



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 3, 2001

TO: DIRECTOR, DIVISION OF RECORDS AND REPORTING (BAYO)

FROM: DIVISION OF ECONOMIC REGULATION (DEVLIN, LESTER, D. DRAPER, KYLE, MERCHANT) *PK*
DIVISION OF LEGAL SERVICES (JAEGER) *ESM*
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.
COUNTY: STATEWIDE

AGENDA: 05/15/01 - REGULAR AGENDA - PROPOSED AGENCY ACTION - INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: FINAL DECISION REQUIRED BY THE END OF 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 returns on equity for water and wastewater 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, which was made final by Consummating Order No. PSC-00-1299-CO-WS, issued on July 18, 2000.

Attachment 2 is a detailed background and history of the leverage formula. As noted in this attachment, the Commission has modified the leverage formula methodology periodically.

Staff is presenting a primary recommendation that bases the leverage formula on recent returns on equity the Commission set in gas rate cases. The alternative staff recommendation continues the

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existing leverage formula methodology, which uses returns on equity from financial models.

The Commission has jurisdiction pursuant to Section 367.081 (4) (f), Florida Statutes.

DISCUSSION OF ISSUES

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

PRIMARY RECOMMENDATION: Staff recommends that the Commission base the leverage formula methodology on an 11.5% return on equity (ROE). The Commission approved this ROE for Chesapeake Utilities Corporation by Order No. PSC-00-2263-FOF-GU, issued November 28, 2000, and for City Gas Company by Order No. PSC-01-0316-PAA-GU, which became final on March 5, 2001. This is a change from the existing methodology. Staff recommends the following leverage formula:

$$\text{Return on Common Equity} = 8.41\% + 1.567/\text{Equity Ratio}$$

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

$$\text{Range: } 9.98\% \text{ @ } 100\% \text{ equity to } 12.33\% \text{ @ } 40\% \text{ equity} \quad ;$$

(Devlin)

ALTERNATIVE RECOMMENDATION: Staff recommends that the Commission continue with the existing leverage formula methodology, updated with current financial data. This alternative includes one minor correction and one minor modification to the methodology, which are discussed in the alternative staff analysis. Alternative staff recommends the following leverage formula:

$$\text{Return on Common Equity} = 8.41\% + 0.731/\text{Equity Ratio}$$

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

$$\text{Range: } 9.14\% \text{ @ } 100\% \text{ equity to } 10.24\% \text{ @ } 40\% \text{ equity}$$

(Lester)

PRIMARY STAFF ANALYSIS: Primary staff recommends the use of an electric & gas composite authorized return on equity (ROE) as the proxy for use with the Water & Wastewater (WAW) leverage formula for two reasons: first, this approach will result in a fairer treatment among industries with respect to authorized ROEs. As shown in the following chart, only WAW utilities are held to the strict application of ROE models. Section 367.081(4)(f), Florida

Statutes, requires the annual update of the WAW leverage formula, but it does not specify the methods underlying the proxy ROE.

<u>Industry</u>	<u>Staff Models</u>	<u>Average (a) Commission ROE</u>	<u>Average (a) Nationwide ROE</u>
Electric	9.6%	11.4%	11.7%
Gas	10.1%	11.4%	10.9%
Water & Wastewater	9.8%(b)	9.8%	10.9%

(a) based on ROEs used for Performance Measures Tracking

(b) assumes a 46% equity ratio (weighted average for Florida Class A & B utilities)

Second, authorizing ROEs for WAW utilities similar to those authorized in other rate base regulated industries should enhance consolidation of WAW systems. Publicly traded companies that are active in the purchase of WAW systems would be more likely to invest in Florida utilities if the authorized ROEs were more in line with ROEs authorized in other states and ROEs authorized for other regulated industries under Commission jurisdiction. Consolidation of WAW systems should bring economies of scale that will benefit ratepayers.

The primary staff recommendation uses an 11.5% ROE as a replacement for the models. This ROE is the same as authorized in the two most recent rate cases involving Chesapeake Utilities Corporation and City Gas. In the Chesapeake case, the ROE became a stipulated issue along with all the issues in that case. Although the ROE may have been different in a contested proceeding, the 11.5% ROE was found reasonable by the Commission. These two cases represent the most recent view of the Commission with respect to ROE. All other factors used in the derivation of the primary staff leverage formula, except the bond yield differential, relate to the water and wastewater industry and are used in the primary staff recommendation.

The bond yield differential was excluded from the primary staff leverage formula because Chesapeake, like Florida WAW utilities, was assumed to have a Baa3 bond rating. Therefore, double-counting was avoided.

In the electric and gas industries, the staff models have indicated ROEs for the most part lower than ROEs authorized by the Commission over the past 10 to 15 years. However, the Commission's authorized ROEs for these industries are in line with those

authorized in other states. In the early 1980s when capital costs were significantly higher, the opposite could be found (authorized ROEs were less than models would indicate). This appears to support the notion that regulatory commissions tend to authorize ROEs in a more conservative manner and not react to the highs and lows of the capital markets. Again, our regulation of WAW utilities is the exception and as a consequence, makes investment in WAW utilities less appealing.

The use of a proxy from another industry has precedence. In the 1980s, the WAW leverage formula was based on a current electric utility authorized ROE. It was not until 1988 that WAW utilities were used as a proxy.

It is interesting to note that even utilities included in staff's models have authorized ROEs, granted in other states, far greater than the models would indicate. According to Value Line, American Water Works has various allowed returns ranging from 10.5% to 11.25% and that were set at various times. Philadelphia Suburban was authorized 12.0% in 1991 by the Pennsylvania Public Utilities Commission. Staff's models should be used as one objective source in evaluating return on equity. However, determination of ROE is inherently subjective and even the traditional accepted models, such as the Discounted Cash Flow model, will yield varying results depending upon inputs. The crux of the primary recommendation is to suggest a more judgmental view of the determination of ROE in the WAW industry.

Pages 1 and 2 of Attachment 1 present the calculation of the primary recommendation.

ALTERNATIVE STAFF ANALYSIS: Alternative staff believes the Commission should retain the existing leverage formula methodology for the following reasons:

- ◆ The current leverage formula methodology reflects current capital market conditions, i.e., interest rates, stock prices, dividend forecasts, and investor expectations. This is the appropriate prudent cost basis for determining a utility's required return on equity. The current method is flexible in that the Commission can update it in response to changes in the cost of capital. It is an objective method for estimating the cost of equity for WAW utilities.

- ◆ The current leverage formula methodology reflects business risk conditions specific to the water utility industry.

Staff made one minor correction and one minor modification to the existing methodology, specifically to the capital asset pricing model (CAPM) market return.

- ◆ Staff included 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.
- ◆ Staff added 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.

This correction and modification together add about 6 basis points to the range for the alternative recommendation. The remainder of this staff analysis explains the current leverage formula methodology.

The leverage formula depends on four basic assumptions listed below.

- 1) Business risk is similar for all WAW utilities.
- 2) The cost of equity is a 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%.
- 4) The cost rate at an assumed Moody's Baa3 bond rating plus 50 basis points, represents the average marginal cost of debt to a Florida WAW utility over an equity ratio range of 40% to 100%.

In addition, the leverage formula is assumed to be appropriate for the average Florida WAW utility.

The leverage formula relies on two return on equity models and several adjustments for differences in risk and debt cost to

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conform the model results to the average Florida water utility. The models are as follows:

An annual DCF model applied to an index of four water utilities that have publicly traded stock and are followed by the Value Line Investment Survey (Value Line). The DCF model is an annual model and uses prospective growth rates.

A CAPM using a market return for a large number of dividend paying stocks followed by Value Line, the yield on 30 year Treasury Bonds projected by the Blue Chip Financial Forecasts, and the average beta of the index of water utilities.

The results of the above models are averaged and adjusted in the following manner:

A bond yield differential reflecting the difference in yields between an A+/A1 rated bond, which is the average bond rating for the water company index, and a BBB-/Baa3 rated bond. Florida WAW utilities are assumed to be comparable to water companies with the lowest investment grade bond rating, which is Baa3. This adjustment compensates for the difference between credit quality of the water company index and the assumed credit quality of Florida WAW utilities. Staff believes that regulated utilities should be at least investment grade.

A private placement premium of 50 basis points that reflects 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.

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

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ISSUE 2: Should this docket be closed?

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 the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant. (JAEGER)

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 the movement in capital costs and to readdress the reasonableness of the leverage formula as conditions warrant.

SUMMARY OF RESULTS

Leverage Formula Update

	<u>2000</u>	<u>Primary</u> <u>2001</u>	<u>Alternative</u> <u>2001</u>
(A) Allowed ROE		11.50%	
(B) DCF ROE for Water Index	8.63%		9.27%
© CAPM ROE for Water Index	<u>9.33%</u>	_____	<u>9.08%</u>
AVERAGE	8.98%	11.50%	9.18%
Bond Yield Differential	.43%		.41%
Private Placement Premium	.50%	.50%	.50%
			:
Adjustment to Reflect Required Equity			
Return at a 40% Equity Ratio	<u>.03%</u>	<u>.33%</u>	<u>.15%</u>
Cost of Equity for Average Florida WAW			
Utility at a 40% Equity Ratio	<u>9.94%</u>	<u>12.33%</u>	<u>10.24%</u>

2000 Leverage Formula

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

2001 Leverage Formula (Primary)

Return on Common Equity = 8.41% + 1.567/ER
 Range of Returns on Equity = 9.98% - 12.33%

2001 Leverage Formula (Alternative)

Return on Common Equity = 8.41% + .731/ER
 Range of Returns on Equity = 9.14% - 10.24%

PRIMARY RECOMMENDATION
 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	43.66%	12.00%	5.24%
Total Debt	<u>56.34%</u>	8.41% *	<u>4.74%</u>
	100.0%		9.98%

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 $8.41\% + 1.567/.40 = 12.33\%$.

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%	12.33%	4.93%
Total Debt	<u>60.00%</u>	8.41% *	<u>5.05%</u>
	100.0%		9.98%

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

* Assumed Baa3 rate for March 2001 plus a 50 basis point private placement premium.

Source: Moody's Credit Perspectives

ALTERNATIVE RECOMMENDATION
 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	43.66%	10.09%	4.40%
Total Debt	<u>56.34%</u>	8.41% *	<u>4.74%</u>
	100.00%		9.14%

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 $8.41\% + 0.731/.40 = 10.24\%$:

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%	10.24%	4.10%
Total Debt	<u>60.00%</u>	8.41% *	<u>5.05%</u>
	100.00%		9.14%

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

* Assumed Baa3 rate for March 2001 plus a 50 basis point private placement premium.

Source: Moody's Credit Perspectives

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COST OF EQUITY

VALUE LINE WATER UTILITY INDUSTRY

YEAR	2001	Quarter:	Value Line Issue		Ed 9, Feb 2, 2001		MARCH				
			1st								
COMPANY	DIV1	DIV2	DIV3	DIV4	FPS4	ROF4	GR1-4	GR4+	HI-PR	LO-PR	AVFR-PR
AMERICAN STATES WATER	1.30	1.33	1.37	1.40	2.40	10.50	1.0250	1.0438	33.49	28.75	31.120
AMERICAN WATER WORKS	0.94	0.98	1.02	1.06	2.45	11.00	1.0409	1.0624	33.50	26.50	30.000
CALIFORNIA WATER SVC	1.12	1.14	1.16	1.18	2.15	15.00	1.0175	1.0677	28.60	24.00	26.300
PHILADELPHIA SUBURBAN	0.62	0.65	0.68	0.72	1.30	12.50	1.0511	1.0558	24.24	21.00	22.620
AVERAGE	0.9950	1.0256	1.0572	1.0900 1.1526	2.08	12.2500	1.0336	1.0574			27.510
<u>COST OF EQUITY</u>			<u>APRIL</u>		<u>S&P STOCK</u>						
			Annual	0.092698							
			0.92204	0.86976 26.68470	0.82056	0.77762		23.29472			
	26.68470										

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Attachment 1
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ANNUAL DISCOUNTED CASH FLOW MODEL

\$26.68 = March 2001 average stock price less 3%
flotation cost

9.27% = Cost of equity required to match the current
stock price with the expected cash flows

Sources:

1. Stock Prices - S&P Stock Guide, April 2001 Edition
2. DPS, EPS, ROE - Value Line Edition 9, February 2, 2001.

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 30-year Treasury bond)

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

MR = Market return

$$\underline{9.08\%} = 5.34\% + .61(11.47\% - 5.34\%)$$

Note: Staff estimated the market return using an annual DCF model for a large number of dividend paying stocks followed by Value Line. For March 2001 stock prices, the result was 11.37% including the 3% flotation cost allowance. Staff added 10 basis points to allow for the quarterly compounding of dividends. The resulting market return is 11.47%.

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

BOND YIELD
 Public Utility Long Term Bond Yield
 Source Moody's Credit Perspectives
 Long-Term Corporate Bond Yield Averages - Avg Public

UPDATED 04/23/20

120 Month		0 0905		0 0905		0 0464		0 0464		0 0464		0 0916		0 0916		0 0916		0 0916		
YEAR	MONTH	Aaa	SPREA	Aa1	SPREA	Aa2	SPREA	Aa3	SPREA	A1	SPREA	A2	SPREA	A3	SPREA	Baa1	SPREA	Baa2	SPREA	Baa3
	MAR	7.31	0.10	7.41	0.10	7.51	0.06	7.57	0.06	7.62	0.06	7.68	0.06	7.74	0.06	7.79	0.06	7.85	0.06	7.91
	FEB	7.46	0.08	7.54	0.08	7.62	0.04	7.66	0.04	7.70	0.04	7.74	0.07	7.81	0.07	7.87	0.07	7.94	0.07	8.01
	JAN	7.53	0.10	7.63	0.10	7.73	0.02	7.75	0.02	7.78	0.02	7.80	0.05	7.86	0.06	7.93	0.06	7.99	0.06	8.05
	DEC	7.51	0.14	7.65	0.14	7.79	0.02	7.81	0.02	7.82	0.02	7.84	0.05	7.90	0.06	7.95	0.06	8.01	0.06	8.07
	NOV	7.71	0.16	7.87	0.16	8.03	0.03	8.06	0.03	8.08	0.03	8.11	0.05	8.16	0.05	8.20	0.05	8.25	0.05	8.30
	OCT	7.80	0.14	7.94	0.14	8.08	0.02	8.10	0.02	8.12	0.02	8.14	0.05	8.19	0.05	8.24	0.05	8.29	0.05	8.34
	SEP	7.95	0.08	8.03	0.08	8.11	0.04	8.15	0.04	8.19	0.04	8.23	0.03	8.26	0.03	8.29	0.03	8.32	0.03	8.35
	AUG	7.89	0.03	7.92	0.03	7.95	0.06	8.01	0.06	8.07	0.06	8.13	0.04	8.17	0.04	8.21	0.04	8.25	0.04	8.29
	JULY	8.00	0.05	8.05	0.05	8.10	0.05	8.15	0.05	8.20	0.05	8.25	0.03	8.28	0.03	8.30	0.03	8.33	0.03	8.36
	JUNE	7.96	0.07	8.03	0.07	8.10	0.09	8.19	0.09	8.27	0.09	8.36	0.04	8.40	0.04	8.43	0.04	8.47	0.04	8.51
	MAY	8.22	0.11	8.33	0.11	8.44	0.09	8.53	0.09	8.61	0.09	8.70	0.05	8.75	0.05	8.81	0.05	8.86	0.05	8.91
	APR	7.95	0.11	8.06	0.11	8.17	0.06	8.23	0.06	8.29	0.06	8.35	0.02	8.37	0.02	8.38	0.02	8.40	0.02	8.42
	MAR	7.87	0.06	7.93	0.06	7.99	0.10	8.09	0.10	8.18	0.10	8.28	0.04	8.32	0.04	8.36	0.04	8.40	0.04	8.44
	FEB	7.82	0.09	7.91	0.09	7.99	0.09	8.08	0.09	8.16	0.09	8.25	0.03	8.28	0.03	8.30	0.03	8.33	0.03	8.36
2000	JAN	7.95	0.11	8.06	0.11	8.17	0.06	8.23	0.06	8.29	0.06	8.35	0.02	8.37	0.02	8.38	0.02	8.40	0.02	8.42
	DEC	7.74	0.13	7.87	0.13	8.00	0.05	8.05	0.05	8.09	0.05	8.14	0.05	8.19	0.05	8.23	0.05	8.28	0.05	8.33
	NOV	7.56	0.13	7.69	0.13	7.82	0.04	7.86	0.04	7.90	0.04	7.94	0.06	8.00	0.06	8.06	0.06	8.12	0.06	8.18
	OCT	7.73	0.11	7.85	0.11	7.96	0.03	7.99	0.03	8.03	0.03	8.06	0.09	8.15	0.09	8.23	0.09	8.32	0.09	8.41
	SEP	7.55	0.14	7.69	0.14	7.82	0.04	7.86	0.04	7.89	0.04	7.93	0.09	8.02	0.09	8.10	0.09	8.19	0.09	8.28
	AUG	7.54	0.14	7.68	0.14	7.82	0.03	7.85	0.03	7.88	0.03	7.91	0.08	7.99	0.08	8.08	0.08	8.16	0.08	8.24
	JULY	7.34	0.14	7.48	0.14	7.62	0.03	7.65	0.03	7.68	0.03	7.71	0.09	7.80	0.09	7.88	0.09	7.97	0.09	8.06
	JUNE	7.37	0.15	7.52	0.15	7.67	0.02	7.69	0.02	7.72	0.02	7.74	0.10	7.84	0.10	7.93	0.10	8.03	0.10	8.13
	MAY	7.09	0.15	7.24	0.15	7.38	0.03	7.41	0.03	7.44	0.03	7.47	0.09	7.56	0.09	7.65	0.09	7.74	0.09	7.83
	APR	6.80	0.16	6.96	0.16	7.11	0.04	7.15	0.04	7.18	0.04	7.22	0.10	7.32	0.10	7.41	0.10	7.51	0.10	7.61
	MAR	6.78	0.17	6.95	0.17	7.11	0.05	7.16	0.05	7.21	0.05	7.26	0.10	7.36	0.10	7.45	0.10	7.55	0.10	7.65
	FEB	6.56	0.19	6.75	0.19	6.94	0.05	6.99	0.05	7.04	0.05	7.09	0.11	7.20	0.11	7.30	0.11	7.41	0.11	7.52
1999	JAN	6.41	0.21	6.62	0.21	6.82	0.05	6.87	0.05	6.92	0.05	6.97	0.11	7.08	0.11	7.19	0.11	7.30	0.11	7.41
	DEC	6.43	0.18	6.61	0.18	6.78	0.04	6.82	0.04	6.87	0.04	6.91	0.11	7.02	0.11	7.13	0.11	7.24	0.11	7.35
	NOV	6.59	0.15	6.74	0.15	6.89	0.05	6.94	0.05	6.98	0.05	7.03	0.09	7.12	0.09	7.22	0.09	7.31	0.09	7.40
	OCT	6.64	0.08	6.72	0.08	6.80	0.05	6.85	0.05	6.91	0.05	6.96	0.06	7.02	0.06	7.07	0.06	7.13	0.06	7.19
	SEP	6.66	0.06	6.72	0.06	6.78	0.05	6.83	0.05	6.88	0.05	6.93	0.07	7.00	0.07	7.06	0.07	7.13	0.07	7.20
	AUG	6.75	0.06	6.81	0.06	6.87	0.04	6.91	0.04	6.96	0.04	7.00	0.07	7.07	0.07	7.13	0.07	7.20	0.07	7.27
	JULY	6.80	0.06	6.86	0.06	6.91	0.04	6.95	0.04	6.99	0.04	7.03	0.07	7.10	0.07	7.16	0.07	7.23	0.07	7.30
	JUNE	6.80	0.06	6.86	0.06	6.91	0.04	6.95	0.04	6.99	0.04	7.03	0.06	7.09	0.06	7.15	0.06	7.21	0.06	7.27
	MAY	6.94	0.04	6.98	0.04	7.02	0.05	7.07	0.05	7.11	0.05	7.16	0.06	7.22	0.06	7.28	0.06	7.34	0.06	7.40
	APR	6.94	0.04	6.98	0.04	7.02	0.05	7.07	0.05	7.11	0.05	7.16	0.07	7.23	0.07	7.30	0.07	7.37	0.07	7.44
	MAR	6.96	0.04	7.00	0.04	7.04	0.04	7.08	0.04	7.12	0.04	7.16	0.07	7.23	0.07	7.30	0.07	7.37	0.07	7.44
	FEB	6.91	0.04	6.95	0.04	6.99	0.04	7.03	0.04	7.08	0.04	7.12	0.08	7.20	0.08	7.28	0.08	7.36	0.08	7.44
1998	JAN	6.85	0.05	6.90	0.05	6.94	0.04	6.98	0.04	7.01	0.04	7.05	0.08	7.13	0.08	7.20	0.08	7.28	0.08	7.36

12/31/00 Equity Ratios of Water Index Companies

	Common Equity (,000)	Total Debt (,000)	Preferred Equity (,000)	Equity Ratio
American States Water Co.	\$192,723.0	\$222,187.0	\$1,920.0	46.24%
American Water Works	\$1,669,677.0	\$2,844,739.0	\$52,693.0	36.56%
California Water Service Co.	\$198,834.0	\$204,577.0	\$3,475.0	48.87%
Philadelphia Suburban Corp.	\$432,347.0	\$573,706.0	\$0.0	<u>42.97%</u>
			Average	43.66

Source: Utilities' December 31, 2000, 4th quarters - S.E.C. 10-Qs

Water and Wastewater Leverage Formula

Background and History as of May 3, 2001

The Commission has used a leverage formula for setting the ROE for water and wastewater companies since the 1970s. The leverage formula is an equation that defines the ROE as a general debt cost rate plus an equity risk premium. The only variable is the water and wastewater utility's equity ratio. Below is the general form of the current equation and the definition of terms.

$$\text{ROE} = \text{Bond Yield} + \frac{\text{Equity Risk Premium}}{\text{Equity Ratio}}$$

where:

ROE is return on common equity.

Bond Yield is a constant term and is the recent average monthly yield on BBB rated public utility bonds plus adjustments for private placement.

Equity Risk Premium is a constant term for the amount the cost of equity exceeds the cost of debt and is derived from cost of equity models.

$$\text{Equity Ratio} = \frac{\text{Common Equity}}{\text{Common Equity} + \text{Preferred Equity} + \text{Long Term Debt} + \text{Short Term Debt}}$$

Section 367.081(4)(f), Florida Statutes, authorizes the Commission to establish the leverage formula. The statute reads as follows:

(f) The commission may regularly, not less often than once each year, establish by order a leverage formula or formulae that reasonably reflect the range of returns on common equity for an average water or wastewater utility and which, for purposes of this section, shall be used to calculate the last authorized rate of return on equity for any utility which otherwise would have no established rate of return on equity. In any other proceeding in which an authorized rate of return on equity is to be established, a utility, in lieu of presenting evidence on its rate of return on common equity, may move the commission to adopt the range of rates of return on common equity that has been established under this paragraph.

The Commission developed the leverage formula because it avoided rate case expense associated with cost of equity experts. Also, the leverage formula provides a simple approach to determining the cost of equity.

The Commission held a hearing on March 3, 1981 regarding the leverage formula and the only witness was a staff witness. Based on this hearing, the Commission established a leverage formula by Order No. 9919, issued March 31, 1981 in Docket No. 800778-WS. This order stated the leverage formula as a table of ROEs and equity ratios.

The Commission established the next leverage formula by Order No. 10603, issued February 17, 1982 in Docket No. 820006-WS. This order stated the following assumptions for the leverage formula

- 1) All water and wastewater companies have a similar business risk profile.
- 2) Total Risk = Financial Risk + Business Risk.
- 3) Business risk is minimized in a regulated industry.
- 4) Financial leverage is a surrogate for financial risk.
- 5) Any tax advantage of issuing debt will be taken away through reductions in the regulated price and passed through to the customers.

- 6) The cost of debt is derived from a 1961 to 1981 trendline.
- 7) The relationship between the cost of equity and the debt to equity ratio is assumed to be linear.

For this order, the equity risk premium in the equity risk premium was based on cost of equity models. The Commission implemented a 40% minimum for the equity ratio to encourage prudent financing. This equity ratio minimum continued with all subsequent leverage formulas.

For 1983, the Commission used the recent 6-month average of AAA rated public utility bond yields for the cost of debt. Otherwise, the methodology was similar to that of 1982.

In 1984, the Commission compared the cost of debt of an index of water and wastewater companies to the cost of debt of Tampa Electric Company (TECO). The Commission determined that the cost of debt for the index was 40 basis points higher than the cost of debt for TECO. The Commission had recently set the ROE for TECO at 15.50% by Order No. 12663. With the 40 basis points as a risk premium, the Commission used 15.90% as the cost of equity for the water and wastewater index. A minor refinement was to average the Standard and Poor's public utility bond yield with the corresponding yield from Moodys.

The Commission continued the 1984 methodology for 1985. It based the cost of equity on the recent decision for Gulf Power Company in Docket No. 840086-EI and used AA rated bonds for the cost of debt. In 1986, the Commission based the cost of equity on the recent TECO decision in Docket No. 850050-EI plus a bond yield differential. The Commission noted that, ideally, the cost of equity would be measured for the specific industry but data to make such a measurement was lacking in the water and wastewater industry. A second leverage formula order was issued in 1986 to update for more recent Commission decisions and changes in capital market conditions.

In 1987, the Commission used a cost of equity for an index of water companies as the basis for the leverage formula. However, the PAA order for the 1987 leverage formula was protested by the Office of Public Counsel and the Florida Waterworks Association. The Commission held a hearing in May 1987 and heard from three witnesses, one sponsored by each party and staff.

Because of this hearing, the Commission based the leverage formula on a DCF analysis for water companies and a risk premium analysis for natural gas companies. Also, the cost of debt was based on Baa rated public utility bond yields. The Commission used historical growth information for the cost of debt. Though some witnesses opposed it, the Commission continued the 40% minimum equity ratio. This methodology became the pattern for the next few years.

In 1993, staff recommended that the Commission continue the leverage formula set in 1992. Instead, the Commission updated the leverage formula, which resulted in a decrease in the ROE range from 1992.

In 1994, the Commission continued the leverage formula methodology but ordered staff to hold workshops on the methodology. (Workshops concerning gas company ROEs were also held.) Staff held a workshop in December 1994 and the Commission held a workshop in February 1995. Staff made the following modifications to the leverage formula methodology:

- 1) Added a Capital Asset Pricing Model (CAPM) analysis.
- 2) Based the cost of debt on a Baa3 public utility bond yield.
- 3) Added 25 basis points as a private placement premium to the cost of debt.
- 4) Added 18 basis points to the natural gas risk premium model to allow for the difference in risk between natural gas utilities and water utilities. This was based on different betas - volatility measure - for the gas and water indexes.

In 1996, the Commission voted to continue the leverage formula it set in 1995. That is, it did not update its 1995 model because the Commission made only two ROE decisions in 1995. One was made for Florida Public Utilities gas operation, one for TECO, and both of these decisions were before the last leverage formula. Updating the leverage formula would have resulted in a decrease.

In 1997, staff recommended that the Commission continue the leverage formula it set in 1995 and continued in 1996. Staff reasoned that the Commission had made only one ROE decision - for City Gas - in 1996. Instead, the Commission voted unanimously to update the leverage formula. See Order No. PSC-97-0660-FOF-WS.

In 1998, staff again recommended that the Commission continue the leverage formula from the previous year. Staff reasoned that the ROE had not been reduced for companies in other industries and, therefore, the leverage formula should be held constant. Staff provided an update of the leverage formula with one refinement: the index of water companies was weighted by market capitalization instead of a simple average. The Commission voted unanimously to update the leverage formula, to remove the gas/water premium added to the natural gas risk premium model, and to accept the weighting of the companies in the water index by market capitalization. The Commission also noted that staff could hold workshops to improve the methodology. Florida Water Services Company protested the PAA order but withdrew its protest.

For 1999, staff held workshops in November 1998 and March 1999. Based on comments made by OPC and the industry, staff made the following modifications to the leverage formula methodology:

- 1) Eliminated the historical DCF model for water companies.
- 2) The annual, instead of quarterly, model was used for water companies.
- 3) Eliminated the natural gas risk premium model.
- 4) Eliminated the gas index risk adjustment.
- 5) Increased the private placement premium from 25 to 50 basis points.

This is the current methodology that the Commission used for both 1999 and 2000.