

State of Florida



Public Service Commission

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-M-E-M-O-R-A-N-D-U-M-

DATE: December 4, 2008

TO: Office of Commission Clerk (Cole)

FROM: Division of Economic Regulation (Springer, Bulecza-Banks, Livingston, Maurey)
Office of the General Counsel (Hartman)

RE: Docket No. 080006-WS – Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.

AGENDA: 12/16/08 – Regular Agenda – Post-Hearing Decision – Participation is Limited to Commissioners and Staff

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: Argenziano

CRITICAL DATES: 12/31/08 (Per Statute, Order must be issued by December 31, 2008)

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\PSC\ECR\WP\080006.RCM.DOC

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Case Background

Section 367.081(4)(f), Florida Statutes (F.S.), authorizes this Commission to establish, not less than once each year, a leverage formula to calculate a reasonable range of returns on equity (ROE) for water and wastewater (WAW) utilities. In Docket No. 070006-WS, the Commission established the current leverage formula by Order No. PSC-07-0472-PAA-WS.¹

On May 8, 2008, staff filed a recommendation asking the Commission to approve the recommended 2008 leverage formula. At the May 20 Agenda Conference, after hearing from staff and from counsel of the Office of Public Counsel (OPC) and Utilities, Inc. (UI), the Commission decided that it would be appropriate and administratively efficient to set the establishment of the 2008 leverage formula for WAW utilities directly for hearing.

A prehearing conference was held October 13, 2008, and Prehearing Order No. PSC-08-0702-PHO-WS was issued on October 21, 2008. The formal hearing was held on October 23, 2008. OPC and UI sponsored witnesses and participated at the hearing.

This recommendation addresses the issues and evidence presented at the October 23, 2008 hearing.

The Commission has jurisdiction pursuant to Section 367.081, Florida Statutes.

¹ Order No. PSC-07-472-PAA-WS, issued June 1, 2007, was consummated and made final by Order No. PSC-07-0526-CO-WS, issued June 25, 2007.

Discussion of Issues

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

Recommendation: The most appropriate models to estimate a fair and reasonable return on common equity capital for a WAW utility for inclusion in the leverage formula are the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM). (Livingston)

Position of the Parties

OPC: A two-stage DCF model and a CAPM model based on the actual long-term relationship between inflation and the earned risk premium is an appropriate method to estimate a fair and reasonable return on a water and wastewater (WAW) utility's common equity capital.

Utilities Inc.: The Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM) as applied by the PSC Staff in current leverage formula are the most appropriate models or methods to estimate a fair and reasonable return on a water and wastewater (WAW) utility's common equity capital.

Staff Analysis: Witness James A. Rothschild, testifying on behalf of the OPC, employed two cost of capital models in his analysis. He applied the DCF model to the natural gas index set forth by the Commission in Order No. PSC-01-2514-FOF-WS (2001 Order).² (TR 92-93, EXH 5) A hearing was last held by the Commission on its WAW ROE leverage formula methodology in 2001. Each year since the 2001 Order, staff has updated the WAW ROE leverage formula for current financial information. (EXH 2) Witness Rothschild applied a modified version of the CAPM to ten groups of companies selected from the Ibbotson Associates 2008 Yearbook. (TR 78, 81) The results of these analyses and the application of his professional judgment led the witness to suggest revisions to the DCF and CAPM methods used by staff in its recommendation filed May 8, 2008. (TR 41, EXH 2)

Although witness Rothschild has some differences of opinion regarding certain inputs to the DCF and CAPM methods used by staff, those differences do not extend to the use of the DCF and CAPM as appropriate financial models, nor do the differences extend to the use of the comparative group of gas companies for his analyses. (OPC BR 4, TR 37-39, 155) Witness Rothschild agrees with the use of a DCF model applied to the natural gas index as set forth in the 2001 Order. (TR 38)

Witness Pauline M. Ahern, appearing on behalf of UI, testifies that the results of the leverage formula included in staff's May 8, 2008 recommendation are reasonable for establishing a return on equity for WAW utilities in Florida. (UI BR 2, TR 24, EXH 2) Witness Ahern determined the appropriateness of the allowed return on common equity incorporated in staff's May 2008 recommendation by applying four cost of capital models. She applied the DCF

² Order No. PSC-01-2514-FOF-WS, issued December 24, 2001, in Docket No. 010006-WS, In re: 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.

model, CAPM, Risk Premium Model, and the Comparable Earnings Model to the market data of a proxy group of AUS Utility Reports water companies as well as the companies in the natural gas proxy group. (TR 168, EXH 2, EXH 42)

Witness Ahern does not agree with the modifications to the application of the DCF model recommended by witness Rothschild. (TR 193-195) She believes his recommended changes to the inputs to the DCF and CAPM would inappropriately understate the required return on equity for WAW utilities in Florida. (TR 194-200)

Both witnesses agree that the DCF model is an appropriate model for estimating a fair and reasonable return on a WAW utility's common equity capital. (TR 24, 89) Both witnesses also agree that the CAPM is an appropriate model for estimating a fair and reasonable return on a WAW utility's common equity capital. (TR 24, 78) Witness Ahern testifies the models used in the Commission's current leverage formula methodology are fair and reasonable. (TR 24) While witness Rothschild agrees that the DCF model and CAPM should be used to estimate return, he suggests certain modifications be made to the Commission's application of the CAPM. (TR 37-39)

Witness Rothschild opposes the use of analyst forecasts of growth rates in the DCF model used to calculate the risk premium input for the CAPM. (TR 39) Witness Ahern disagrees, claiming that witness Rothschild provides no basis for this assertion. (TR 183) Witness Ahern calculated risk premium cost rates using both versions of the DCF model. (TR 183) This analysis concluded that the difference in the average common equity cost rate as well as the median equity cost rate for the two models was .05%. (TR 183, EXH 26) In addition, the results of both models were lower than witness Rothschild's DCF model results as shown on Exhibit 5, page 1. (TR 183, EXH 2, EXH 5)

Based on an analysis of this issue and review of the witnesses' testimonies, staff recommends that the DCF and CAPM models continue to be the most appropriate methods to estimate the return on common equity capital for WAW utilities in Florida. (TR 61-63, 75) Therefore, based on the record in this proceeding, staff recommends that the most appropriate models to estimate a fair and reasonable return for a WAW utility for inclusion in the leverage formula are the DCF model and the CAPM.

Issue 1A: Should the leverage formula methodology take into account an individual utility's equity ratio in the determination of return on equity?

Recommendation: Yes. (Livingston)

Position of the Parties

OPC: Yes.

Utilities Inc.: Yes. The leverage formula methodology should take into account an individual utility's common equity ratio in the determination of the rate of return on common equity, providing that the individual utility's common equity ratio is reasonable and appropriate for ratemaking purposes.

Staff Analysis: OPC and UI both agree that the leverage formula should take into account an individual utility's equity ratio in the determination of return on equity (ROE). (OPC BR 11, UI BR 9-10) Historically, the Commission's WAW ROE leverage formula has specifically adjusted the cost of equity consistent with a utility's capital structure. (TR 120) Staff agrees with the position of the parties on this issue and recommends the leverage formula methodology continue to take into account an individual utility's equity ratio in the determination of return on equity.

Issue 1B: Should the leverage formula methodology take into account the change to the cost of debt in response to changes in the level of common equity in a utility's capital structure?

Recommendation: No. (Springer)

Position of the Parties

OPC: Yes. This is not only consistent with the same Modigliani & Miller principle that is the basis for the leverage formula, but the relationship between capital structure and cost of debt is confirmed by the actual data associated with the comparative group of companies.

Utilities Inc.: No, it is not necessary to change the cost of debt in response to changes in the level of common equity in a utility's capital structure.

Staff Analysis: OPC witness Rothschild testifies that the leverage formula methodology should take into account the change to the cost of debt in response to changes in the level of common equity in a utility's capital structure. (TR 49-50) He believes that, when computing the overall cost of capital for a particular company, both the cost of equity derived from the leverage formula that is consistent with the subject company's capital structure and the actual embedded cost of debt of the subject company must be used. (OPC BR 12) Witness Rothschild argues that the work done by Modigliani and Miller is generally regarded as the breakthrough work on the relationship between capital structure and cost of capital, and that this work forms the basis for the leverage formula used by the Commission.³ (TR 50, 219-220) Witness Rothschild argues that Modigliani and Miller showed that, if it were not for income taxes and bankruptcy risk, the capital structure selected by a company would have no impact on the overall cost of capital. (TR 50) Witness Rothschild believes that the cost of debt must vary in response to changes in the level of common equity in a utility's capital structure since the overall cost of capital remains constant over different capital structures and the cost of equity varies depending on the equity ratio. (TR 221) He asserts that the relationship between bond ratings and capital structure for the natural gas index shows that the cost of debt does vary in relation to the equity ratio. (EXH 8)

Rather than merely assign the same cost of capital to all WAW utilities, witness Rothschild notes the concept behind the leverage formula begins by recognizing that each utility uses a different capital structure. (TR 220) He believes that, because utilities use different capital structures, even if the overall cost of capital were the same from company to company, the cost of equity would change due to variations in the capital structures used. (TR 220-221) In other words, the witness believes two WAW companies that have the same business risk will have different financial risk if they use different capital structures. (TR 221) He states that the Modigliani and Miller principle tells us that as the percentage of common equity goes up, financial risk goes down, which causes both the cost of debt and the cost of equity to go down. (TR 221) Witness Rothschild argues that the expectation of the lower cost of debt must be

³ Franco Modigliani and Merton Miller, professors at the Graduate School of Industrial Administration at the Carnegie Mellon University, in 1958 developed the theorem that forms the basis for modern thinking on capital structure. The basic theorem states that, in the absence of taxes, bankruptcy costs, asymmetric information, and an inefficient market, the value of a firm is unaffected by the mix of capital used to finance its operations. (EXH 9)

modeled into the determination of the leverage formula for it to produce a correct answer. (TR 225-226)

UI witness Ahern testifies that holding the debt cost rate constant for purposes of deriving the WAW ROE leverage formula is reasonable for two reasons. (TR 175) First, she states that the revenue requirement formula ensures that the regulated utility will receive sufficient earnings to compensate for the expenses it incurs to service both its debt and equity obligations. (TR 174) Witness Ahern adds that, in the ratemaking process, the embedded cost of debt is utilized in the calculation of the overall rate of return. (TR 211-212) In addition, she states that the cost of debt is a function of many factors. (TR 175) The bond rating process itself indicates that bond ratings are not simply and exclusively a function of debt ratios, especially historical or point in time debt ratios. (TR 176)

Witness Ahern testifies that the current leverage formula assumes that if Florida WAW utilities had bonds which were rated, they would be rated Baa3 by Moody's, which is equivalent to a BBB- by Standard & Poor's (S&P). (UI BR 10, TR 177) She notes the bond rating process is comprehensive, both qualitative and quantitative, and does not focus exclusively on the debt ratio. (TR 177) Witness Ahern explains that the business risk/financial risk matrix indicates that utilities with a BBB- rating and a weak business risk profile would likely have a modest financial risk profile, and those with a strong business risk profile would likely have an aggressive financial risk profile. (TR 177) The range of financial risk indicative ratios published by S&P are shown on page 12 of Exhibit 23. (TR 177, EXH 23) The total debt to total capital indicative ratios for utilities with a modest financial risk profile range from 25 percent to 40 percent, while those with an aggressive financial risk profile range from 45 percent to 60 percent. (TR 177) Witness Ahern asserts that utilities with BBB- bond ratings by S&P (and Baa3 by Moody's) could have debt ratios ranging from 25 percent to 60 percent and still maintain the BBB- (Baa3) bond rating. (TR 177) Based on this review, witness Ahern concluded it was not necessary to allow the cost rate of debt to vary in the derivation of the Commission's WAW ROE leverage formula. (TR 177)

Staff agrees with witness Ahern that it is not necessary to allow the cost rate for debt to vary in the derivation of the leverage formula. (TR 175) Both witnesses agree the primary purpose of the Commission's WAW ROE leverage formula is to provide an easily applied mechanism to avoid the expense and burden of hiring expert cost of capital witnesses for each WAW proceeding. (TR 142, TR 204-205) In addition to the reasons offered by witness Ahern for why such an adjustment is not necessary, from a practical standpoint, staff believes it would be administratively burdensome to recalibrate the WAW ROE leverage formula each time it is used. For these reasons, staff does not believe it is necessary to vary the cost rate of debt in the derivation of the Commission's WAW ROE leverage formula.

Issue 1C: Should the determination of the leverage formula be based on a before-tax or after-tax cost of capital?

Recommendation: The determination of the leverage formula should be based on an after-tax cost of capital. (Springer)

Position of the Parties

OPC: The determination of the leverage formula should be based on a before-tax cost of capital. This will provide the cost of equity as experienced by equity investors.

Utilities Inc.: The determination of the leverage formula should be based upon an after-income tax overall cost of capital. To do otherwise assumes that the revenue cost of capital is identical over an equity ratio range of 40% to 100% which is not at all the case.

Staff Analysis: OPC witness Rothschild testifies that the determination of the leverage formula should be based on a before-tax cost of capital. In his opinion, this will provide the cost of equity as experienced by equity investors. (TR 52) Witness Rothschild states that it is important that the Commission use the before-tax cost of capital so customers are not harmed by excessive use of equity in the capital structure of WAW utilities in Florida. (TR 51-52) He states that, if the goal of the Commission is to compute the cost of equity as experienced by equity investors, the overall cost of capital that should be held constant is the one determined prior to consideration of income taxes. (TR 51) He asserts that, since a utility is only entitled to recover prudently incurred costs, absent a showing of why a particular company cannot finance its rate base with a reasonable amount of debt, a company is only entitled to charge ratepayers for a leverage formula-determined cost of capital that considers the real world impact of taxes. (TR 52) Witness Rothschild believes that, if there is a utility with a special situation that could explain why it is appropriate for it to use an excessively high level of common equity in its capital structure, it could ask the Commission to give it a return in excess of the amount determined by the leverage formula. (TR 52) Without such a showing, it would be inappropriate to charge ratepayers the higher cost of an inherently inefficient capital structure. (TR 53)

Witness Rothschild contends that, if the Commission does not use the before-tax cost of capital, the leverage formula would fail to include the effect of income taxes. (OPC BR 14, TR 151-152) He believes the version of the formula that fails to include the effect of income taxes would not make the capital structure selected indifferent to ratepayers. (TR 55) According to his reading of Modigliani and Miller's paper, there is an optimal capital structure when income taxes are taken into account. (TR 151) If a company uses too much or too little equity, inefficiency is produced. (TR 151)

Witness Rothschild believes that regulation should be a substitute for competition. (OPC BR 15, TR 153) He asserts that if a company uses an inefficient capital structure and its competition is using an efficient capital structure, the one using the inefficient capital structure will earn a lower return. (TR 153) It is witness Rothschild's opinion that using a before-tax cost of capital in the leverage formula provides this result, and that the use of an after-tax cost of capital will not. (TR 51-52)

UI witness Ahern testifies that the determination of the leverage formula should be based on an after income tax overall cost of capital. (TR 177-178) She states that to do otherwise assumes the revenue cost of capital is identical over an equity ratio range of 40 percent to 100 percent, which is not the case. (TR 177-178) Witness Ahern agrees with witness Rothschild's summation of Modigliani and Miller's principle, stating that "Modigliani and Miller showed that if it were not for income taxes and bankruptcy risk, the capital structure selected by a company would have no impact on the overall cost of capital." (UI BR 12-13) However, by holding the before income tax overall cost of capital constant, witness Ahern testifies that witness Rothschild's recommendation results in the exact opposite, and that differing amounts of debt and equity in the capital structure have absolutely no impact on the revenue cost of capital. (UI BR 11, TR 178) This led witness Ahern to recommend the Commission reject witness Rothschild's proposal that the before income tax overall cost of capital be held constant in the leverage formula. (UI BR 13, TR 179)

Staff believes witness Rothschild has an incomplete understanding of Modigliani and Miller's work in this area. (TR 179-180) While it is true the 1958 paper by Modigliani and Miller that first put forth the principle upon which the Commission leverage formula is based was done so without consideration of taxes, Modigliani and Miller published a number of follow-up papers discussing this principle. (EXH 9) Their continued work in this area showed that when corporate and personal taxes are considered, the results lead to the same conclusions Modigliani and Miller reached in their earlier paper. (EXH 9) Since the results are the same with or without consideration of taxes, it is not necessary to explicitly consider taxes when determining the relationship between financial leverage and the cost of equity.

In addition to the infirmities witness Ahern identified in the application of witness Rothschild's recommended leverage formula, she also correctly notes that his recommendation on this issue would result in a constant revenue cost of capital over the 40 to 100 percent equity ratio range. (TR 180-181) Staff believes that not only is this outcome inappropriate for the reasons outlined in witness Ahern's testimony and discussed above, this exact same argument was considered and rejected by the Commission in Order No. 19718 when raised by witness Rothschild in the 1988 hearing on the Commission's WAW ROE leverage formula.⁴ (TR 177-180)

Finally, while witness Rothschild does raise a valid concern regarding the impact a high equity ratio has on a company's cost capital, his argument is off point in the instant case. (TR 51-52) There are examples of utilities in other industries regulated by this Commission that have the same ROE but have different equity ratios.⁵ The companies with the higher equity ratios have higher costs of capital by operation of math and these higher costs are recovered from their

⁴ Order No. 19718, issued July 26, 1988, in Docket No. 880006-WS, In re: Establishment of Authorized Range of Return on Common Equity for water and sewer utilities Pursuant to Section 367.081(4)(f), Florida Statutes.

⁵ Order No. PSC-0902-S-EI, issued September 14, 2005, in Docket No. 050045-EI, In re: Petition for rate increase by Florida Power & Light Company, Order No. PSC-05-0945-S-EI, issued September 28, 2005, in Docket No. 050078-EI, In re: Petition for rate increase by Progress Energy Florida, Inc., Order No. PSC-02-0787-FOF-EI, issued June 10, 2002, in Docket No. 010949-EI, In re: Request for rate increase by Gulf Power Company, and Order No. PSC-95-0580-AS-EI, issued May 10, 1995, in Docket No. 950379-EI, In re: Investigation into the earnings for 1995 and 1996 of Tampa Electric Company.

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respective customers. However, the WAW ROE leverage formula specifically adjusts the cost of equity based on the financial leverage of the subject company. (TR 120) Therefore, the issue witness Rothschild raised about recovering the cost resulting from an inefficient capital structure from a utility's customers is unwarranted with respect to WAW utilities in Florida.

For the foregoing reasons, staff recommends the determination of the leverage formula continue to be based on an after-tax cost of capital.

Issue 1D: Is it appropriate to make a Bond Yield Differential adjustment? If so, how should this adjustment be made?

Recommendation: Yes. Staff recommends the Commission continue to make a bond yield differential adjustment as reflected in Attachment A to this recommendation. (Springer)

Position of the Parties

OPC: No. The cost of debt increases when a company uses a higher proportion of debt. This higher interest expense is exactly the same factor that causes an increase in the risk experienced by the equity holders, which is what the leverage already formula measures. The adjustment is therefore a double-count.

Utilities Inc.: Yes. The bond yield differential reflected in the debt cost rate in the leverage formula compensates bondholders for the riskiness of a Baa3 rated public utility bond relative to that inherent in an A rated public utility bond. It does not compensate the common equity shareholders for the added relative risk.

Staff Analysis: OPC witness Rothschild testifies that when a utility issues a bond, the bond yield or interest expense the utility must pay on the bond is related to the risk bond investors perceive to be associated with the bond. (OPC BR 15, TR 57) He also states that, while numerous factors contribute to the determination of a bond rating, important factors such as the coverage ratio and internal cash generation are influenced by the capital structure, i.e. the degree of financial leverage used by a utility. (TR 57) Witness Rothschild believes that interest expense increases when a company increases the percentage of total debt financing in its capital structure. (TR 58) In addition, he argues that because of higher interest expense and fewer dollars of equity, both the income available to equity and the associated income taxes decrease. (TR 58) This leads witness Rothschild to believe that higher interest expense, lower income available to common shareholders, and lower income taxes all result in a lower coverage ratio. (TR 58) It is witness Rothschild's opinion that this increase in risk experienced by equity holders is the same risk measured by the leverage formula. (TR 58) Therefore, he concludes that adding a factor for the anticipated higher cost of debt is a double-count. (TR 58)

Witness Rothschild claims Exhibit 11, page 2 of 2, shows that when there is a lower amount of equity in the capital structure of the natural gas index, the bond rating of the company is lower. (OPC BR 16, EXH 11) This leads him to believe that no additional bond yield differential should be made because increased risk from a higher proportion of debt in the capital structure is already reflected in the bond rating of the company. (EXH 11)

UI witness Ahern testifies that it is appropriate to include a bond yield differential adjustment in the cost of common equity calculation in the leverage formula because the bond yield differential reflected in the debt cost rate only compensates bond holders for the increased riskiness inherent in Baa3 public utility bonds relative to the riskiness inherent in A rated public utility bonds. (UI BR 13-14, TR 184) She believes it is neither necessary nor appropriate to change the debt cost rate as common equity ratios change. (TR 184) Therefore, witness Ahern believes that there is no mechanism in the leverage formula to compensate common equity

holders for their increased risk exposure for investing in the common equity of utilities with Baa3 rated bonds. (UI BR 14, TR 184)

Staff agrees with witness Ahern that it is appropriate to make a bond yield differential adjustment in the derivation of the Commission's WAW ROE leverage formula. (TR 184) The average bond rating for the natural gas index is A. (TR 145, EXH 11) The assumed bond rating for the average WAW utility in Florida is Baa3. (TR 177) By failing to appropriately recognize this incremental difference in risk between the companies in the natural gas index and the average WAW utility in Florida, witness Rothschild's recommended leverage formula produces results that understate the required return for these utilities. (TR 184, TR 145-146) For these reasons, staff recommends the Commission continue to make a bond yield differential adjustment as reflected in Attachment A to this recommendation.

Issue 1E: Is it appropriate to make a Private Placement Premium adjustment? If so, how should this adjustment be made?

Recommendation: Yes. Staff recommends the Commission continue to make a Private Placement Premium adjustment of 50 basis points as reflected in Attachment A to this recommendation. (Springer)

Position of the Parties

OPC: It is not appropriate to make a private placement premium adjustment. Borrowers self-select their debt issuance choice to minimize financing costs, so there is no premium paid for private placement.

Utilities Inc.: Yes. It is appropriate to make a Private Placement Premium adjustment because investors in such debt demand compensation for the lack of liquidity relative to large, readily saleable public traded debt. The adjustment should be made in a manner identical to that in the current leverage formula.

Staff Analysis: OPC witness Rothschild testifies that there are a sufficient number of investors, such as retirement funds and life insurance companies, that plan to hold an investment to maturity and have no reason to expect a private placement premium. (OPC BR 16, TR 59) Witness Rothschild states that he attempted to find studies that evaluated the cost difference between private placement and public placement debt. (TR 59) The only study he said he was able to find was a working paper entitled “Financial Contracting and the Choice between Private Placement and Publicly Offered Bonds,” dated November, 2004, by Simon H. Kwan of the Economic Research Department of the Federal Reserve Bank of San Francisco and Willard T. Carleton of the Department of Finance at the University of Arizona. (TR 59) The authors concluded:

Finally, we find evidence that borrowers self-select their debt issuance choice to minimize financing costs. However, switchers that issue debt in both markets do not realize significant cost savings by issuing bonds in the private market. (TR 59)

Witness Rothschild believes this shows that the private placement alternative is selected when the borrower perceives an opportunity to experience a lower cost of debt rather than as a mechanism for higher cost. (TR 59-60)

UI witness Ahern testifies that it is appropriate to include a private placement premium in the cost of common equity calculation in the leverage formula because investors demand compensation for the lack of liquidity experienced with this type of debt relative to large, readily saleable publicly traded debt. (UI BR 14-15, TR 186) She states that privately placed debt is typically held to maturity and does not, by definition, have a public market in which it is traded. (TR 186) This leads witness Ahern to believe that holders of privately placed debt require a higher return than holders of publicly held debt, and that this higher return premium must be reflected in the common equity cost rate. (UI BR 15, TR 186)

Staff agrees with witness Rothschild that companies that have access to both publicly and privately placed debt may not realize significant cost savings between the two forms of financing. (TR 59) However, witness Rothschild failed to demonstrate that the average Florida WAW utility is capable of accessing both public and private financing. (TR 109) Witness Rothschild, when asked whether he could identify any WAW utility under the Commission's jurisdiction that has issued equity through private placement, stated that he had not studied the issue. (TR 109) He also admitted that he did not specifically study the small WAW utilities in Florida to which the leverage formula is legislatively mandated to apply. (TR 109) In addition, staff believes that the average WAW utility in Florida does not have access to public financing. (TR 145-146) The fact that an average WAW utility in Florida cannot access public financing justifies the inclusion of a private placement premium adjustment to compensate for the lack of liquidity and the higher cost of financing of privately placed debt. (TR 186) For these reasons, staff recommends the Commission continue to make a Private Placement Premium adjustment of 50 basis points as reflected in Attachment A to this recommendation.

Issue 1F: Is it appropriate to make a Small-Utility Risk Premium adjustment? If so, how should this adjustment be made?

Recommendation: Yes. Staff recommends it is appropriate for the Commission to continue to include a small utility risk premium of 50 basis points in the cost of common equity calculation in the leverage formula as reflected in Attachment A to this recommendation. (Springer)

Position of the Parties

OPC: No. First, not all companies to which the leverage formula could be applied are small. Second, financial theory explains why there shouldn't be a small company premium, and empirical review of financial data shows that financial theory is correct: there is no small company premium.

Utilities Inc.: Yes. Size is a factor which affects business risk and must be reflected in the common equity cost rate. Since the WAW utilities operating in Florida are all significantly smaller than the companies comprising the Natural Gas Index used to calculate the leverage formula, they are relatively more risky.

Staff Analysis: OPC witness Rothschild testifies that investors only demand compensation for the risk a company has in relation to the overall market. (OPC BR 17, TR 60) He believes the information reported in Exhibit 6 proves that small companies have provided higher returns since 1926, but these returns can be explained by higher betas of the companies. (TR 60, EXH 6) The exhibit displays 10 groups of companies grouped according to size. (EXH 6) Witness Rothschild states the data indicates that if a small company has a lower beta it would also have a lower expected return, and this proves there is no reason for a small company to require a higher return due to its size. (TR 60)

Witness Rothschild testifies that risks typically faced by small firms would not be replicated for a regulated public utility. (OPC BR 18, TR 248) He believes an unregulated, small firm is more likely to have one or only a few key products that could be subject to obsolescence or vulnerable to attack from a larger, more powerful competitor. (TR 248) However, witness Rothschild also argues that regulated WAW utilities should not fear competition because they have the protection of territorial monopolies, and they have products with no chance of becoming obsolete. (TR 248) For these reasons, he believes there is no small company premium. (TR 60)

UI witness Ahern testifies that it is appropriate to include the small-utility risk premium in the cost of common equity calculation because size is a factor which affects business risk and must be reflected in the common equity cost rate in the leverage formula. (UI BR 16, TR 186) She states that smaller companies are less capable of coping with significant events which affect sales, revenues, and earnings. (TR 186-187) Witness Ahern argues that the loss of revenues from a few large customers, for example, would have a greater effect on a small company than on a much larger company with a larger customer base. (TR 187) She states that the average WAW utility under the Commission's jurisdiction is a small, regulated utility. (EXH 46) Witness Ahern believes the allowed overall costs of capital and fair rates of return applied to these companies must reflect the impact of their small size on the common equity cost rate. (TR

187) She testifies that size is an important factor which affects common equity cost rates and the Florida WAW utilities, including Utilities, Inc., on a consolidated basis. (TR 187) Witness Ahern states that these are significantly smaller companies than the average company in the natural gas index whose market data are utilized in the derivation of the WAW ROE leverage formula. (TR 187)

Witness Ahern testifies that a comparison of Florida WAW utilities to the natural gas index used in the leverage formula indicates a small size premium of 428 basis points or 4.28 percent. (UI BR 17, TR 188-189) This premium is based upon data contained in Chapter 7 of SBBI entitled, "Firm Size and Return." (TR 189) Based on this analysis, witness Ahern believes the 50 basis point small utility risk premium currently included in the Commission's WAW ROE leverage formula is an extremely conservative estimate of the adjustment needed to reflect the business risk differential between Utilities, Inc., the average Florida WAW utility, and the natural gas index. (TR 189-190)

With respect to large, publicly traded companies with investment grade credit ratings relative to small, publicly traded companies with investment grade credit ratings, staff agrees with witness Rothschild that it is not necessary to recognize a premium for the difference in size. (TR 60) However, with respect to large, publicly traded companies with investment grade credit ratings, relative to extremely small companies without access to the public debt or equity markets, staff agrees with witness Ahern that a small utility risk premium adjustment like the one included in the current Commission WAW ROE leverage formula is appropriate and necessary. (TR 186-187) Staff agrees with witness Ahern that the average WAW utility in Florida is significantly smaller than the average company in the natural gas index whose market data are utilized in the derivation of the WAW ROE leverage formula. As such, the loss of revenues from a few large customers would have a greater effect on a small company than on a much larger company with a larger customer base. (TR 187) For these reasons, staff recommends it is appropriate for the Commission to continue to include a small utility risk premium of 50 basis points in the cost of common equity calculation in the leverage formula as reflected in Attachment A to this recommendation.

Issue 2: Should the following leverage formula methodology be applied using updated financial data:

$$\text{Return on Common Equity} = 7.36\% + 2.123/\text{Equity Ratio}$$

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

Range 9.48% @ 100% equity to 12.67% @ 40% equity

Recommendation: No, the recommended WAW ROE leverage formula should be approved without using updated financial information. The leverage formula identified above results in a reasonable range of common equity returns for the average WAW utility in Florida and should be approved. (Livingston)

Position of the Parties

OPC: No. Instead, the leverage formula methodology proposed by Mr. Rothschild should be applied using updated financial data.

Utilities Inc.: Yes, the current leverage formula results in a reasonable range of common equity cost rate for the average WAW utility in Florida.

Staff Analysis: OPC witness Rothschild testifies that the existing leverage formula fails to consider that the cost of debt changes along with the cost of equity as capital structure changes. (TR 49-50) In addition, he believes the existing leverage formula does not recognize the real-world impact of income taxes as a critical part of capital structure selection. (OPC BR 19, TR 251-252) Finally, witness Rothschild believes the results of the DCF and CAPM analyses overstate the return on equity for WAW utilities in Florida. (OPC BR 10)

Witness Rothschild states that for the leverage formula to be appropriate, it is critical for the Commission to change the form of the leverage formula. (TR 91) Witness Rothschild recommends the following leverage formula be applied:

$$k = (\text{OCC} - D (1-\text{ER}))/\text{ER}$$

where

k = cost of equity

D = cost of debt, determined as a function of the percentage of equity in the capital structure

OCC = overall cost of capital

ER = equity ratio

(TR 40)

Witness Rothschild notes that if a utility has characteristics that make it particularly different from the average Florida WAW utility, it may make the argument that the leverage formula should not apply to it. (TR 98)

UI witness Ahern testifies that the results of the current leverage formula are reasonable for establishing a return on common equity for WAW utilities in Florida. (TR 167) She concludes that, while witness Rothschild's argument that the cost of debt varies with leverage is theoretically valid, it is not necessary to make this change to the Commission's leverage formula methodology. (TR 175) Witness Ahern believes the Commission's assumption that the debt cost rate is constant over a common equity range of 40% to 100% is reasonable. (TR 175)

Witness Ahern testifies that witness Rothschild's recommendation to base the derivation of the WAW ROE leverage formula on the before-tax cost of capital would result in a constant revenue cost of capital and therefore is inappropriate. (TR 179-180) This same argument has been previously considered and rejected by the Commission in Order No. 19718.

Witness Ahern testifies that witness Rothschild's DCF and CAPM analyses are flawed and result in returns that are inadequate for determining the required ROE for WAW utilities in Florida. (TR 168, 204) She states that because of the numerous deficiencies in these analyses, his recommended changes to the Commission's WAW ROE leverage formula should be rejected. (UI BR 1-2)

The witnesses agree the concept of a leverage formula is a creative, innovative approach to streamline rate proceedings for Florida WAW utilities. (OPC BR 19, TR 168, 251) Witness Ahern notes that approximately two-thirds of the WAW utilities in Florida reported annual revenues equal to or less than \$200,000 in 2007. (UI BR 20, EXH 46) She argues that it would be cost prohibitive for each of these utilities to hire cost of capital experts for a rate case. (UI BR 20) Witness Ahern believes these utilities represent the average WAW utility in Florida to which the leverage formula is intended to apply. (UI BR 21)

Witness Ahern testifies that the results of the leverage formula proposed by staff in its May 8, 2008 recommendation is reasonable. (TR 167, EXH 2) The results indicated by witness Rothschild's recommended leverage formula are much lower than the returns authorized for other regulated entities in Florida. (TR 54, 148-149) Therefore, staff believes it would be inappropriate to accept witness Rothschild's proposed leverage formula.

Based on this analysis, as well as staff's analysis in previous issues, staff recommends the following leverage formula methodology be applied:

$$\text{Return on Common Equity} = 7.36\% + 2.123/\text{Equity Ratio}$$

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

Range: 9.48% @ 100% equity to 12.67% @ 40% equity

Issue 3: What is the appropriate range of returns on common equity for water and wastewater (WAW) utilities pursuant to Section 367.081 (4)(f), Florida Statutes?

Recommendation: Staff recommends the following leverage formula:

$$\text{Return on Common Equity} = 7.36\% + 2.123/\text{Equity Ratio}$$

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

Range: 9.48% @ 100% equity to 12.67% @ 40% equity

In addition, staff recommends the Commission cap returns on common equity at 12.67% for all WAW utilities with equity ratios less than 40 percent to discourage imprudent financial risk. (Maurey)

Position of the Parties

OPC: The range should be calculated using the formula recommended by Mr. Rothschild. The appropriate return on equity to allow to a water or wastewater company with a common equity ratio of 40.0% is 10.53%; at an inefficient equity ratio of 100%, it is 6.52%

Utilities, Inc.: The appropriate range of the rate of return on common equity is the range proposed by the PSC Staff as outlined in Exhibit 2.

Staff Analysis: Two witnesses presented testimony in this proceeding regarding the appropriate range of returns on common equity for WAW utilities pursuant to Section 367.081(4)(f), Florida Statutes. OPC witness Rothschild recommends a number of changes to the current Commission methodology for determining the range of returns on equity for WAW utilities. (TR 33-44) He determined ROE estimates based on the DCF model and the CAPM of 9.42%-9.43% and 9.37%, respectively. (TR 75, 86) Witness Rothschild's recommended leverage formula results in a range of returns on equity of 6.52% at 100 percent equity and 10.53% at 40 percent equity. (TR 54)

UI witness Ahern testifies that the results of staff's recommended leverage formula are reasonable for establishing the ROE for WAW utilities in Florida. (TR 204; EXH 2) Although she did not recommend an ROE for purposes of this proceeding, witness Ahern did perform an analysis that indicated ROE estimates of 11.47% based on the DCF model and 12.20% based on the CAPM. (TR 208, EXH 42) Based on her analysis, witness Ahern concludes that the results of the staff recommended WAW ROW leverage formula are reasonable if not conservatively low. (TR 204-205)

The statutory principles for determining the appropriate rate of return for a regulated utility are set forth by the U.S. Supreme Court in its Hope and Bluefield decisions.⁶ These decisions define the fair and reasonable standards for determining rate of return for regulated

⁶ Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944) and Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923).

enterprises. Namely, these decisions hold that the authorized return for a public utility should be commensurate with returns on investments in other companies of comparable risk, sufficient to maintain the financial integrity of the company, and sufficient to maintain its ability to attract capital under reasonable terms. (TR 149-150, 192, 205)

Each of witness Rothschild's recommended adjustments to the Commission's methodology for determining the WAW ROE leverage formula has been discussed in detail in the previous issues. Rather than repeat those arguments and the rebuttal testimony to each adjustment offered by witness Ahern, staff will briefly summarize the primary defect in witness Rothschild's testimony and the basis for staff's recommendation in the instant issue.

While witness Rothschild correctly begins his analysis by applying generally accepted financial models to an index of regulated natural gas companies as a proxy for WAW utilities, his end result is compromised by his failure to recognize the significant difference in risk between the average company in the proxy group and the average WAW utility in Florida. (TR 92, 142, 148-154, 186-192, 244) It was repeatedly demonstrated that witness Rothschild lacks a thorough understanding of the WAW utilities under the Commission's jurisdiction that are the subject of this proceeding. (TR 94-100, 109, 144-146) The proxy group contains large companies that are all publicly traded, all have investment grade bond ratings, and all have annual revenue at or above \$1 billion. (EXH 11, EXH 47, pp. 19-20) In contrast, the group of WAW utilities under the Commission's jurisdiction is comprised of numerous small companies. (TR 94, 188) Of the 267 certificated WAW utilities under the Commission's jurisdiction, 176 or 66 percent have annual revenues less than \$200 thousand. (EXH 46) Of this same group, 247 or 88 percent have annual revenues less than \$1 million. (EXH 46) Witness Rothschild could not identify any WAW utility in Florida that has an investment grade bond rating. (TR 144-145) With the exception of Aqua America, witness Rothschild could not identify any WAW utility in Florida that has publicly traded equity. (TR 144-145) By basing his recommended leverage formula on the indicated ROE for a group of large, publicly traded natural gas companies without making any adjustment for the difference in risk between the proxy group and the average WAW utility in Florida, witness Rothschild's recommended range of returns significantly understates the required return on equity for the WAW companies under the Commission's jurisdiction. (TR 54, 148-149, 183-188)

The inadequacy of the indicated returns from witness Rothschild's recommended leverage formula is readily apparent when recent Commission decisions are considered. In Order No. PSC-08-0436-PAA-GU, the Commission approved an authorized ROE of 11.0% for St. Joe Natural Gas Company.⁷ If St. Joe's 60 percent equity ratio were plugged into witness Rothschild's recommended leverage formula, the indicated return would have been 8.46%. (TR 54) In contrast, staff's recommended leverage formula indicates an ROE of 10.9% for a utility with an equity ratio of 60 percent. (EXH 2) The staff analyses in Issues 1(B) – 1(F) discuss in detail the deficiencies in witness Rothschild's approach to developing his recommended leverage formula that cause his recommended returns to be inadequate.

⁷ Order No. PSC-08-0436-PAA-GU, issued July 8, 2008, in Docket No. 070592-GU, In re: Petition for rate increase by St. Joe Natural Gas Company, Inc.

As noted earlier, both the Hope and Bluefield decisions require regulatory commissions to authorize returns that are fair, just, and reasonable. (TR 192, 205) Witness Rothschild was unable to cite to any exceptions in either of these U.S. Supreme Court decisions that support his recommendation that this Commission approve a leverage formula that would result in authorized returns for WAW utilities that are systematically significantly less than authorized returns for other regulated companies operating in the same jurisdiction. (TR 149-150)

Based on its analysis of the cost of capital testimony presented in this case and its recommendations in the previous issues, staff recommends the Commission adopt the leverage formula specified above and presented in greater detail in Attachment A to this recommendation. Staff also recommends the Commission cap returns on common equity at 12.67% for all WAW utilities with equity ratios less than 40 percent. Staff believes this will discourage imprudent financial risk. This cap is consistent with the methodology approved in numerous previous Commission orders regarding the WAW ROE leverage formula.

Docket No. 080006-WS
Date: December 4, 2008

Issue 4: Should this docket be closed?

Recommendation: No. This docket is a perpetual docket and should not be closed until next year's docket is opened. (Hartman)

Position of the Parties

OPC: No.

Utilities Inc.: No.

Staff Analysis: This docket is a perpetual docket and should not be closed until next year's docket is opened.

State of Florida



Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: May 8, 2008

TO: Office of Commission Clerk (Cole)

FROM: Division of Economic Regulation (Springer, Maurey, Bulecza-Banks)
Office of the General Counsel (Hartman)

RE: Docket No. 080006-WS – Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.

AGENDA: 05/20/08 – Regular Agenda – Proposed Agency Action - Interested Persons May Participate

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: Argenziano

CRITICAL DATES: 12/30/08 – Pursuant to Section 367.081(4)(f), Florida Statutes

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\PSC\ECR\WP\080006.RCM.DOC

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 returns on equity (ROE) for water and wastewater (WAW) utilities. In Docket No. 070006-WS, the Commission established the current leverage formula by Order No. PSC-07-0472-PAA-WS, issued June 1, 2007.

This staff recommendation utilizes the current leverage formula methodology established in Order No. PSC-01-2514-FOF-WS, issued December 24, 2001, in Docket No. 010006-WS. Since then, the Commission has used this methodology in establishing the leverage formula.

This methodology uses returns on equity from financial models based upon an index of natural gas utilities. In establishing the methodology, the Commission found that relatively few WAW utilities have actively traded stocks. Furthermore, the available WAW utilities were heavily influenced by regulation in one state – California – and by merger activity. Therefore, the Commission has used natural gas utilities as the proxy companies for the leverage formula since 2001. There are many natural gas utilities that have actively traded stocks and forecasted financial data. Staff used natural gas utilities that derive at least 55% of their revenue from regulated rates. These utilities have market power and are influenced significantly by economic regulation. As explained in the body of this recommendation, the model results based on natural gas utilities are adjusted to reflect the risks faced by Florida WAW utilities.

The Commission has jurisdiction pursuant to Section 367.081, Florida Statutes.

Discussion of Issues

Issue 1: What is the appropriate range of returns on common equity for water and wastewater (WAW) utilities pursuant to Section 367.081(4)(f), Florida Statutes?

Recommendation: Staff recommends that the current leverage formula methodology be applied using updated financial data. Staff recommends the following leverage formula:

$$\text{Return on Common Equity} = 7.36\% + 2.123/\text{Equity Ratio}$$

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

$$\text{Range: } 9.48\% \text{ @ } 100\% \text{ equity to } 12.67\% \text{ @ } 40\% \text{ equity}$$

(Springer)

Staff Analysis: Section 367.081(4)(f), Florida Statutes, authorizes the Commission to establish a leverage formula to calculate a reasonable range of returns on equity for WAW utilities. The Commission must establish this leverage formula not less than once a year.

Staff notes that the leverage formula depends on four basic assumptions:

- 1) Business risk is similar for all WAW utilities;
- 2) The cost of equity is an exponential function of the equity ratio;
- 3) The marginal weighted average cost of investor capital is constant over the equity ratio range of 40% to 100%; and,
- 4) The debt cost rate at an assumed Moody's Baa3 bond rating, plus a 50 basis point private placement premium and a 50 basis point small utility risk premium, represents the average marginal cost of debt to a Florida WAW utility over an equity ratio range of 40% to 100%.

For these reasons, the leverage formula is assumed to be appropriate for the average Florida WAW utility.

The leverage formula relies on two ROE models. Staff adjusted the results of these models to reflect differences in risk and debt cost between the index of companies used in the models and the average Florida WAW utility. Both models include a four percent adjustment for flotation costs. The models are as follows:

- A Discounted Cash Flow (DCF) model applied to an index of natural gas utilities (NG) that have publicly traded stock and are followed by the Value Line Investment Survey (Value Line). This DCF model is an annual model and uses prospective growth rates. The index consists of 10 companies that derive at least 55% of their total revenue from

gas distribution service. These companies have a median Standard and Poor's bond rating of A.

- A Capital Asset Pricing Model (CAPM) using a market return for companies followed by Value Line, the average yield on the Treasury's long-term bonds projected by the Blue Chip Financial Forecasts, and the average beta for the index of NG utilities. The market return for the 2008 leverage formula was calculated using a quarterly DCF model.

Staff averaged the indicated returns of the above models and adjusted the result as follows:

- A bond yield differential of 39 basis points is added to reflect the difference in yields between an A/A2 rated bond, which is the median bond rating for the NG utility index, and a BBB-/Baa3 rated bond. Florida WAW utilities are assumed to be comparable to companies with the lowest investment grade bond rating, which is Baa3. This adjustment compensates for the difference between the credit quality of "A" rated debt and the credit quality of the minimum investment grade rating.
- A private placement premium of 50 basis points is added to reflect the difference in yields on publicly traded debt and privately placed debt, which is illiquid. Investors require a premium for the lack of liquidity of privately placed debt.
- A small utility risk premium of 50 basis points is added because the average Florida WAW utility is too small to qualify for privately placed debt.

After the above adjustments, the resulting cost of equity estimate is included in the average capital structure for the NG utilities. The cost of equity is determined at a 40% equity ratio and the leverage formula is derived. The derivation of the recommended leverage formula using the current methodology with updated financial data is presented in Attachment 1.

Staff recommends that the Commission cap returns on common equity at 12.67% for all water and wastewater utilities with equity ratios less than 40%. Staff believes that this will discourage imprudent financial risk. This cap is consistent with the methodology in Order No. PSC-01-2514-FOF-WS.

Issue 2: Should the Commission close this docket?

Recommendation: No. Upon expiration of the protest period, if a timely protest is not received from a substantially affected person, the decision should become final and effective upon the issuance of a Consummating Order. However, this docket should remain open to allow staff to monitor changes in capital market conditions and to readdress the reasonableness of the leverage formula as conditions warrant. (Hartman, Springer)

Staff Analysis: Upon expiration of the protest period, if a timely protest is not received from a substantially affected person, the decision should become final and effective upon the issuance of a Consummating Order. However, this docket should remain open to allow staff to monitor changes in capital market conditions and to readdress the reasonableness of the leverage formula as conditions warrant.

SUMMARY OF RESULTS

Leverage Formula Update

| | <u>Updated Results</u> | <u>Currently in Effect</u> |
|--|------------------------|----------------------------|
| (A) DCF ROE for Natural Gas Index | 9.68% | 8.89% |
| (B) CAPM ROE for Natural Gas Index | <u>11.40%</u> | <u>10.98%</u> |
| AVERAGE | 10.54% | 9.93% |
| Bond Yield Differential | 0.39% | 0.42% |
| Private Placement Premium | 0.50% | 0.50% |
| Small-Utility Risk Premium | 0.50% | 0.50% |
| Adjustment to Reflect Required Equity | | |
| Return at a 40% Equity Ratio | <u>0.73%</u> | <u>0.66%</u> |
| Cost of Equity for Average Florida WAW | | |
| Utility at a 40% Equity Ratio | <u>12.67%</u> | <u>12.01%</u> |

2007 Leverage Formula (Currently in Effect)

| | |
|------------------------------|------------------|
| Return on Common Equity = | 7.10% + 1.961/ER |
| Range of Returns on Equity = | 9.07% - 12.01% |

2008 Leverage Formula (Recommended)

| | |
|------------------------------|------------------|
| Return on Common Equity = | 7.36% + 2.123/ER |
| Range of Returns on Equity = | 9.48% - 12.67% |

Marginal Cost of Investor Capital
 Average Water and Wastewater Utility

| <u>Capital Component</u> | <u>Ratio</u> | <u>Marginal Cost Rate</u> | <u>Weighted Marginal Cost Rate</u> |
|--------------------------|---------------|-------------------------------|--|
| Common Equity | 46.37% | 11.94% | 5.53% |
| Total Debt | <u>53.63%</u> | 7.36% * | <u>3.95%</u> |
| | 100.00% | | 9.48% |

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 $7.36\% + 2.123/.40 = 12.67\%$

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% | 12.67% | 5.07% |
| Total Debt | <u>60.00%</u> | 7.36% * | <u>4.42%</u> |
| | 100.00% | | 9.48% |

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

* Assumed Baa3 rate for March 2008 plus a 50 basis point private placement premium and a 50 basis point small utility risk premium.

Sources: Moody's Credit Perspectives and Value Line Selection and Opinion

ANNUAL DISCOUNTED CASH FLOW MODEL

| INDEX | NATURAL GAS INDEX | | | | | | | | | MARCH | | |
|--------------------------------|-------------------|--------|--------|--------|--------|--------|---------|--------|--------|-------|-------|---------|
| | DIV0 | DIV1 | DIV2 | DIV3 | DIV4 | EPS4 | ROE4 | GR1-4 | GR4+ | HI-PR | LO-PR | AVER-PR |
| AGL RESOURCES INC. | 1.68 | 1.72 | 1.76 | 1.80 | 1.84 | 3.20 | 14.50 | 1.0227 | 1.0616 | 35.62 | 33.45 | 34.535 |
| ATMOS ENERGY CORPORATION | 1.30 | 1.32 | 1.35 | 1.37 | 1.40 | 2.45 | 9.50 | 1.0198 | 1.0407 | 26.52 | 25.00 | 25.760 |
| EQUITABLE RESOURCES, INC. | 0.88 | 1.00 | 1.07 | 1.15 | 1.23 | 3.60 | 20.50 | 1.0714 | 1.1350 | 65.05 | 55.65 | 60.350 |
| LACLEDE GROUP, INC. | 1.49 | 1.53 | 1.57 | 1.61 | 1.65 | 2.70 | 11.00 | 1.0255 | 1.0428 | 36.45 | 33.42 | 34.935 |
| NICOR INC. | 1.86 | 1.90 | 1.90 | 1.90 | 1.90 | 3.25 | 13.50 | 1.0000 | 1.0561 | 34.29 | 32.35 | 33.320 |
| NORTHWEST NATURAL GAS CO. | 1.52 | 1.60 | 1.69 | 1.78 | 1.88 | 3.35 | 11.00 | 1.0552 | 1.0483 | 43.92 | 41.07 | 42.495 |
| PIEDMONT NATURAL GAS CO., INC. | 1.04 | 1.08 | 1.12 | 1.16 | 1.20 | 1.75 | 12.50 | 1.0357 | 1.0393 | 27.32 | 24.05 | 25.685 |
| SOUTH JERSEY INDUSTRIES, INC. | 1.10 | 1.16 | 1.20 | 1.24 | 1.28 | 3.00 | 14.50 | 1.0334 | 1.0831 | 35.71 | 31.90 | 33.805 |
| SOUTHWEST GAS CORPORATION | 0.90 | 0.94 | 0.98 | 1.02 | 1.06 | 2.65 | 10.00 | 1.0409 | 1.0600 | 28.35 | 25.14 | 26.745 |
| WGL HOLDINGS, INC. | 1.40 | 1.44 | 1.48 | 1.52 | 1.56 | 2.50 | 10.50 | 1.0270 | 1.0395 | 33.49 | 30.26 | 31.875 |
| AVERAGE | 1.3170 | 1.3690 | 1.4109 | 1.4545 | 1.5000 | 2.8450 | 12.7500 | 1.0332 | 1.0606 | | | 34.951 |

VALUE LINE ISSUE: Ed. 3, March 14, 2008

S&P STOCK GUIDE: APRIL 2008 with MARCH Stock Prices

| | | | | |
|--|----------|--------|---------|--------|
| Stock Price w/four Percent Flotation Costs | \$ 33.55 | Annual | 9.68% | ROE |
| Cash Flows | 1.2126 | 1.1467 | 1.0776 | 1.0130 |
| Present Value of Cash Flows | 33.5525 | 0.9594 | 28.1431 | |

NOTE: The cash flows for this multi-stage DCF Model are derived using the average forecasted dividends and the near term and long term growth rates. The discount rate, 9.68%, equates the cash flows with the average stock price less flotation cost.

\$33.55 = March 2008 average stock price with a 4% flotation cost.

9.68% = Cost of equity required to match the current stock price with the expected cash flows.

Sources:

1. Stock Prices - S&P Stock Guide, April 2008 Edition.
2. DPS, EPS, ROE - Value Line Edition 3, March 14, 2008.

Capital Asset Pricing Model Cost of Equity for
Water and Wastewater Industry

CAPM analysis formula

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

K = Investor's required rate of return

RF = Risk-free rate (Blue Chip forecast for Long-term Treasury bond, April 1, 2008)

Beta = Measure of industry-specific risk (Average for water utilities followed by Value Line)

MR = Market return (Value Line Investment Survey For Windows, April 2008)

$$\underline{11.40\%} = 4.54\% + 0.87(12.20\% - 4.54\%) + 0.20\%$$

Note: Staff calculated the market return using a quarterly DCF model for a large number of dividend paying stocks followed by Value Line. For March 2008, the result was 12.20%. Staff also added 20 basis points to the CAPM result to allow for a four-percent flotation cost.

| BOND YIELD DIFFERENTIALS | | | | | | | | | |
|---|------|--------|------|--------|------|--------|------|--------|------|
| Public Utility Long Term Bond Yield Averages | | | | | | | | | |
| 120 Month Average Spread | | 0.0987 | | 0.0987 | | 0.0987 | | 0.0987 | |
| MONTH/YEAR | A2 | SPREAD | A3 | SPREAD | Baa1 | SPREAD | Baa2 | SPREAD | Baa3 |
| Mar-08 | 6.08 | 0.06 | 6.14 | 0.06 | 6.20 | 0.06 | 6.26 | 0.06 | 6.32 |
| Sources: Moody's Credit Perspectives and Value Line Selection and Opinion | | | | | | | | | |

INDEX STATISTICS AND FACTS

| <u>Natural Gas Distribution Proxy Group</u> | <u>S & P Bond Rating</u> | <u>% of Gas Revenue</u> | <u>V/L Market Capital (\$ millions)</u> | <u>Equity Ratio</u> | <u>Value Line Beta</u> |
|---|------------------------------|-------------------------|---|---------------------|------------------------|
| AGL Resources Inc. | A- | 67% | 2,706.88 | 42.43% | 0.85 |
| Atmos Energy Corporation | BBB | 56% | 2,437.35 | 43.36% | 0.85 |
| Equitable Resources, Inc. | A- | 68% | 8,102.96 | 47.10% | 0.90 |
| Laclede Group, Inc. | A | 55% | 804.72 | 40.36% | 0.90 |
| NICOR Inc. | AA | 83% | 1,587.91 | 52.15% | 1.00 |
| Northwest Natural Gas Co. | AA- | 98% | 1,195.22 | 47.40% | 0.80 |
| Piedmont Natural Gas Co., Inc. | A | 82% | 1,988.27 | 45.27% | 0.85 |
| South Jersey Industries, Inc. | A | 63% | 1,086.29 | 50.25% | 0.80 |
| Southwest Gas Corporation | BBB- | 85% | 1,256.19 | 41.04% | 0.90 |
| WGL Holdings, Inc. | AA- | 57% | 1,658.52 | 51.11% | 0.85 |
| Average: | | | | 46.37% | 0.87 |
| Sources: | | | | | |

Value Line Investment Survey for Windows, April 2008
S.E.C. Forms 10Q and 10K for Companies
AUS Utility Report, March 2008