costs and a risk premium to account for the small size and the additional risk of the average water and wastewater utility, results in a leverage formula appropriate for an average water and wastewater utility. (JAEGER, D. DRAPER)

**POSITION OF THE PARTIES**

**FWA:** The PAA Order produces returns on equity that are significantly less than the composite authorized rate of return for Commission regulated electric and gas utilities. There is no reasonable or justified basis for this difference and this result does not appropriately reflect the risks and issues facing the water and wastewater industry.

**OPC:** The formula should reflect the actual cost of equity for an average water/wastewater utility, not ROEs stipulated in some other industry. If risk factors associated with another industry are different (e.g., threat of restructuring, absence of indexing), the ROEs should reflect that difference.

**STAFF ANALYSIS:** FWA argues that the past methodology produced returns significantly less than the composite authorized rate of return for Commission regulated electric and gas utilities. FWA goes on to argue that: "The Commission should refrain from elevating the subjective application of financial models for which there are no directly comparable proxies to conclusive status for determining the reasonable range of ROEs for the average Florida water and wastewater utility." FWA believes that WAW utilities have become as risky if not more risky than energy utilities. (TR 64)

In addition, FWA notes that the rising costs, the continually changing environmental regulations and conditions, the small size of the average water utility, the uncertainty regarding future demand (and supply), the possibility of contamination, and the need for substantial external financing must all be considered. In conclusion, FWA argues that there is no rationale for the ROE for WAW utilities to be below that of the gas utilities, and that, in fact, the ROE should be higher than the average return allowed for the gas utilities. (TR 61)

In its post-hearing brief, OPC states that this issue was presented as one of policy and not one of fact, and that OPC's approach has been as a matter of regulatory policy. OPC also states that Section 367.081(4)(f), Florida Statutes, clearly applies only to WAW companies. Therefore, OPC argues that those returns from other regulated industries should not be considered and especially when those returns were based on stipulations. (BR 5)

While staff agrees in principal with OPC's interpretation of the statute, staff believes that the evidence shows the average WAW utility in Florida may face more risk than the energy utilities used in the models. Pursuant to Section 367.081(4)(f), Florida Statutes, the Commission must establish a leverage formula which reasonably reflects the "range of returns on common equity for an average water or wastewater utility." Staff believes that using the methodologies in Issue 1, and allowing for placement costs and a risk premium to account for the small size and the additional risk of the average WAW utility, results in a leverage formula appropriate for an average WAW utility.

**MIXED ISSUES OF FACT, LAW AND POLICY**

**ISSUE 4:** What is the appropriate range of returns on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), Florida Statutes?

**RECOMMENDATION:** Staff recommends the following return on equity:

Return on Common Equity = 9.10% + 0.896/Equity Ratio

Where the Equity Ratio = Common Equity / (Common Equity + Preferred Equity + Long-Term and Short-Term Debt)

Range: 10.00% @ 100% equity to 11.34% @ 40% equity

Based on its analysis of this issue and a review of the witnesses' testimonies and exhibits, Staff recommends the following:

1. The Commission should use a two-stage annual DCF model applied to an index of natural gas distribution utilities, using forecasted expected dividend growth rates for the first stage and the retention earnings method for the second stage.
2. The Commission should use the CAPM for an index of natural gas distribution utilities, using an average beta, derived from Value Line, and a market risk premium calculated by a simple DCF model using an average of forecasted dividend and earnings growth rate.
3. The Commission should make a 20-basis point adjustment to each model to adjust for flotation cost allowance. In addition, a 10-basis point adjustment made to the CAPM to adjust for quarterly compounded results.
4. The Commission should make the following adjustments to the average of the two models: a bond yield differential adjustment, a private placement premium of 50-basis points and a small-utility risk premium of 50-basis points.
5. The Commission should allow the indicated range of ROE in the leverage formula for a WAW utility to range

from 40% equity to 100% equity. In addition, it has been Commission practice to include an adjustment to reflect the required equity return at a 40% equity ratio.

(ATTACHMENT A) (D. DRAPER)

**POSITION OF THE PARTIES**

**FWA:** The reasonable range of return on common equity to be used as part of the leverage formula methodology is 10.2% to 12.7% with the mid-point of 11.5% for a typical Florida water and wastewater utility with an average capital structure. The range of return set forth in the PAA Order is too low and would place Florida water and wastewater utilities at a competitive disadvantage in the capital markets.

**OPC:** 9.14% ROE @ 100% equity ratio to 10.24% ROE @ 40% (or lower) Equity ratio, based on the formula: Return on Common Equity = 8.41% + 0.731/Equity Ratio.

**STAFF ANALYSIS:**

**SUMMARY OF WITNESSES TESTIMONY**

**Witness Morin's Direct and Cicchetti's Rebuttal:**

**CAPM:** In his analysis, FWA witness Morin used a common form of the CAPM and a ECAPM. In using these models, he had to make assumptions regarding the appropriate beta, market return, and risk-free rate. He used a historical measure of beta supplied by Value Line. (TR 29-33) Witness Morin's estimate of the market return was based on the results of both forward-looking and historical studies of long-term risk premiums. Finally, for the risk-free rate, he used the actual yield on long-term Treasury bonds. (TR 21) Based upon this analysis, he concluded that his common form of the CAPM and his ECAPM analysis indicated a cost of equity of 10.2% and 10.8%, respectively. (EXH 1)

On rebuttal, Witness Cicchetti criticized the use of the actual yield on long-term Treasury bonds used in witness Morin's CAPM analysis. Witness Cicchetti states:

[T]he current yield on long-term Treasury bonds is lower. Consequently, using witness Morin's own methodology, the

results of his CAPM risk premium approach and Risk Premium analysis are overstated by 50 basis points. (TR 244)

In addition, witness Cicchetti disagrees with witness Morin's use of a market risk premium, noting that witness Morin's ". . . market risk premium was based on the historical earned returns of a broad market sample of common stock over the returns of long-term Treasury bonds." (TR 32)

Witness Cicchetti does not believe it is appropriate to rely on a risk premium analysis that uses earned returns rather than expected returns in determining the risk premium. Witness Cicchetti states:

Required return is a function of expectations and not a function of ex post performance. Actual performance may deviate substantially from what was expected but it is expectations relative to requirements that determine if an investment should be made. Relying on earned returns in the rate making process as the basis for required returns can produce incorrect results. (TR 244)

Furthermore, witness Cicchetti believes that relying on earned returns as a proxy for required returns can produce nonsensical results. For example, he points to witness Morin's Exhibit 1, RAM-2 & 3, which shows annual equity risk premiums that range from negative 37.3% to positive 61.2%. Witness Cicchetti believes that it is illogical to think that in any year the cost of equity was 37.3 percentage points less than the cost of less risky debt. (TR 244)

Witness Cicchetti also believes that it is inappropriate for witness Morin to rely on expected earnings growth as a proxy for expected dividend growth in determining the market risk premium of his CAPM. The DCF model is used to determine the market risk premium in the CAPM. Witness Cicchetti states that the DCF model is a dividend discounting model which in theory takes the present value of all dividends paid out and the present value of the future stock price, discounted back in order to determine the discount rate or investors' required return. Furthermore, he states that due to the fact that not all earnings are paid out as dividends when they are earned, the use of earnings in determining the market

risk premium violates the principle of the time value of money. (TR 245)

**RISK PREMIUM:** In his Risk Premium analysis, witness Morin used historical and allowed risk premiums on a surrogate index of electric and natural gas utilities. For the risk-free rate, he used the actual yield on long-term Treasury bonds. (TR 41-3) He then adjusted the results of the Risk Premium model by 35 basis points to compensate for his perception of the difference in risk between that of the utility indexes used in his model and the average Florida WAW utility. (TR 38)

As previously stated, witness Cicchetti disagrees with using the actual yield on long-term Treasury bonds and he also disagreed that it was appropriate to use ex post returns as a proxy for expectations. He states that the use of these inputs in the Risk Premium model overstates the cost of equity for a typical Florida WAW utility. (TR 246) Witness Cicchetti believes the risk adjustment made by witness Morin to compensate WAW utilities for their greater risk is wrong and argues that WAW utilities are not riskier than electric or natural gas utilities. He points out that because of limited technological breakthroughs, lack of competition and having no substitutes for water, Standard and Poor's considers water utilities to be the lowest-risk utility sector. (TR 247) Witness Cicchetti believes that using allowed returns to determine a utility's cost of equity is circular logic and that the required ROE is a function of relevant risk. (TR 247)

**DCF:** Witness Morin also conducted a cost of equity analysis using a single-stage annual DCF model, applied to three proxy groups: a group of WAW utilities, a group of T&D electric utilities, and a group of natural gas distribution utilities. (TR 45) To use these models, he had to make assumptions regarding the expected dividend yield and the expected long term growth rate. The expected dividend in the DCF model can be obtained by multiplying the current indicated annual dividend rate by the assumed expected long term growth rate. Witness Morin used long-term earnings growth rate forecasts provided by Institutional Broker's Estimate Systems (IBES) and by Value Line's earnings growth forecasts as a proxy for dividend growth rates. (TR 47)

After combining the long-term growth rates for his WAW utilities with their average expected dividend yields, witness Morin then added 30 basis points to recognize quarterly payments of

dividends. He further adjusted his ROE results to recognize a five-percent flotation cost allowance. The estimated ROE obtained from witness Morin's DCF analysis on his WAW utilities group using IBES growth rates is 10.2%. (EXH 1) Witness Morin then performed a DCF analysis, on his same WAW utilities group, using historical earnings growth rate forecasts (instead of analyst earnings growth rates). After adjusting for quarterly timing of dividends and flotation costs, his analysis resulted in an 11.4% cost of equity. (TR 47) Performing the same analysis for a third time, but using Value Line's long-term earnings growth rate forecasts instead of IBES or historical growth rates, and not adjusting for quarterly timing of dividends or flotation allowance, resulted in an 11.6% cost of equity. (EXH 1)

Witness Morin performed a DCF analysis on his T&D electric utilities group by using IBES average long-term growth rate forecasts. Witness Morin adjusted the results for a five-percent flotation cost allowance and also added 35 basis points for a small size premium. Witness Morin truncated the range of his indicated returns by removing the highest and lowest cost of equity outcomes. After these adjustment were made, his ROE analysis produced a 10.8% cost of equity. (TR 49) Witness Morin then conducted a similar DCF analysis on his T&D electric utilities group, using Value Line's long-term earnings growth rate forecast instead. After adjusting for flotation costs and a small size premium, he truncated these results to arrive at a 12.3% cost of equity. (TR 50)

On his index of natural gas utilities, witness Morin repeated his DCF analyses using IBES and Value Line earnings growth rate forecasts. The results of using IBES forecasted growth rate estimates on his index of natural gas utilities, resulted in a ROE estimate of 12.7%. His DCF analysis using Value Line growth rate estimates resulted in a ROE estimate of 14.5%. (TR 51) Witness Morin considered the ROE estimate derived from his DCF analysis on his index of natural gas utilities, using Value Line's forecasted earnings growth rate to be an outlier and accorded it little weight. (TR 48)

As previously stated, witness Cicchetti believes that the use of earnings growth rates, historical or projected, as a proxy for expected dividend growth rates in the DCF model is inappropriate. Witness Cicchetti testified that using earnings growth rates in the DCF analysis overstates the cost of equity for a typical Florida WAW utility. (TR 248)

Witness Cicchetti's Direct and Morin's Rebuttal:

**DCF:** In his testimony, witness Cicchetti used a two-stage variable growth rate DCF model. (TR 125) In his model, witness Cicchetti averaged the high and low stock price for each company and assumed an initial five-year growth period based upon Value Line's explicit dividends forecasts. He assumed a constant growth rate for the period beyond five-years. He calculated the long-term constant growth rate by multiplying Value Line's expected ROE (r) and expected retention rate (b) for 2005, this is known as "b times r" or the earnings retention method. Using his DCF model on an index of WAW utilities and adjusting the results to include a three-percent flotation cost allowance, he estimated an ROE of 8.91%. (EXH 5) Witness Cicchetti also includes a quarterly compounding two-stage variable growth rate DCF model for his index of WAW utilities. The result of his quarterly DCF model ROE estimate was 9.08% (EXH 4)

Witness Morin criticizes witness Cicchetti analysis for being too narrow in scope by relying exclusively on one particularly fragile variant of the DCF approach, namely, the retention growth approach (b times r). (TR 75) Witness Morin states that:

Mr. Cicchetti's recommendation rests entirely on the retention growth DCF method, and there are serious logical inconsistencies in this particular method because witness Cicchetti is forced to assume the answer to implement the method. This method is the least valid, both empirically and theoretically. . . . Mr. Cicchetti fails to use analyst's growth rate forecasts in his DCF analysis, even though the stock price he uses in his analysis is predicated on such forecasts. (TR 77)

Witness Morin disagreed with witness Cicchetti's singular use of Value Line's forecasted dividend growth rate in his DCF model, stating that there are at least four different techniques to estimate an expected growth rate, including the retention growth method. Witness Morin believes that the use of the retention growth method (b times r) is circular because the method requires him to assume the ROE answer to start with. (TR 83) In addition, witness Morin states that witness Cicchetti's forecast of expected ROE published by Value Line is based on end-of-period book equity rather than on average book equity, understating the results by 10-20 basis points. (TR 85-6)

**RISK PREMIUM:** Witness Cicchetti also performed a Risk Premium analysis on an index of natural gas companies. This analysis required him to make two assumptions: first, the equity risk premium, and second, the risk-free rate of return. Witness Cicchetti determined the equity risk premium by subtracting the required returns on equity as reported by Value Line from the then current yield on long-term government bonds, averaged over a ten-year period. By taking this average and adding it to a consensus forecast for long-term government bonds, as published by Blue Chip Financial Forecasts, he then adjusted the results for a bond yield differential (the difference between the Index's average bond rating and the assumed BBB rating of Florida's WAW utilities) producing an ROE estimate of 8.60%. (TR 129)

On rebuttal, witness Morin states that: "witness Cicchetti's risk premium analysis is merely a replication of his DCF analysis over several years . . ." and therefore subject to the same criticisms as previously stated on his DCF analysis, especially the inherent circularity of the technique. (TR 91)

**Witness Lester's Direct and Morin's and Cicchetti's Rebuttal:**

**DCF:** In his testimony, witness Lester used a two-stage annually compounded DCF model and a CAPM analysis applied to an index of WAW utilities and natural gas utilities. Witness Lester's inputs for his DCF model consisted of current stock prices, Value Line's forecasted dividend growth rates, and long-term growth rates using the earnings retention method. (TR 199) The results of his DCF model were adjusted for a three-percent flotation cost allowance, which produces an ROE estimated for his index of WAW utilities of 9.01% and an ROE estimate of 10.71% for his index of natural gas utilities. (EXH 6)

**CAPM:** Witness Lester also performed a CAPM analysis on an index of WAW utilities and natural gas utilities. For his inputs, witness Lester used the average forecasted 30-year Treasury bond and the average beta as reported by Value Line. For his required market return input, witness Lester applied a simple DCF equation to 652 companies selected from Value Line. In his simple DCF model he used the average of expected earnings growth rate and expected dividends growth rate as a proxy for the forecasted growth rate. Witness Lester added 10 basis points to his required market return in his CAPM to compensate for quarterly compounding of dividends.

(TR 201) The result of his CAPM analysis for both WAW and natural gas utilities was 8.98%. (EXH 6)

**ADJUSTMENTS:** After averaging the estimated ROE results of these four models, witness Lester made three adjustments to his final recommended ROE. The first adjustment was to adjust for the historical differences between the different bond yield rated indexes and the average Florida WAW utility. This adjustment, consistent with the status quo methodology, amounted to 25-basis points. (TR 204) He then added 50 basis points to compensate for the liquidity premium that investors require for holding privately placed bonds. (TR 205) Finally, he added 50 basis points to compensate for the small size of Florida WAW utilities. (TR 206) Based on his financial analysis, Witness Lester recommended a leverage formula range of 9.69% to 10.80%. (TR 188)

In his criticism of witness Lester's testimony, witness Morin had several points of disagreement with the methods and inputs of his models. These disagreements are similar to those he expressed in regard to the models and methods used by witness Cicchetti in his ROE analysis. Witness Morin disagreed: (1) with witness Lester's use of the retention growth approach in the DCF model; (2) the exclusive use of Value Line's [dividend] growth rate forecasts as opposed to the consensus analyst's [earnings] growth rate forecast; (3) the market risk premium [methodology] of his CAPM analysis; (4) the use of a plain vanilla version of the CAPM; and (5) the capital structure assumption [the 40% floor in the allowed equity ratio] inherent in the leverage formula. (TR 93)

Witness Morin did agree with several of witness Lester's views and procedures. Witness Morin agreed with witness Lester's: (1) use of information from two regulated industries, although he was somewhat concerned with the statistical reliability of a four-company sample of water utilities; (2) stock prices in his DCF analysis; (3) inclusion of a flotation cost allowance; (4) estimate of his risk free rate in the CAPM; (5) beta estimates in the CAPM analysis; and (6) risk adjustments, including a bond yield differential, a private placement premium, and a size premium in the calculation of the recommended leverage formula. (TR 93)

On rebuttal, Witness Cicchetti disagreed with witness Lester's use of an earnings growth rate in determining the market risk premium inherent in the CAPM. This disagreement is similar to the criticisms witness Cicchetti expressed about witness Morin's use of

a forecasted earnings growth rate in his models. (TR 252) Witness Cicchetti also stated that the addition of a small size risk premium in the leverage formula is unnecessary. Witness Cicchetti believes that the risk due to size has already been accounted for by the bond yield adjustment and the private placement premium included in the leverage formula. (TR 254)

#### ANALYSIS OF WITNESSES' TESTIMONIES

Staff has analyzed and reviewed each of the arguments made in the witnesses' testimonies. In regard to their methods and inputs used in the financial models presented, staff believes there is agreement on some of the inputs or methods applied. All three witnesses agree with the use of a bond yield differential adjustment and a private placement premium. In addition, all three witnesses agree on a flotation cost allowance, but disagree on the required size of the adjustment. Finally, there was a general consensus on an adjustment for quarterly dividends with the models.

Witnesses Lester and Cicchetti both stated that historically the utilities' underwriting expenses associated with issuing common stock have averaged around three to four-percent. (TR 202, 127) Witness Morin stated that according to empirical financial literature, the total flotation costs amount to four-percent for the direct costs and one-percent for the market's downward pressure on a newly issued stock's price. (TR 54) Staff believes that due to the small size of Florida's WAW utilities and the lack of in-house legal services and additional resources normally available to larger companies, a four-percent flotation cost allowance would be appropriate. To allow for this four-percent flotation cost adjustment, staff would add 20-basis points to each model. This adjustment of 20-basis points is derived from an approximate average of a one-percent allowance in each of the witnesses' testimonies.

In addition, staff would include an adjustment for a bond yield differential and a private placement premium. This would be in agreement with all the witnesses' testimonies. As for the small size premium, staff believes an adjustment is justified in light of the new information presented in witness Lester's testimony concerning the size of Florida's WAW utilities. (ATTACHMENT B) Witness Lester was the only witness who specifically analyzed Florida's WAW utilities. In his analysis, witness Lester reports that two-thirds of Florida's WAW utilities range from small to very small. (EXH 6) Based on this information and the opinions of witness

Lester and witness Morin, staff believes that a 50-basis point adjustment is appropriate and should be included in the leverage formula.

Another risk factor facing Florida's water and wastewater industry is regulatory risk (TR 61). There are two primary regulatory risk factors that have a profound effect on these utilities. First, water and wastewater utilities face significant exposure to used and useful adjustments. These adjustments impact cash flow and financial integrity. Unlike electric utilities who have the opportunity to sell excess generation capacity on the wholesale market, water utilities have limited revenue producing options for excess capacity even though it may be prudent to build for future growth. Second, water utilities face increasing cost pressures due to environmental regulations. Unlike electric utilities who have access to an environmental cost recovery clause, water utilities face risk of recovery and regulatory lag via a base rate proceeding. These risk factors are considered in staff's recommended adjustments.

There appeared to be no direct criticism as to whether a single-stage DCF or two-stage DCF is more reliable at determining an estimated ROE. Staff believes that a two-stage annual DCF provides a more detailed analysis of the cost of equity because short-term forecasts are more reliable than long-term forecasts. Staff analyzed the approximate basis point differences between a two-stage and single-stage DCF model using an index of W&W utilities. For the two-stage DCF model, staff used Value Line's forecasted dividend growth rates for the initial five-years period, and the retention growth method for the periods beyond five-years. For the single-stage DCF model, Staff used the retention growth method as a proxy for long-term dividend growth rates. The results of this analysis calculated an estimated ROE for the two-stage DCF model of 9.01%, and for the single-stage DCF model an estimated of 9.46% ROE.

As for the DCF model's inputs, staff believes that it is appropriate to use the forecasted dividend growth rates as published by Value Line in the calculation of the DCF model. Staff believes that dividend growth rates are a more reliable prediction of short-term future growth and more closely satisfy the concept of the time value of money theory. Witness Cicchetti supports this concept by testifying that:

Required return is a function of expectations and not a function of ex post performance. Actual performance may deviate substantially from what was expected but it is expectations relative to requirements that determine if an investment should be made. Relying on earned returns in the ratemaking process as the basis for required returns can produce incorrect results. For example, just because a company had an earned ROE of either 5% or 25% does not mean that the company's cost of equity was either 5% or 25%. Furthermore, relying on earned returns as a proxy for required returns can produce nonsensical results (TR 244)

In addition, staff also believes that the use of a retention growth method for the periods beyond the first five years is appropriate. Staff recognizes that an average of a dividend growth rate forecast and an earnings growth rate forecast would also be appropriate, but, again, staff believes that the retention growth method most closely satisfies the concept of the time value of money theory.

As for the CAPM inputs, all three witnesses agreed that the average beta as derived from an index of the companies published in Value Line was appropriate. Therefore, staff recommends that the use of the average beta as derived from Value Line is appropriate. Staff believes that using the twelve-month average yield of the 30-year Treasury Bond, as reported by Blue Chip Financial Forecasts, as opposed to using the actual 30-year Treasury Bond yield, is a more reliable measure due to its smoothing effect on short-term aberrations. For the calculation of the market risk premium, staff believes that the averaging of a forecasted dividend growth rate with the forecasted earnings growth rate is appropriate. Although this seems to contradict our previous recommendation concerning the inputs to the DCF model, staff believes that it is appropriate here in determining the overall market risk premium. Staff's reasoning for using this method is based on the assumption stated by witness Cicchetti that over time the earnings growth rate and the dividends growth rate would theoretically be the same. (TR 142)

The use of the CAPM and DCF model is based on the assumption that the index of companies used in the models to estimate an ROE for a utility have comparable characteristics. (TR 198) Staff believes that besides witness Morin's use of an electric utility index in his analysis, nowhere else in the record does the evidence

support the use of a T&D electric utility index for a proxy of WAW utilities. Therefore, staff would not recommend the use of a T&D electric utility index as a proxy of WAW utilities.

All three witnesses used an index of nationally traded, dividend paying WAW companies as a proxy for Florida WAW utilities. However, each witness criticized the small size of their index and the unreliability of the information provided by using only four companies. For the four water companies used in witness Cicchetti's and witness Lester's testimonies, two utilities are located in California. These companies are heavily influenced by the California Public Service Commission and the current electric deregulation crisis. In addition, another of the four utilities in the index is being acquired by a foreign investor. When asked if takeover rumors can have an impact on stock prices, witness Cicchetti said yes. (TR 167) Therefore takeovers of publicly traded utilities can affect the results of an ROE estimate for a particular industry. Finally, staff takes note of a statement made by witness Morin, that:

There is a severe shortage of pure-play water utilities whose shares are publicly listed and actively traded, and are therefore subject to the opinions and actions of investors in a measurable way. Given this situation, the need to extend the sample to companies of comparable risk is obvious. (TR 36)

In addition, witness Morin states:

I consider the DCF results obtained from the water utilities group somewhat unreliable in view of the scarcity of available companies. Moreover, the DCF results are somewhat clouded by pending merger negotiations for several of the water companies in the sample. There is a very strong possibility that the stock price of these companies used as input in the DCF dividend yield component is biased by ongoing merger negotiations. The DCF analysis of these companies is therefore susceptible to the singular vagaries of these particular companies. An abnormally low or high ROE recommendation can result from a biased DCF estimate. It is fairly common practice amongst experts and investment analysts to exclude companies currently involved in merger negotiations when applying the DCF model to a sample of comparable risk companies." (TR 48)

Based on the record and the testimonies of the witnesses, staff believes that excluding the index of four WAW utilities used in witness Cicchetti's and witness Lester's analyses would result in a more reliable estimate. Due to the lack of available data, staff also suggests excluding the WAW index used by witness Morin. Staff believes that there is sufficient evidence in the record showing that the specific business risks and singular vagaries of the three of the four water utilities used in the index overpower the most important assumption implicit in the financial models, that is, that each water utility has similar business risks compared to the risks of Florida's WAW utilities.

All three witnesses used an index of natural gas distribution companies as a proxy for the WAW utilities. Staff believes that with the elimination of the electric and water indexes, the use of natural gas distribution companies as a proxy will result in a more reasonable cost of equity for Florida's WAW utilities. Staff does have concerns with using only one index of companies in its analysis but considers the alternative to be unreliable and to produce possibly distorted results.

#### CONCLUSION AND RECOMMENDATION

Based on its analysis of this issue and a review of the witnesses' testimonies and exhibits, Staff recommends the following:

1. The Commission should use a two-stage annual DCF model applied to an index of natural gas distribution utilities, using forecasted expected dividend growth rates for the first stage and the retention earnings method for the second stage.
2. The Commission should use the CAPM applied to an index of natural gas distribution utilities, using an average utility beta derived from Value Line, and a market risk premium calculated by a simple DCF model using an averaged forecasted dividends and earnings growth rate.
3. The Commission should make a 20-basis point adjustment be made to each model to adjust for flotation cost allowance. In addition, a 10-basis point adjustment made to the CAPM to adjust for quarterly compounded results.

4. The Commission should make the following adjustments be made to the average of the two models, a bond yield differential adjustment, a private placement premium of 50 basis points and a small-utility risk premium of 50 basis points.

5. The Commission should make the applied range of ROE for a WAW utility should be from 40% equity to 100% equity. In addition, it has been the Commission practice to include an adjustment to reflect the required equity return at a 40% equity ratio.

Based on the above recommendations, Staff recommends the following leverage formula:

$$\text{Return on Common Equity} = 9.10\% + 0.896/\text{Equity Ratio}$$

Where the Equity Ratio = Common Equity / (Common Equity + Preferred Equity + Long-Term and Short-Term Debt)

Range: 10.00% @ 100% equity to 11.34% @ 40% equity

(D. DRAPER)

DOCKET NO. 010006-WS  
DATE: December 5, 2001

**ISSUE 5:** Should this docket be closed?

**RECOMMENDATION:** No, pursuant to Stipulation No. 1, this docket should remain open to allow staff to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant. (JAEGER, D. DRAPER)

**POSITION OF THE PARTIES**

**FWA:** This docket should remain open to allow staff to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.

**OPC:** No position.

**STAFF ANALYSIS:** As agreed to in Stipulation No. 1, which was approved by the Commission at the November 5, 2001 hearing, this docket should remain open to allow staff to monitor the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.

**Calculation of Recommended and Status Quo Leverage Formulae**

|  | <u>Recommended<br/>2001</u> | <u>PAA Order<br/>2001</u> |
|--|-----------------------------|---------------------------|
| (A) DCF ROE for Water Index            | %                           | 9.01%                     |
| (B) DCF ROE for Gas Index              | 10.81%                      |                           |
| (C) CAPM for Water Index               |                             | <u>8.98%</u>              |
| (D) CAPM for Gas Index                 | <u>9.08%</u>                |                           |
| AVERAGE                                | 9.95%                       | 9.00%                     |
| Bond Yield Differential                | .25%                        | .41%                      |
| Small-Utility Risk Premium             | .50%                        |                           |
| Private Placement Premium              | .50%                        | .50%                      |
| Adjustment to Reflect Required Equity  |                             |                           |
| Return at a 40% Equity Ratio           | <u>.15%</u>                 | <u>.11%</u>               |
| Cost of Equity for Average Florida WAW |                             |                           |
| Utility at a 40% Equity Ratio          | <u>11.34%</u>               | <u>10.01%</u>             |

2000 Leverage Formula (Currently in Effect)

|                              |                 |
|------------------------------|-----------------|
| Return on Common Equity =    | 8.99% + .376/ER |
| Range of Returns on Equity = | 9.37% - 9.94%   |

2001 Leverage Formula (Recommended)

|                              |                 |
|------------------------------|-----------------|
| Return on Common Equity =    | 9.10% + .896/ER |
| Range of Returns on Equity = | 10.00% - 11.34% |

2001 Leverage Formula (PAA Order)

|                              |                 |
|------------------------------|-----------------|
| Return on Common Equity =    | 8.54% + .588/ER |
| Range of Returns on Equity = | 9.13% - 10.01%  |

BASIC DCF EQUATION

$$P_0 = \frac{D_1}{(1+K)} + \frac{D_2}{(1+K)^2} + \frac{D_3}{(1+K)^3} + \dots + \frac{D_\infty}{(1+K)^\infty}$$

where:  $D_t$  = Dividends paid at the end of period  $t$

$K$  = Investors' required rate of return

$P_0$  = The current price of the stock this can also be written as

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t}, \text{ as } n \text{ approaches } \infty$$

Assuming constant growth in dividends and  $g < K$ , these equations reduce to

$$K = \frac{D_1}{P_0} + g$$

where  $g$  is the constant growth rate in dividends.

TWO-STAGE ANNUALLY COMPOUNDED DCF MODEL

$$P_0(1 - FC) = \frac{D_1}{(1 + K)} + \frac{D_2}{(1 + K)^2} + \dots + \frac{D_n}{(1 + K)^n} + \frac{D_n(1 + g)}{K - g} \frac{1}{(1 + K)^n}$$

Where

$P_0$  = The current stock price

$D_1, D_2, \dots, D_n$  = Expected dividends each year

FC = Flotation costs

K = Investors required rate of return

g = The constant growth rate after year n

ATTACHMENT A

COST OF EQUITY

INDEX OF GAS UTILITIES

| COMPANIES            | VALUE LINE ISSUE: Ed. 3, 6/22/01 |        |        |        |       |      |        |        |        |        |
|----------------------|----------------------------------|--------|--------|--------|-------|------|--------|--------|--------|--------|
|                      | 2001                             | 2002   | 2003   | 2004   | 2005  | EPS4 | ROE4   | GR1-4  | GR4+   | AVG-PR |
| AGL RESOURCES        | 1.08                             | 1.08   | 1.10   | 1.13   | 1.15  | 1.85 | 12.00  | 1.0212 | 1.0454 | 22.80  |
| ATMOS ENERGY         | 1.16                             | 1.20   | 1.25   | 1.30   | 1.35  | 2.60 | 17.50  | 1.0400 | 1.0841 | 21.34  |
| CASCADE NATURAL GAS  | 0.96                             | 0.96   | 0.97   | 0.99   | 1.00  | 1.90 | 14.50  | 1.0137 | 1.0687 | 20.67  |
| ENERGEN CORP.        | 0.69                             | 0.71   | 0.74   | 0.77   | 0.80  | 4.10 | 23.00  | 1.0406 | 1.1851 | 25.95  |
| LACLEDE GAS          | 1.35                             | 1.36   | 1.39   | 1.42   | 1.45  | 2.15 | 11.50  | 1.0216 | 1.0374 | 23.65  |
| NORTHWEST NAT. GAS   | 1.25                             | 1.26   | 1.27   | 1.29   | 1.30  | 2.45 | 11.00  | 1.0105 | 1.0516 | 24.65  |
| PEOPLES ENERGY       | 2.04                             | 2.08   | 2.11   | 2.13   | 2.16  | 4.05 | 12.00  | 1.0127 | 1.0560 | 38.23  |
| PIEDMONT NATURAL GAS | 1.52                             | 1.60   | 1.67   | 1.74   | 1.82  | 3.00 | 13.00  | 1.0439 | 1.0511 | 33.02  |
| SEMCO ENERGY         | 0.84                             | 0.88   | 0.92   | 0.96   | 1.00  | 1.70 | 3.50   | 1.0435 | 1.0144 | 14.92  |
| SOUTHWEST GAS        | 0.82                             | 0.84   | 0.88   | 0.92   | 0.96  | 1.75 | 8.00   | 1.0455 | 1.0361 | 23.46  |
| AGL HOLDINGS         | 1.26                             | 1.28   | 1.30   | 1.33   | 1.35  | 2.60 | 12.50  | 1.0179 | 1.0601 | 27.35  |
| AVERAGE              | 1.1791                           | 1.2045 | 1.2365 | 1.2695 | 1.304 | 2.56 | 12.591 | 1.0283 | 1.0627 | 25.097 |
|                      |                                  |        |        |        | 1.385 |      |        |        |        |        |

S&P STOCK GUIDE: SEPT. 2001 with August Stock Prices

Annual 10.81% COST OF EQUITY

Average Price less Flotation  
 \$24.34

Cash Flows

|                  |          |          |         |         |         |
|------------------|----------|----------|---------|---------|---------|
| <b>1.0876188</b> | 1.006462 | 0.933303 | 0.86561 | 0.81942 | 19.6314 |
|                  |          |          | 35      | 80      | 87      |
| 24.34391         |          |          |         |         |         |

Sources: Stock Prices/S&P Stock Guides; Dividends, EPS, ROE/Value Line, Ed. 3

Capital Asset Pricing Model Cost of Equity for  
an Average Water or Wastewater Utility

CAPM Analysis Formula

$$K = RF + \text{Beta}(\text{MR} - \text{RF})$$

$$K = \text{Investor's required rate of return}$$

$$\text{RF} = \text{Risk-free rate (Blue Chip forecast for 30-year Treasury bond)}$$

$$\text{Beta} = \text{Measure of systematic risk (Average for water utilities followed by Value Line and average for the gas index)}$$

$$\text{MR} = \text{Market return}$$

$$\text{GAS } \underline{9.08\%} = 5.74\% + .61(10.89\% - 5.74\%) + .20\%$$

**Note:** Staff estimated the market return using an annual DCF model for a large number of dividend paying stocks followed by Value Line. For July 2001 stock prices, the result was 10.79%. Staff added 10 basis points to allow for the quarterly compounding of dividends. The resulting market return is 10.89%. Staff also added 20 basis points to the CAPM result to allow for a four-percent flotation cost.

Source: Blue Chip Financial Forecasts, August 1, 2001 Value Screen CD 2.0, August 2001

**RECOMMENDED**  
 Marginal Cost of Investor Capital  
Average Water and Wastewater Utility

Recommended:  $9.10 + 0.896/ER$

Range: 10.00% to 11.34%

| <u>Capital Component</u> | <u>Ratio</u>  | <u>Marginal Cost Rate</u> | <u>Weighted Marginal Cost Rate</u> |
|--------------------------|---------------|---------------------------|------------------------------------|
| Common Equity            | 42.79% *      | 11.20%                    | 4.79%                              |
| Total Debt               | <u>57.21%</u> | 9.10% **                  | <u>5.21%</u>                       |
|                          | 100.0%        |                           | 10.00%                             |

A 40% equity ratio is the floor for calculating the required return on common equity. The return on equity at a 40% equity ratio is

$$9.10\% + .896/.40 = 11.34\%.$$

Marginal Cost of Investor Capital  
Average Water & Wastewater Utility at 40% Equity Ratio

| <u>Capital Component</u> | <u>Ratio</u>  | <u>Marginal Cost Rate</u> | <u>Weighted Marginal Cost Rate</u> |
|--------------------------|---------------|---------------------------|------------------------------------|
| Common Equity            | 40.00%        | 11.34%                    | 4.54%                              |
| Total Debt               | <u>60.00%</u> | 9.10% **                  | <u>5.46%</u>                       |
|                          | 100.0%        |                           | 10.00%                             |

Where: ER = Equity Ratio = Common Equity / (Common Equity + Preferred Equity + Long-Term Debt + Short-Term Debt)

\* Average of average gas index equity ratios.

\*\* Baa rate for August 2001 plus a 50 basis point private placement premium plus 50 basis point small-utility risk premium.

Source: Moody's Credit Perspectives

ATTACHMENT A

GAS INDEX STATISTICS

| Company Name            | Percent<br>Non-utility<br>Revenue (1) | Sales to<br>Net Plant<br>Ratio (2) | Beta (3) | S & P<br>Bond<br>Rating (4) | Annual<br>Revenue (5)<br>Millions \$ | Equity<br>Ratio (6) for 2000(7) | Achieved<br>ROE |
|-------------------------|---------------------------------------|------------------------------------|----------|-----------------------------|--------------------------------------|---------------------------------|-----------------|
| AGL Resources           | 1%                                    | 0.37                               | 0.60     | A-                          | \$607.40                             | 33.60%                          | 11.50%          |
| Atmos Energy            | 4%                                    | 0.87                               | 0.55     | A-                          | 850.15                               | 58.06%                          | 8.20%           |
| Cascade Natural Gas     | 0%                                    | 0.85                               | 0.55     | BBB+                        | 241.94                               | 44.76%                          | 12.90%          |
| Energen Corp.           | 19%                                   | 0.61                               | 0.75     | A-                          | 555.60                               | 43.88%                          | 13.80%          |
| Laclede Gas             | 11%                                   | 0.98                               | 0.50     | AA-                         | 566.13                               | 44.32%                          | 9.10%           |
| Northwest Nat. Gas      | 1%                                    | 0.57                               | 0.60     | A                           | 532.11                               | 49.45%                          | 10.00%          |
| Peoples Energy          | 16%                                   | 0.86                               | 0.70     | A+                          | 1,417.53                             | 40.85%                          | 12.40%          |
| Piedmont Natural<br>Gas | 0%                                    | 0.77                               | 0.60     | A                           | 830.38                               | 53.83%                          | 12.10%          |
| SEMCO Energy            | 16%                                   | 0.83                               | 0.65     | BBB                         | 422.59                               | 20.35%                          | 12.30%          |
| Southwest Gas           | 5%                                    | 0.61                               | 0.65     | BBB-                        | 1,034.09                             | 33.39%                          | 7.20%           |
| WGL Holdings Inc.       | 22%                                   | 0.71                               | 0.60     | AA-                         | 1,031.10                             | 48.15%                          | 11.70%          |
| AVERAGE                 | 9%                                    | 0.73                               | 0.61     | A-                          | 735.37                               | 42.79%                          | 11.02%          |

- (1) From 1st Quarter 2001 10-Q's
- (2) From Value Screen July 2001 Disk
- (3) From Value Screen July 2001 Disk
- (4) From Standard & Poor's Ratings Direct Website
- (5) From Value Screen July 2001 Disk
- (6) From 1st Quarter 2001 10-Q's
- (7) Value Line Investment Survey, Ed. 3, June 22, 2001

**BREAKDOWN OF WATER AND WASTEWATER SYSTEMS BY REVENUE**

As of December 31, 2000

|   | Number of<br>Systems |
|---|----------------------|
| Water Systems With<br>Less than \$200K Revenue            | 97                   |
| Water Systems With<br>\$200K to \$1,000,000 in Revenue    | 42                   |
| Water Systems With<br>\$1,000,000 or More in Revenue      | 9                    |
| <b>TOTAL</b>  | <b>148</b>           |
|   |                      |
| Wastewater Systems<br>With Less than \$200K Revenue       | 73                   |
| Wastewater Systems<br>\$200K to \$1,000,000 in Revenue    | 36                   |
| Wastewater Systems<br>With \$1,000,000 or More in Revenue | 9                    |
| <b>TOTAL</b>  | <b>118</b>           |

SOURCE: PSC Annual Reports for 2000

**Comparison of 2000 Profitability for Water Systems**

Water Systems by Revenue Class

|                         | Over \$1 Million          | \$200 K to \$1 Million | Under \$200 K | \$200 K to \$1 Million       | Under \$200 K |
|-------------------------|---------------------------|------------------------|---------------|------------------------------|---------------|
|                         | <u>With Common Equity</u> |                        |               | <u>Without Common Equity</u> |               |
| Number of Systems       | 9                         | 28                     | 56            | 14                           | 41            |
|                         | <u>Achieved ROE</u>       |                        |               | <u>Achieved ROR</u>          |               |
| Average                 | 18.14%                    | -106.07%               | -15.44%       | -0.83%                       | -27.64%       |
| Median                  | 12.04%                    | 0.50%                  | -2.30%        | 8.06%                        | -10.20%       |
| Range                   | 7.37%                     | -3076.74%              | -<br>392.84%  | -81.81%                      | -460.74%      |
|                         | to<br>59.92%              | to<br>359.54%          | to<br>486.96% | to<br>18.52%                 | to<br>225.92% |
| Number Above 12% ROE    | 5                         | 5                      | 12            | --                           | --            |
| Number Reporting Losses | 0                         | 14                     | 32            | 4                            | 28            |
| Number Above 10% ROR    |                           |                        |               | 1                            | 5             |

ROR - rate of return  
 Source: PSC Annual Reports for 2000

**Comparison of 2000 Profitability for Wastewater Systems**

Wastewater Systems by Revenue Class

|                       | Over \$1<br>Million       | \$200 K to \$1<br>Million | Under \$200 K            | Over \$1<br>Million          | \$200 K to<br>\$1 Million | Under \$200 K            |
|-----------------------|---------------------------|---------------------------|--------------------------|------------------------------|---------------------------|--------------------------|
|                       | <u>With Common Equity</u> |                           |                          | <u>Without Common Equity</u> |                           |                          |
| # of<br>Systems       | 6                         | 28                        | 43                       | 3                            | 8                         | 30                       |
|                       | <u>Achieved ROE</u>       |                           |                          | <u>Achieved ROR</u>          |                           |                          |
| Average               | 5.67%                     | -6.45%                    | -34.59%                  | 7.53%                        | 4.68%                     | -12.81%                  |
| Median                | 8.30%                     | 2.77%                     | -5.25%                   | 7.13%                        | 5.62%                     | -3.87%                   |
| Range                 | -32.52%<br>to<br>35.56%   | -234.46%<br>to<br>96.64%  | -360.57%<br>to<br>28.44% | 5.85%<br>to<br>9.61%         | -3.73%<br>to<br>9.82%     | -148.99%<br>to<br>55.53% |
| # Above<br>12% ROE    | 2                         | 4                         | 2                        | --                           | --                        | --                       |
| # Reporting<br>Losses | 1                         | 12                        | 33                       | 0                            | 1                         | 19                       |
| # Above<br>10% ROR    |                           |                           |                          | 0                            | 0                         | 5                        |

ROR - rate of return

Source: PSC Annual Reports for 2000

ATTACHMENT B

Comparison of 2000 Revenue for Gas Companies and WAW Systems

| <u>Gas Systems</u> |                           | <u>Water Systems &amp; Revenue</u>      |                        |                  |
|--------------------|---------------------------|---|------------------------|------------------|
|                    | Florida Gas Utilities (1) | Over \$1 Million                        | \$200 K to \$1 Million | Less Than \$200K |
| Number of Systems  | 8                         | 9                                       | 42                     | 97               |
| <u>Revenue</u>     |                           |   |                        |                  |
| Average            | \$26,024,627              | \$5,785,778                             | \$412,511              | \$67,644         |
| Median             | 5,569,149                 | 2,316,526                               | 325,606                | 54,052           |
| Range              | 259,935 to 145,147,000    | 1,089,043 to 26,199,153                 | 202,277 to 913,740     | 2,005 to 188,806 |
| <u>Gas Systems</u> |                           | <u>Wastewater Systems &amp; Revenue</u> |                        |                  |
|                    | Florida Gas Utilities (1) | Over \$1 Million                        | \$200 K to \$1 Million | Less Than \$200K |
| Number of Systems  | 8                         | 9                                       | 36                     | 73               |
| <u>Revenue</u>     |                           |   |                        |                  |
| Average            | \$26,024,627              | \$6,057,937                             | \$458,717              | \$71,541         |
| Median             | 5,569,149                 | 2,949,128                               | 417,356                | 53,981           |
| Range              | 259,935 to 145,147,000    | 1,027,439 to 20,531,114                 | 213,864 to 907,909     | 4,274 to 199,073 |

(1) Net Revenue

Source: PSC Annual Reports for 2000 & Dec. 2000 Surveillance Reports