



# Public Service Commission

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TALLAHASSEE, FLORIDA 32399-0850

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

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COMMISSION CLERK

DATE: JUNE 6, 2002

TO: DIRECTOR, DIVISION OF THE COMMISSION CLERK  
ADMINISTRATIVE SERVICES (BAYO)

FROM: DIVISION OF ECONOMIC REGULATION (D. DRAPER, P. LESTER) DM  
OFFICE OF THE GENERAL COUNSEL (A. VINING) *AeV Wad JDS ALM*

RE: DOCKET NO. 020006-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), FLORIDA STATUTES

AGENDA: 06/18/02 - REGULAR AGENDA - PROPOSED AGENCY ACTION -  
INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: DECEMBER 31, 2002 - PURSUANT TO SECTION 367.081  
(4)(f) FLORIDA STATUTES

SPECIAL INSTRUCTIONS: NONE

FILE NAME AND LOCATION: S:\PSC\ECR\WP\020006.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. 010006-WS, the Commission established the current leverage formula by Order No. PSC-01-2514-FOF-WS, issued on December 24, 2001. This staff recommendation utilizes the current leverage formula methodology set forth in Order No. PSC-01-2514-FOF-WS, which uses returns on equity from financial models using an index of natural gas utilities.

DOCUMENT NUMBER-DATE  
05911 JUN-6 02  
FPSC-COMMISSION CLERK

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:

$$\text{Return on Common Equity} = 9.65\% + 0.582/\text{Equity Ratio}$$

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

Range: 10.23% @ 100% equity to 11.10% @ 40% equity

(DRAPER)

**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 listed below.

- 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%.
- 4) The 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 premium, represents the average marginal cost of debt to a Florida WAW utility over an equity ratio range of 40% to 100%.

The leverage formula is assumed to be appropriate for the average Florida WAW utility.

The leverage formula relies on two return on equity (ROE) models and several adjustments for differences in risk and debt cost in order to conform the results of the models to 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). The DCF model is an annual model and uses prospective growth rates.
- 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 of the index of NG utilities. The market return is adjusted to assume a quarterly model by adding 20 basis points to the result.

The indicated returns of the above models are averaged and the resulting estimate is adjusted in the following manner:

- A bond yield differential of 40 basis point to reflect the difference in yields between an A/A2 rated bond, which is the average bond rating for the NG utility index, and a BBB-/Baa3 rated bond. Florida WAW utilities are assumed to be comparable to WAW 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 premium of 50 basis points is added to reflect that 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 leverage formula derived using the current methodology with updated financial data is presented in Attachment 1.

DATE: June 6, 2002

**ISSUE 2:** Should the Commission use the water and wastewater leverage formula approved in this docket to reestablish the return on equity (ROE) for all water and wastewater utilities that currently have an authorized ROE?

**RECOMMENDATION:** Yes. For WAW utilities that have authorized ROEs, the Commission should reestablish the authorized ROE using the water and wastewater leverage formula approved in Issue 1. The appropriate equity ratio for determining the new authorized ROE should be the equity ratio that the Commission used to determine the utility's last authorized ROE. The appropriate range for the new authorized ROE is the ROE plus or minus 100 basis points. (LESTER)

**STAFF ANALYSIS:** Many WAW utilities currently have authorized ROEs that are outside the range of returns indicated by the recommended leverage formula in Issue 1. Capital market conditions change continuously and in order to reflect current capital market conditions, the Commission should reestablish the authorized ROE for WAW utilities that currently have authorized ROEs. A utility's authorized ROE and range can affect excess earnings reviews (earnings surveillance), index and pass-through applications, and interim rates. Updating the WAW utilities' ROEs will bring many outdated ROEs in line with current economic returns expected by today's investors. In addition, using an ROE based on current expected returns will limit the chance of overstating or understating the true economic cost to the utilities when the ROE is used for purposes other than setting rates.

As set forth in Section 367.081 (4) (f), Florida Statutes, the Commission should use the current leverage formula for any utility "which otherwise would have no established rate of return on equity." As a result, the recommendation on this issue only applies to WAW utilities that currently have an authorized ROE. Staff does not recommend that this update be done annually but rather only when there have been significant changes in the capital markets. Staff believes this action is cost effective and appropriate in avoiding a piecemeal approach to updating each utilities' authorized ROEs.

Pursuant to Section 367.011(2), Florida Statutes, the Commission has "exclusive jurisdiction over each utility with respect to its authority, service, and rates." Additionally, as set forth in Section 367.081(2) (a) of the Florida Statutes, the Commission can "either upon request or upon its own motion, fix

rates." The utility's ROE is one factor that is used in determining rates. Therefore, staff believes that the Commission has the authority to use the leverage formula approved in this docket to reestablish the ROE for all WAW utilities that currently have an authorized ROE. Updating the ROEs of the WAW utilities as contemplated in this recommendation will not change the rates currently charged to ratepayers.

The Commission regulates approximately 200 WAW utilities. Only 47% of these utilities have authorized ROEs. Based on the leverage formula recommended in Issue 1, this recommendation will lower the ROE of an estimated 34% of utilities with authorized ROEs. In addition, it will raise the ROE of an estimated 38% of utilities with authorized ROEs and leave 28% of utilities with authorized ROEs unchanged. Staff notes that the Commission adopted a similar approach for the gas industry. See Order No. PSC-93-1820-FOF-GU, issued December 22, 1993, in Docket No. 931098-GU; Order No. PSC-94-0249-FOF-GU, issued March 7, 1994, in Docket No. 931100-GU; and Order No. PSC-93-1772-FOF-GU, issued December 10, 1993, in Docket No. 931099-GU. This was done to reflect significant changes in capital market conditions and to bring those utilities' ROEs more in line with current market conditions.

DOCKET NO. 020006-WS

DATE: June 6, 2002

**ISSUE 3:** Should this docket be closed?

**RECOMMENDATION:** No. (VINING)

**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>Updated Results</u>	<u>Currently in Effect</u>
(A) CAPM ROE for Natural Gas Index	8.93%	9.08%
(B) DCF ROE for Natural Gas Index	<u>10.13%</u>	<u>10.81%</u>
AVERAGE	9.53%	9.95%
Bond Yield Differential	.40%	.25%
Private Placement Premium	.50%	.50%
Small-Utility Risk Premium	.50%	.50%
Adjustment to Reflect Required Equity		
Return at a 40% Equity Ratio	<u>.17%</u>	<u>.15%</u>
Cost of Equity for Average Florida WAW		
Utility at a 40% Equity Ratio	<u>11.10%</u>	<u>11.34%</u>

2001 Leverage Formula (Currently in Effect)

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

2002 Leverage Formula (Recommended)

Return on Common Equity	=	9.65% + .582/ER
Range of Returns on Equity	=	10.23% - 11.10%

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	45.46%	10.93%	4.97%
Total Debt	<u>54.54%</u>	9.65% *	<u>5.26%</u>
	100.00%		10.23%

A 40% equity ratio is the floor for calculating the required return on common equity. The return on equity at a 40% equity ratio is  $9.65\% + 0.582/.40 = 11.10\%$

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

<u>Capital Component</u>	<u>Ratio</u>	<u>Marginal Cost Rate</u>	<u>Weighted Marginal Cost Rate</u>
Common Equity	40.00%	11.10%	4.44%
Total Debt	<u>60.00%</u>	9.65% *	<u>5.79%</u>
	100.00%		10.23%

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

\* Assumed Baa3 rate for April 2002 plus a 50 basis point private placement premium and a 50 basis point small utility risk premium.

Source: Moody's Credit Perspectives



ANNUAL DISCOUNTED CASH FLOW MODEL

INDEX COMPANY	MOODY'S NATURAL GAS INDEX						APRIL					
	DIV0	DIV1	DIV2	DIV3	DIV4	EPS4	ROE4	GR1-4	GR4+	HI-PR	LO-PR	AVER-PR
AGL RESOURCES	108	108	111	113	116	210	1250	10241	10560	24340	22800	23570
ATMOS ENERGY	118	121	125	130	135	220	1400	10372	10541	24550	23440	23995
CASCADE NATURAL GAS	096	096	097	097	098	200	1500	10069	10765	22500	20200	21350
LACLEDE GAS	136	138	140	143	145	225	1200	10166	10427	24880	23300	24090
NICOR, INC.	184	194	204	214	224	440	2150	10491	11055	49000	44990	46995
NORTHWEST NATURAL GAS	126	128	130	133	135	250	1100	10179	10506	30300	27600	28950
PIEDMONT NATURAL GAS	160	168	173	177	182	290	1250	10270	10466	37950	35000	36475
SOUTHWEST GAS	082	082	084	086	088	195	800	10238	10439	24990	22600	23795
WGL HOLDINGS	128	130	132	133	135	265	1250	10127	10613	27950	26250	27100
AVERAGE	12644	12944	13278	13622	13978	255	13222	10239	10597			28480

S&P STOCK GUIDE, MAY 2002 with April Stock Prices

Stock Price w/four Percent Flotation Costs **27.3408**

Annual **10.13%** ROE

11550 10742 10005 09321 08757 223033  
273408

\$27.34 = April 2002 average stock price with a 4% flotation cost.

10.13% = Cost of equity required to match the current stock price with the expected cash flows.

Sources:

1. Stock Prices - S&P Stock Guide, May 2002 Edition.
2. DPS, EPS, ROE - Value Line Edition 3, March 22, 2002.

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)

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

MR = Market return (Value Line Investment Survey  
For Windows, May 2002)

$$\underline{8.93\%} = 6.00\% + .59(10.64\% - 6.00\%) + .20\%$$

**Note:** We calculated the market return using an annual DCF model for a large number of dividend paying stocks followed by Value Line. For April 2002 stock prices, the result was 10.44%. We have added 20 basis points to allow for the quarterly compounding of dividends. The resulting market return is 10.64%. We have 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  
Source: Moody's Credit Perspectives

UPDATED: 05/20/2002

Long Term Corporate Bond Yield Averages - Avg. Public Utility

120 Month Average -	0 1982		0 1982		0 0472		0 0472		0 0472		0 0989		0 0989		0 0989		0 0989		
MONTH/YEAR	Aaa	SPREAD	Aa1	SPREAD	Aa2	SPREAD	Aa3	SPREAD	A1	SPREAD	A2	SPREAD	A3	SPREAD	Baa1	SPREAD	Baa2	SPREAD	Baa3
Apr-2002	3.69	3.69	3.69	7.38	0.06	7.44	0.06	7.51	0.06	7.57	0.23	7.80	0.23	8.02	0.23	8.25	0.23	8.48	
Mar-2002	3.71	3.71	3.71	7.42	0.11	7.53	0.11	7.65	0.11	7.76	0.19	7.95	0.19	8.13	0.19	8.32	0.19	8.51	
Feb-2002	3.57	3.57	3.57	7.14	0.13	7.27	0.13	7.41	0.13	7.54	0.21	7.75	0.21	7.97	0.21	8.18	0.21	8.39	
Jan-2002	3.64	3.64	3.64	7.28	0.13	7.41	0.13	7.53	0.13	7.66	0.16	7.82	0.16	7.97	0.16	8.13	0.16	8.29	
Dec-2001	7.53	0.00	7.53	0.00	7.53	0.10	7.63	0.10	7.73	0.10	7.83	0.15	7.98	0.15	8.12	0.15	8.27	0.15	8.42
Nov-2001	7.45	0.00	7.45	0.00	7.45	0.04	7.49	0.04	7.53	0.04	7.57	0.13	7.70	0.13	7.83	0.13	7.96	0.13	8.09
Oct-2001	7.45	0.01	7.46	0.01	7.47	0.05	7.52	0.05	7.58	0.05	7.63	0.13	7.76	0.13	7.89	0.13	8.02	0.13	8.15
Sep-2001	7.52	0.02	7.54	0.02	7.55	0.07	7.62	0.07	7.68	0.07	7.75	0.12	7.87	0.12	8.00	0.12	8.12	0.12	8.24
Aug-2001	7.36	0.01	7.38	0.01	7.39	0.07	7.46	0.07	7.52	0.07	7.59	0.12	7.71	0.12	7.83	0.12	7.95	0.12	8.07
Jul-2001	7.46	0.04	7.51	0.04	7.55	0.08	7.63	0.08	7.70	0.08	7.78	0.09	7.87	0.09	7.96	0.09	8.05	0.09	8.14
Jun-2001	7.50	0.06	7.56	0.06	7.62	0.08	7.70	0.08	7.77	0.08	7.85	0.06	7.91	0.06	7.96	0.06	8.02	0.06	8.08
May-2001	7.61	0.09	7.70	0.09	7.79	0.07	7.86	0.07	7.92	0.07	7.99	0.04	8.03	0.04	8.07	0.04	8.11	0.04	8.15
Apr-2001	7.53	0.09	7.63	0.09	7.72	0.07	7.79	0.07	7.87	0.07	7.94	0.04	7.98	0.04	8.02	0.04	8.06	0.04	8.10
Mar-2001	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-2001	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-2001	7.53	0.10	7.63	0.10	7.73	0.02	7.75	0.02	7.78	0.02	7.80	0.06	7.86	0.06	7.93	0.06	7.99	0.06	8.05
Dec-2000	7.51	0.14	7.65	0.14	7.79	0.02	7.81	0.02	7.82	0.02	7.84	0.06	7.90	0.06	7.95	0.06	8.01	0.06	8.07
Nov-2000	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-2000	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-2000	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-2000	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
Jul-2000	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
Jun-2000	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-2000	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-2000	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-2000	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-2000	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
Jan-2000	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-1999	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-1999	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-1999	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-1999	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-1999	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
Jul-1999	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
Jun-1999	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-1999	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-1999	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-1999	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-1999	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
Jan-1999	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

Source: Moody's Credit Perspectives, May 20, 2002

## 12/31/01 Equity Ratios of Natural Gas Utilities

Value Line Listed Gas Utilities	Bond Rating	% of Gas Rev.	V/L Market Capital (billions)	Equity Ratio	Value Line Beta
AGL RESOURCES	A-	76%	1.30	35%	0.60
ATMOS ENERGY	A-	96%	0.95	46%	0.55
CASCADE NATURAL GAS	BBB+	100%	0.23	44%	0.55
LACLEDE GAS	A+	93%	0.45	43%	0.55
NICOR, INC.	AA	83%	2.00	53%	0.60
NORTHWEST NAT. GAS	A	98%	0.68	49%	0.60
PIEDMONT NAT. GAS	A	86%	1.10	52%	0.60
SOUTHWEST GAS CORP.	BBB-	86%	0.78	36%	0.65
WGL HOLDINGS	AA-	100%	1.30	52%	0.60
Average:	A			45.46%	0.59

## Source:

Value Line Edition 3, March 22, 2002.  
 Utilities Filed March 31, 2002 S.E.C. 10Q  
 C.A. Turner Utilities Report May 2002