

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

May 7, 1997

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

FROM: DIVISION OF AUDITING & FINANCIAL ANALYSIS (JONES, MAUREY)
DIVISION OF WATER & WASTEWATER (MERCHANT) *ALM*
DIVISION OF LEGAL SERVICES (VACCARO) *5/7*
APC
1997

RE: DOCKET NO. 970006- WS - WATER AND WASTEWATER INDUSTRY -
ANNUAL REESTABLISHMENT OF AUTHORIZED RANGE OF RETURNS ON
COMMON EQUITY OF WATER AND WASTEWATER UTILITIES; PURSUANT
TO SECTION 367.081(4)(f), FLORIDA STATUTES

AGENDA: 05/19/97 - REGULAR AGENDA - PROPOSED AGENCY ACTION -
INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: FINAL DECISION BY THE END OF 1997

SPECIAL INSTRUCTIONS: S:\PSC\AFA\WP\970006.RCM

DISCUSSION OF ISSUE

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?

RECOMMENDATION: Based on the current range of returns on equity authorized by the Commission for other regulated utilities, the 10.18% to 11.88% range of returns authorized in Order No. PSC-96-0729-FOF-WS is still reasonable for water and wastewater utilities for the period until the leverage formula is readdressed.

Staff recommends the authorized range of returns on common equity for water and wastewater utilities be based upon the following formula:

Return on Common Equity = 9.05% + 1.131/Equity Ratio where the

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

DOCUMENT NUMBER-DATE

04517 MAY-76

FPSC-RECORDS/REPORTING

Docket No. 970006-WS
Date: May 7, 1997

Staff further recommends the authorized return on common equity be limited to a maximum of 11.88% for all equity ratios of less than 40% in order to discourage imprudent financial risk. (JONES, MAUREY)

STAFF ANALYSIS: Pursuant to Section 367.081 (4) (f), Florida Statutes, the Commission is authorized 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. The Commission last established this range of returns in Order No. PSC-96-0729-FOF-WS issued on May 31, 1996, in Docket No. 960006-WS.

Based upon Commission decisions rendered since the leverage formula was last approved, staff believes that the WAW leverage formula approved in Order No. PSC-96-0729-FOF-WS is still appropriate. The Commission has not changed the allowed return for any telephone, natural gas, or electric utility since it approved the last WAW leverage formula. Prior to the last WAW leverage formula, only two ROE decisions were rendered in 1995 in the electric and natural gas industries. In Order No. PSC-95-0518-FOF-GU issued on April 26, 1995, in Docket No. 940620-GU, the Commission approved an increase in the ROE for Florida Public Utilities Company from 11.0% to 11.4%. In Order No. PSC-95-0580-FOF-EI issued on May 10, 1995, in Docket No. 950379-EI, the Commission approved an increase in the ROE for Tampa Electric Company from 11.35% to 11.75%. Only one ROE decision was rendered in 1996 in the gas industry. In Order No. PSC-96-1404-FOF-GU, issued on November 20, 1996, in Docket No. 960502-GU, the Commission maintained the same ROE of 11.3% that was approved in the previous rate case in Order No. PSC-94-1570-FOF-GU, issued on December 19, 1994, in Docket No. 940276-GU.

In staff's opinion, the leverage formula range of 10.18% to 11.88% is still reasonable for WAW utilities. Staff believes the leverage formula currently in effect should continue to remain in effect because it produces results that are consistent with the currently authorized ROEs ranging from 11.0% to 12.0% in the electric and gas industries. Therefore, staff recommends that the current leverage formula continue to be used for determining the return on equity for WAW utilities. Staff has recommended the leverage formula remain unchanged from one year to the next on two previous occasions. In Order No. PSC-93-1107-FOF-WS, issued on July 29, 1993, in Docket No. 930006-WS, the Commission denied staff's recommendation and approved the updated version of the leverage formula. In Order No. PSC-96-0729-FOF-WS, issued on May 31, 1996, in Docket No. 960006-WS, the Commission approved staff's recommendation to leave the currently allowed leverage formula in place.

Even though staff recommends the current leverage formula remain in place, staff has provided, in the attached schedules, the most current information available for determining an updated leverage formula. The determination of an updated leverage formula results in a range of returns on equity from 9.21% to 10.46% based on a formula of $8.38\% + .832/\text{Equity Ratio}$. The midpoint of the 9.21% to 10.46% range has decreased by 120 basis points when compared to the existing midpoint.

In developing the updated leverage formula, staff relied on the same methodologies used in the 1995 leverage formula docket. The difference between the existing leverage formula and the updated formula is the result of changes in underlying market conditions; that is, changes in bond yields and required rates of return.

The basic assumptions remain unchanged from the previous two years and are as follows:

- 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 40% to 100% equity ratio range.
- 4) The cost rate at an assumed Moody's Baa3 bond rating, plus 25 basis points, is representative of the average marginal cost of debt to a Florida WAW utility over a 40% to 100% equity ratio range.

In the leverage formula, the 10.46% return on common equity can be divided into three segments. First, a 9.49% return on equity is derived by averaging the results of two Discounted Cash Flow (DCF) analyses, a Risk Premium analysis, and a Capital Asset Pricing Model (CAPM) analysis. Staff assigned one third weight to the average of the two DCF analyses, one third weight to the Risk Premium analysis, and one third weight to the CAPM analysis.

The DCF models are applied to an index of publicly traded WAW utilities. The difference between the two applications is one version relies on historic growth rates and the other version relies on projected growth rates. Prior to 1995, only a DCF analysis using historic growth rates was used because of a lack of projected financial information on publicly traded WAW utilities. (See pages 3-4 of Attachment 1)

The Risk Premium model is applied to an index of publicly traded natural gas utilities. In addition, staff added a negative 24 basis point premium to the return indicated by the Risk Premium analysis of natural gas utilities. Using the difference between

Docket No. 970006-WS
Date: May 7, 1997

the average beta of the WAW and natural gas indices (.60 - .64 = -.04) and the prospective market risk premium of 6.01% determined in staff's CAPM analysis, staff calculated a natural gas premium of a negative 24 basis points. This adjustment is made to compensate for the perceived difference in risk between the index of natural gas utilities and the index of WAW utilities. The Commission noted in Order No. PSC-95-0982-FOF-WS, issued August 10, 1995, in Docket No. 950006-WS, that this adjustment could be negative in the future if the average beta for the natural gas index were to rise above the average beta for the WAW index, and once this change was adopted, this adjustment would be made regardless of whether the risk differential adjustment was positive or negative. This is the same application used in the determination of the existing leverage formula. (See pages 1, 5, and 7 of Attachment 1)

Finally, a CAPM analysis is performed. This return is based on the market return for all dividend-paying stocks followed by Value Line, the yield on the 30 year Treasury bond projected by Blue Chip Financial Forecasts, and the average beta of the WAW utilities followed by Value Line. (See page 6 of Attachment 1)

After the ROE for the indices is determined, a bond yield differential adjustment of 49 basis points is added to reflect the difference in risk between the indices of companies used in the DCF and Risk Premium models and an average WAW utility in Florida. Next, a private placement premium of 25 basis points is added to recognize that Florida WAW utilities do not have access to the public debt and equity markets. Finally, an adjustment of 23 basis points is added to reflect the required return on equity at a 40% equity ratio. (See page 1 of Attachment 1)

The bond yield differential adjustment of 49 basis points is comprised of the bond yield differential between the yield on A1-rated bonds and the yield on Baa3-rated bonds. (See page 8 of Attachment 1) The A1 rating is the average bond rating for both the natural gas index and WAW index and the Baa3 rating is the bond rating assumed for the average WAW utility in Florida.

The private placement premium of 25 basis points is added to recognize that, because of their small size, lack of institutional interest in their securities, and the lack of liquidity of their issues, Florida WAW utilities must rely on the private placement market to obtain capital. This premium is based on the results of surveys of participants in the private placement market conducted by staff and a review of the financial literature.

The 23 basis point adjustment represents the difference between the required return on equity at a 40.0% equity ratio and the required rate of return at the 45.34% equity ratio average for

Docket No. 970006-WS
Date: May 7, 1997

the indices of WAW utilities and natural gas utilities. (See pages 9-10 of Attachment 1) Using the most recently available capital structure for the index of publicly traded WAW utilities and the index of natural gas utilities as a proxy for the capital structure of an average WAW utility in Florida, staff calculates the marginal cost of investor capital for an average WAW utility in Florida to be 9.21%.

In summary, staff recommends the authorized range of returns on common equity for WAW utilities remain unchanged based on the following formula:

$$\text{Return on Common Equity} = 9.05\% + 1.131/\text{Equity Ratio}$$

We further recommend the authorized return on common equity be limited to a maximum of 11.88% for all equity ratios of less than 40%. This leverage formula maintains the range of returns approved in Order Nos. PSC-95-0982-FOF-WS and PSC-96-0700-FOF-WS

Docket No. 970006-WS
Date: May 7, 1997

ISSUE 2: Should this docket be closed?

RECOMMENDATION: No. (VACCARO)

STAFF ANALYSIS: 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>1995</u>	<u>1996</u>	<u>1997</u>
(A) DCF ROE for Water Index (Historic)	10.92%	10.32%	9.28%
(B) DCF ROE for Water Index (Projected)	10.37%	9.13%	8.66%
(C) Risk Premium ROE for Gas Index	10.50%	9.57%	9.52%
(D) Gas Index premium	.18%	.44%	(.24)%
(E) CAPM ROE for Water Index	<u>11.00%</u>	<u>10.17%</u>	<u>10.23%</u>
AVERAGE [(((A+B)/2) + (C+D)+E)/3]	10.78%	9.97%	9.49%
Bond Yield Differential	.51%	.49%	.49%
Private Placement Premium	.25%	.25%	.25%
Adjustment to Reflect Required Equity Return at a 40% Equity Ratio	<u>.34%</u>	<u>.29%</u>	<u>.23%</u>
Cost of Equity for Average Florida WAW Utility at a 40% Equity Ratio	<u>11.88%</u>	<u>11.00%</u>	<u>10.46%</u>

1995 Leverage Formula (CURRENTLY IN EFFECT)

Return on Common Equity	=	9.05% + 1.131/ER
Range of Returns on Equity	=	10.18% - 11.88%

1996 Leverage Formula

Return on Common Equity	=	8.51% + .997/ER
Range of Returns on Equity	=	9.51% - 11.00%

1997 Leverage Formula

Return on Common Equity	=	8.38% + .832/ER
Range of Returns on Equity	=	9.21% - 10.46%

$$\text{Leverage Formula} = 8.38 + 0.832 / \text{ER}^*$$

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	44.94%	10.23%	4.60%
Total Debt	<u>55.06%</u>	8.38% **	<u>4.61%</u>
	100.00%		9.21%

A 40% equity ratio is the floor for calculating the required return on common equity. The return on equity at a 40% equity ratio = $8.38\% + 0.832 / .40 = 10.46\%$

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%	10.46%	4.18%
Total Debt	<u>60.00%</u>	8.38% **	<u>5.03%</u>
	100.00%		9.21%

* Where: $\text{Equity Ratio} = \frac{\text{Common Equity}}{(\text{Common Equity} + \text{Preferred Equity} + \text{Long-Term Debt} + \text{Short-Term Debt})}$

** Assumed Baa3 rate for February 1997 plus 25 basis point private placement premium
 Source: Moody's Bond Survey, 3/1/97

	Arithmetic Average Growth Rate	Current Dividend	Current Average Stock Price	Required Return on Equity %
American Water Works	9.65%	0.76	23.63	13.18
Aquarion Company	1.56%	1.62	27.94	7.45
California Water Services Co.	4.05%	2.11	42.25	9.25
Consumers Water Company	3.67%	1.20	17.63	10.73
Philadelphia Suburban Corp.	2.70%	0.81	20.13	6.83
United Water Resources	2.84%	0.92	17.50	8.24
Average	3.64%	1.24	24.84	9.28

DCF Analysis

$$K = D(1)/P(0) + g$$

K = Investors' required rate of return

D(1) = Dividend expected next period = Arithmetic growth rate x current dividend

P(0) = Current stock price = May average stock price

g = Projected long-term growth in dividends = Arithmetic growth rate

$$K = 9.28$$

Source: Standard & Poor's Stock Guide, March 1997 Edition

* Standard & Poor's Stock Reports, March 3, 1997

COST OF EQUITY FOR WATER INDEX COMPANIES
DISCOUNTED CASH FLOW MODEL

COMPANY	FEBRUARY										
	DIV1	DIV2	DIV3	DIV4	EPS4	ROE4	GR1-4	GR4+	HI-PR	LO-PR	AVER-PR
AMERICAN WATER WORKS	0.76	0.82	0.88	0.94	1.65	10.00%	1.0734	1.0430	24.500	22.750	23.625
AQUARION CO	1.62	1.65	1.69	1.72	2.60	12.50	1.0202	1.0423	28.750	27.125	27.938
CALIFORNIA WATER SVC	2.11	2.15	2.20	2.24	3.20	11.00	1.0201	1.0330	43.000	41.500	42.250
CONSUMERS WATER	1.20	1.20	1.20	1.20	1.45	10.00	1.0000	1.0172	18.250	17.000	17.625
PHILADELPHIA SUBURBAN	0.82	0.90	1.00	1.10	1.60	15.50	1.1029	1.0484	20.500	19.750	20.125
UNITED WATER RESOURCES	0.92	0.95	0.97	1.00	1.20	10.50	1.0282	1.0175	18.125	16.875	17.500
AVERAGE	1.2383	1.2785	1.3212	1.3667	1.95	11.5833	1.0408	1.0336			24.844

\$24.10 = February 1997 average stock price less 3% flotation costs, or $P_0(1-f_c)$

8.66% = Cost of equity required to match the current stock price with the expected cash flows

Sources:

1. Stock Prices - S&P Stock Guide, March 1997 Edition
2. DPS, EPS, ROE - Value Line Edition 9, February 7, 1997

Attachment :
P. 5 of 10

Risk Premium Cost of Equity for Moody's Natural Gas
Distribution Index

Estimated Monthly Risk Premium	2.897 % (1)
Blue Chip Forecast for 30-Year Treasury Bond	6.620 % (2)
	<u>9.517 %</u>

Source (1) Page 7 of Attachment 1
(2) Blue Chip Financial Forecasts, May 1, 1996

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

$$10.23\% = 6.62\% + 60(12.63\% - 6.62\%)$$

Source: Blue Chip Financial Forecasts, March 1, 1997
ValueScreen, March 1997

ESTIMATED MONTHLY RISK PREMIUMS
 MOODY'S NAT'L GAS DISTRIBUTION INDEX
 MARCH 1987 - MARCH 1997

YEAR	MONTH	Quarterly Cost of Equity Gas	Risk Free Rate	Risk Premium Quarterly	YEAR	MONTH	Quarterly Cost of Equity Gas	Risk Free Rate	Risk Premium Quarterly
1987	JAN	11.847	7.37	4.477	1992	JAN	10.580	7.68	2.900
	FEB	11.642	7.39	4.252		FEB	10.640	7.57	3.070
	MAR	11.563	7.54	4.023		MAR	10.698	7.85	2.848
	APR	11.293	7.55	3.743		APR	10.684	7.97	2.714
	MAY	11.759	8.25	3.509		MAY	10.810	7.95	2.860
	JUN	11.903	8.78	3.123		JUN	10.740	7.88	2.860
	JUL	11.738	8.57	3.168		JUL	10.525	7.84	2.685
	AUG	11.856	8.64	3.216		AUG	10.351	7.60	2.751
	SEP	11.858	8.97	2.888		SEP	10.170	7.38	2.790
	OCT	12.148	9.59	2.558		OCT	9.812	7.33	2.482
	NOV	12.926	9.61	3.316		NOV	10.032	7.54	2.492
	DEC	13.078	8.95	4.128		DEC	10.113	7.60	2.513
1988	JAN	13.226	9.12	4.106	1993	JAN	9.653	7.43	2.223
	FEB	12.850	8.83	4.020		FEB	9.518	7.33	2.188
	MAR	12.416	8.43	3.986		MAR	9.306	7.08	2.226
	APR	12.396	8.63	3.766		APR	9.086	6.82	2.266
	MAY	12.398	8.95	3.448		MAY	9.222	6.85	2.372
	JUN	12.378	9.23	3.148		JUN	9.338	6.92	2.418
	JUL	12.049	9.00	3.049		JUL	9.547	6.80	2.747
	AUG	12.027	9.14	2.887		AUG	8.769	6.62	2.149
	SEP	12.314	9.32	2.994		SEP	8.774	6.31	2.464
	OCT	12.070	9.06	3.010		OCT	8.813	5.99	2.823
	NOV	12.036	8.89	3.146		NOV	8.843	5.93	2.913
	DEC	12.088	9.02	3.068		DEC	9.136	6.21	2.926
1989	JAN	12.028	9.01	3.018	1994	JAN	9.133	6.24	2.893
	FEB	12.050	8.91	3.140		FEB	8.805	6.28	2.525
	MAR	12.060	9.00	3.060		MAR	8.885	6.49	2.395
	APR	12.580	9.16	3.420		APR	9.126	6.90	2.226
	MAY	12.480	9.02	3.460		MAY	9.431	7.25	2.181
	JUN	12.312	8.83	3.482		JUN	9.550	7.40	2.150
	JUL	12.071	8.26	3.811		JUL	9.737	7.39	2.347
	AUG	11.882	8.07	3.812		AUG	9.723	7.57	2.153
	SEP	11.788	8.11	3.678		SEP	9.802	7.48	2.322
	OCT	11.450	8.15	3.300		OCT	9.921	7.69	2.231
	NOV	11.462	7.99	3.472		NOV	9.813	7.93	1.883
	DEC	11.320	7.89	3.430		DEC	10.198	8.07	2.128
1990	JAN	10.978	7.89	3.088	1995	JAN	10.342	7.86	2.482
	FEB	11.130	8.26	2.870		FEB	10.071	7.83	2.241
	MAR	11.252	8.50	2.752		MAR	9.891	7.60	2.291
	APR	11.416	8.55	2.866		APR	9.865	7.44	2.425
	MAY	11.620	8.74	2.880		MAY	9.226	7.35	1.876
	JUN	11.710	8.72	2.990		JUN	9.888	6.93	2.958
	JUL	11.468	8.45	3.018		JUL	9.858	6.57	3.288
	AUG	11.550	8.49	3.060		AUG	9.885	6.71	3.175
	SEP	11.630	8.85	2.980		SEP	9.956	6.85	3.106
	OCT	11.160	9.01	2.150		OCT	9.502	6.55	2.952
	NOV	11.340	8.84	2.500		NOV	9.573	6.37	3.203
	DEC	11.070	8.54	2.530		DEC	9.622	6.25	3.372
1991	JAN	11.031	8.22	2.811	1996	JAN	9.788	6.06	3.728
	FEB	11.186	8.25	2.936		FEB	9.216	6.05	3.166
	MAR	11.171	8.03	3.141		MAR	9.255	6.24	3.015
	APR	10.864	8.27	2.594		APR	9.389	6.60	2.789
	MAY	10.810	8.20	2.610		MAY	9.748	6.79	2.958
	JUN	10.820	8.26	2.560		JUN	9.816	6.92	2.896
	JUL	10.797	8.47	2.327		JUL	9.710	7.05	2.660
	AUG	10.783	8.44	2.343		AUG	10.158	7.03	3.128
	SEP	10.680	8.14	2.540		SEP	9.984	6.84	3.144
	OCT	10.968	7.94	3.048		OCT	10.241	7.02	3.221
	NOV	10.742	7.93	2.812		NOV	9.930	6.80	3.130
	DEC	10.719	7.92	2.799		DEC	9.781	6.48	3.301
					1997	JAN	9.894	6.55	3.344
						FEB	9.768	6.82	2.948
						MAR	9.838	6.68	3.158

SOURCE: Value Line 1987-1997
 Moody's Bond Survey
 U.S. Treasuries - 30-Year Bond
 Natural Gas Index

AVERAGE RISK PREMIUM 2.897

BOND YIELD DIFFERENTIALS

Public Utility Long Term Bond Yield Averages

Source: Moody's Credit Perspectives

Long-Term Corporate Bond Yield Averages - Avg. Public Utility

UPDATED

01/20/97

120 Month Average -		0.0965		0.0965		0.0633		0.0633		0.0633		0.1060		0.1060		0.1060		0.1060		
YEAR	MONTH	AAA	SPREAD	AA+	SPREAD	AA-	SPREAD	AA-	SPREAD	A+	SPREAD	A	SPREAD	A-	SPREAD	BBB+	SPREAD	BBB-	SPREAD	
1997	FEB	7.47	0.07	7.54	0.07	7.60	0.01	7.61	0.01	7.63	0.01	7.64	0.13	7.77	0.13	7.89	0.13	8.02	0.13	8.11
	JAN	7.53	0.07	7.61	0.07	7.68	0.03	7.71	0.03	7.74	0.03	7.77	0.14	7.91	0.14	8.04	0.14	8.18	0.14	8.32
	DEC	7.33	0.06	7.39	0.06	7.44	0.05	7.49	0.05	7.54	0.05	7.59	0.13	7.72	0.13	7.85	0.13	7.98	0.13	8.11
	NOV	7.21	0.06	7.27	0.06	7.32	0.06	7.38	0.06	7.43	0.06	7.49	0.13	7.62	0.13	7.74	0.13	7.87	0.13	8.00
	OCT	7.50	0.05	7.55	0.05	7.60	0.06	7.66	0.06	7.71	0.06	7.77	0.13	7.90	0.13	8.02	0.13	8.15	0.13	8.28
	SEPT	7.76	0.04	7.80	0.04	7.84	0.06	7.90	0.06	7.95	0.06	8.01	0.13	8.14	0.13	8.28	0.13	8.41	0.13	8.54
	AUG	7.59	0.03	7.63	0.03	7.66	0.06	7.72	0.06	7.78	0.06	7.84	0.14	7.98	0.14	8.11	0.14	8.25	0.14	8.39
	JULY	7.78	0.02	7.81	0.02	7.83	0.06	7.89	0.06	7.96	0.06	8.02	0.14	8.16	0.14	8.30	0.14	8.44	0.14	8.58
	JUNE	7.83	0.02	7.85	0.02	7.87	0.06	7.93	0.06	8.00	0.06	8.06	0.13	8.21	0.13	8.36	0.13	8.51	0.13	8.64
	MAY	7.73	0.03	7.76	0.03	7.79	0.06	7.85	0.06	7.92	0.06	7.98	0.14	8.13	0.14	8.28	0.14	8.42	0.14	8.56
	APR	7.60	0.05	7.61	0.05	7.70	0.06	7.76	0.06	7.83	0.06	7.89	0.14	8.03	0.14	8.18	0.14	8.32	0.14	8.46
	MAR	7.45	0.05	7.50	0.05	7.55	0.06	7.61	0.06	7.67	0.06	7.73	0.14	7.87	0.14	8.01	0.14	8.15	0.14	8.29
	FEB	7.11	0.04	7.16	0.04	7.20	0.06	7.26	0.06	7.31	0.06	7.37	0.14	7.51	0.14	7.64	0.14	7.78	0.14	7.92
1996	JAN	6.82	0.03	6.87	0.03	7.02	0.07	7.09	0.07	7.15	0.07	7.22	0.14	7.36	0.14	7.50	0.14	7.64	0.14	7.78
	DEC	6.94	0.01	6.99	0.01	7.03	0.07	7.10	0.07	7.16	0.07	7.23	0.13	7.36	0.13	7.50	0.13	7.63	0.13	7.78
	NOV	7.13	0.04	7.18	0.04	7.22	0.07	7.29	0.07	7.36	0.07	7.43	0.13	7.56	0.13	7.68	0.13	7.81	0.13	7.94
	OCT	7.23	0.04	7.27	0.04	7.30	0.05	7.35	0.05	7.41	0.05	7.46	0.12	7.58	0.12	7.70	0.12	7.82	0.12	7.94
	SEPT	7.42	0.03	7.45	0.03	7.48	0.05	7.53	0.05	7.57	0.05	7.62	0.12	7.74	0.12	7.86	0.12	7.98	0.12	8.10
	AUG	7.66	0.03	7.69	0.03	7.71	0.04	7.73	0.04	7.79	0.04	7.83	0.14	7.97	0.14	8.10	0.14	8.24	0.14	8.38
	JULY	7.51	0.04	7.56	0.04	7.60	0.03	7.63	0.03	7.67	0.03	7.70	0.14	7.84	0.14	7.97	0.14	8.11	0.14	8.25
	JUNE	7.39	0.05	7.44	0.05	7.49	0.04	7.53	0.04	7.56	0.04	7.60	0.14	7.74	0.14	7.87	0.14	8.01	0.14	8.15
	MAY	7.71	0.05	7.76	0.05	7.80	0.04	7.84	0.04	7.87	0.04	7.91	0.13	8.04	0.13	8.17	0.13	8.30	0.13	8.43
	APR	8.08	0.01	8.13	0.01	8.17	0.03	8.20	0.03	8.24	0.03	8.28	0.13	8.41	0.13	8.54	0.13	8.67	0.13	8.80
	MAR	8.18	0.05	8.24	0.05	8.29	0.03	8.32	0.03	8.34	0.03	8.37	0.13	8.50	0.13	8.63	0.13	8.76	0.13	8.89
	FEB	8.33	0.06	8.39	0.06	8.43	0.02	8.45	0.02	8.50	0.02	8.52	0.14	8.66	0.14	8.79	0.14	8.93	0.14	9.07
1995	JAN	8.53	0.07	8.60	0.07	8.66	0.02	8.68	0.02	8.71	0.02	8.76	0.14	8.87	0.14	9.01	0.14	9.15	0.14	9.29
	DEC	8.53	0.07	8.60	0.07	8.66	0.02	8.68	0.02	8.71	0.02	8.76	0.13	8.89	0.13	9.03	0.13	9.16	0.13	9.29
	NOV	8.77	0.06	8.84	0.06	8.90	0.03	8.93	0.03	8.95	0.03	8.98	0.12	9.10	0.12	9.23	0.12	9.35	0.12	9.47
	OCT	8.65	0.07	8.72	0.07	8.78	0.03	8.81	0.03	8.83	0.03	8.86	0.13	8.99	0.13	9.11	0.13	9.24	0.13	9.37
	SEP	8.41	0.08	8.49	0.08	8.56	0.03	8.59	0.03	8.62	0.03	8.64	0.11	8.75	0.11	8.87	0.11	8.98	0.11	9.09
	AUG	8.15	0.09	8.24	0.09	8.32	0.03	8.35	0.03	8.38	0.03	8.41	0.11	8.52	0.11	8.63	0.11	8.74	0.11	8.85
	JUL	8.21	0.09	8.30	0.09	8.38	0.03	8.41	0.03	8.44	0.03	8.47	0.11	8.58	0.11	8.69	0.11	8.80	0.11	8.91
	JUN	8.07	0.07	8.14	0.07	8.21	0.03	8.24	0.03	8.28	0.03	8.31	0.11	8.42	0.11	8.53	0.11	8.64	0.11	8.75
	MAY	8.11	0.07	8.18	0.07	8.24	0.03	8.27	0.03	8.30	0.03	8.33	0.09	8.42	0.09	8.52	0.09	8.61	0.09	8.70
	APR	8.00	0.06	8.06	0.06	8.12	0.03	8.15	0.03	8.19	0.03	8.22	0.08	8.30	0.08	8.39	0.08	8.47	0.08	8.55
	MAR	7.60	0.07	7.67	0.07	7.74	0.04	7.79	0.04	7.83	0.04	7.85	0.09	7.94	0.09	8.02	0.09	8.11	0.09	8.20
	FEB	7.19	0.08	7.27	0.08	7.34	0.04	7.38	0.04	7.41	0.04	7.43	0.09	7.54	0.09	7.66	0.09	7.76	0.09	7.86
1994	JAN	7.05	0.06	7.12	0.06	7.18	0.05	7.23	0.05	7.28	0.05	7.33	0.11	7.47	0.11	7.60	0.11	7.73	0.11	7.86
	DEC	7.06	0.06	7.12	0.06	7.18	0.05	7.23	0.05	7.28	0.05	7.33	0.11	7.43	0.11	7.56	0.11	7.69	0.11	7.82
	NOV	7.06	0.06	7.12	0.06	7.17	0.04	7.21	0.04	7.26	0.04	7.30	0.13	7.43	0.13	7.56	0.13	7.69	0.13	7.82
	OCT	6.73	0.07	6.82	0.07	6.89	0.05	6.94	0.05	6.98	0.05	7.03	0.08	7.11	0.08	7.19	0.08	7.27	0.08	7.35
	SEP	6.76	0.06	6.83	0.06	6.89	0.05	6.94	0.05	6.99	0.05	7.04	0.10	7.14	0.10	7.23	0.10	7.33	0.10	7.43
	AUG	6.94	0.07	7.01	0.07	7.07	0.06	7.13	0.06	7.17	0.06	7.23	0.11	7.36	0.11	7.48	0.11	7.59	0.11	7.70
	JUL	7.25	0.07	7.32	0.07	7.38	0.05	7.43	0.05	7.49	0.05	7.54	0.13	7.67	0.13	7.80	0.13	7.93	0.13	8.06
	JUN	7.37	0.09	7.46	0.09	7.54	0.07	7.61	0.07	7.68	0.07	7.75	0.10	7.85	0.10	7.95	0.10	8.05	0.10	8.15
	MAY	7.44	0.10	7.54	0.10	7.64	0.07	7.71	0.07	7.79	0.07	7.86	0.11	7.97	0.11	8.07	0.11	8.18	0.11	8.29
	APR	7.50	0.07	7.57	0.07	7.64	0.06	7.70	0.06	7.75	0.06	7.81	0.10	7.91	0.10	8.01	0.10	8.11	0.10	8.21
	MAR	7.64	0.06	7.70	0.06	7.76	0.05	7.81	0.05	7.85	0.05	7.90	0.07	7.97	0.07	8.03	0.07	8.10	0.07	8.17
	FEB	7.75	0.09	7.84	0.09	7.92	0.04	7.96	0.04	8.00	0.04	8.04	0.09	8.13	0.09	8.22	0.09	8.31	0.09	8.40
1993	JAN	7.94	0.10	8.04	0.10	8.14	0.04	8.18	0.04	8.23	0.04	8.27	0.10	8.37	0.10	8.47	0.10	8.57	0.10	8.67
	DEC	8.01	0.15	8.17	0.15	8.32	0.04	8.36	0.04	8.39	0.04	8.43	0.09	8.52	0.09	8.60	0.09	8.68	0.09	8.78
	NOV	8.11	0.20	8.31	0.20	8.51	0.04	8.55	0.04	8.59	0.04	8.63	0.08	8.71	0.08	8.78	0.08	8.86	0.08	8.94
	OCT	8.06	0.18	8.24	0.18	8.42	0.04	8.46	0.04	8.50	0.04	8.54	0.07	8.61	0.07	8.69	0.07	8.76	0.07	8.83
	SEP	8.04	0.12	8.16	0.12	8.28	0.04	8.32	0.04	8.36	0.04	8.40	0.05	8.45	0.05	8.49	0.05	8.54	0.05	8.59
	AUG	8.04	0.13	8.17	0.13	8.30	0.05	8.35	0.05	8.39	0.05	8.44	0.05	8.49	0.05	8.53	0.05	8.58	0.05	8.63
	JUL	8.12	0.17	8.29	0.17	8.45	0.04	8.49	0.04	8.53	0.04	8.57	0.04	8.61	0.04	8.65	0.04	8.69	0.04	8.73
	JUN	8.26	0.18	8.45	0.18	8.63	0.05	8.68	0.05	8.71	0.05	8.78	0.04	8.82	0.04	8.86	0.04	8.90	0.04	8.94
	MAY	8.32	0.16	8.51	0.16	8.69	0.06	8.75	0.06	8.81	0.06	8.87	0.05	8.92	0.05	8.96	0.05	9.01	0.05	9.06
	APR	8.36	0.20	8.56	0.20	8.76	0.06	8.82	0.06	8.87	0.06	8.93	0.06	8.99	0.06	9.05	0.06	9.11	0.06	9.17
	MAR	8.39	0.21	8.61	0.21	8.82	0.05	8.87	0.05	8.92	0.05	8.97	0.06	9.03	0.06	9.10	0.06	9.18	0.06	9.22
	FEB	8.30	0.23	8.53	0.23	8.76	0.06	8.82	0.06	8.87	0.06	8.93	0.05	8.98	0.05	9.04	0.05	9.09	0.05	9.14
1992	JAN	8.22	0.20	8.43	0.20	8.63	0.07	8.70	0.07	8.77	0.06	8.84	0.06	8.94	0.06	9.01	0.06	9.07	0.06	9.13
	DEC	8.38	0.17	8.55	0.17	8.71	0.06	8.77												

12/96 EQUITY RATIOS OF WATER INDEX COMPANIES

	BOOK VALUE PER SHARE	COMMON SHARES OUTSTANDING	COMMON EQUITY	TOTAL DEBT	PREFERPED EQUITY	EQUITY RATIO
AMERICAN WATER WORKS	\$13.35	78,196,975	\$1,043,929,616	\$1,876,600,000	\$99,300,000	34.57%
AQUARION COMPANY	17.95	6,970,370	125,118,142	170,600,000	0	42.31%
CALIFORNIA WATER SERVICE CO.	24.37	6,299,789	153,525,858	145,500,000	3,500,000	50.75%
CONSUMERS WATER COMPANY	12.51	8,684,331	108,640,981	183,500,000	1,100,000	37.05%
PHILADELPHIA SUBURBAN CORP.	9.05	19,011,390	172,053,080	197,000,000	4,200,000	46.10%
UNITED WATER RESOURCES	10.90	34,281,977	373,673,549	667,400,000	102,300,000	32.68%
AVERAGE						40.58%

SOURCE: Value Line Investment Survey
 Edition 9 February 7, 1997
 C.A. Turner Utility Reports March 1997

12/96 EQUITY RATIOS OF GAS INDEX COMPANIES

	BOOK VALUE PER SHARE	COMMON SHARES OUTSTANDING	COMMON EQUITY	TOTAL DEBT	PREFERRED EQUITY	EQUITY RATIO
AGL RESOURCES	\$10.58	55,867,649	\$589,962,373	\$773,300,000	\$58,500,000	41.50%
BAY STATE GAS	17.58	13,443,594	236,338,383	321,000,000	5,000,000	42.03%
BROOKLYN UNION GAS	18.17	50,074,596	909,855,409	740,000,000	6,600,000	54.93%
INDIANA ENERGY	13.19	22,580,998	297,843,364	235,000,000	0	55.90%
LACLEDE GAS	13.72	17,557,540	240,889,449	271,400,000	2,000,000	46.84%
NORTHWEST NATURAL GAS	14.90	22,484,940	335,025,606	326,400,000	38,700,000	47.85%
PEOPLES ENERGY	19.48	34,981,497	681,439,562	549,100,000	0	55.38%
WASHINGTON GAS LIGHT	12.79	43,703,476	558,967,458	532,800,000	28,400,000	49.90%
AVERAGE						49.29%

SOURCE: Value Line Investment Survey
 Edition 3 March 28, 1997
 C.A. Turner Utility Reports March 1997