United Water

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Division of Records & Reporting
Florida Public Service Commission
Capital Circle Office Center
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0850

Re: Docket No. 99006-WS
Leverage Formula Workshop

Enclosed please find seven (7) copies of the Additional Comments of United Water Florida.

Very truly yours,

Walton F. Hill
Vice President-Regulatory Business

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ADDITIONAL COMMENTS OF

UNITED WATER FLORIDA, INC.

Docket No. 990006-WS

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March 22, 1999

FEDERAL EXPRESS

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Vice President - Regulatory Business
United Water Management & Services
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Re: Additional Comments Resulting from the March 12, 1999 Workshop in Re: Docket No. 990006-WS

Dear Mr. Hill:

As a result of the March 12th Workshop, at your request I have prepared additional comments to be offered on behalf of United Water Florida, Inc. The additional comments address issues which arose on March 12th and some of them respond directly to certain observations made by OPC relative to those comments.

There is a single attachment to each of the enclosed 12 copies of the additional comments. The attachment is a report prepared by this firm regarding the relative risk of water utilities vis-a-vis electric, gas, and telephone companies. While that report was prepared in 1995, all of the observations and conclusions contained therein are still very much appropriate today.

If you have any questions regarding the additional comments, I will be pleased to discuss them with you at your convenience.

Respectfully submitted,

Frank J. Hanley

FJH/s
enc.

BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

SECOND WORKSHOP TO
PSC-REGULATED WATER AND WASTEWATER UTILITIES
AND OTHER INTERESTED PERSONS

Docket No. 990006-WS

ADDITIONAL COMMENTS OF

UNITED WATER FLORIDA, INC.

PREPARED BY

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ADDITIONAL COMMENTS OF UNITED WATER FLORIDA, INC.
Docket No. 990006-WS

PURPOSE

The purpose of these additional comments is to respond to points made by the Office of Peoples Counsel (OPC) at the March 12, 1999 Workshop regarding United Water Florida, Inc.'s comments. I address the relative risk of water and wastewater utilities vis-a-vis other utilities such as electric, gas and telephone. I also respond to OPC's comments regarding my proposed: 1) elimination of the two-stage growth DCF model; 2) reliance on forecasted growth in earnings per share (EPS); 3) use of the long-term historical earned returns from the Ibbotson Associates' Annual Yearbook in the determination of the equity risk premium in the risk premium model; and 4) use of the rates of return on common equity awarded to water utilities in other jurisdictions.

RELATIVE RISK OF WATER AND WASTEWATER UTILITIES

Attached hereto is a copy of the 1995 report prepared by AUS Consultants entitled, "The Paradox of State Regulatory Opinions and Investors Behavior - Relative Investment Risk of Water Utilities". While the absolute statistics referred to therein may have changed somewhat, on a relative basis, the conclusions reached are still accurate. The report shows that water (and wastewater) utilities have greater financial risk, lower cash flows, and are much smaller in size than electric, gas and telephone utilities. As a result of their small size, the securities of water/wastewater utilities are less marketable which exacerbates their riskiness. The report shows that water utilities are much more capital-intensive than the other types of utilities. The very significant capital additions which have been made in the past several years, and which are expected to be made in the next several years by United Water Florida, Inc. as shown in the table below demonstrate the significance of such investments on a relative basis.

ADDITIONAL COMMENTS OF UNITED WATER FLORIDA, INC.
Docket No. 990006-WS

Table

Line No.	($000's)	Water ($000's)	Wastewater ($000's)	Total
1.	Plant in Service 12/31/95	$45,930	$74,883	$120,813
2.	Additions 1/1/96-12/31/98	16,506	30,886	47,392
3.	Planned Additions 1/1/99 - 12/31/2001	14,497	25,683	40,180
4.	Est. Plant in Service 12/31/2001	$76,933	$131,452	$208,385
5.	Percent Increase (Line No. 4 ÷ Line No. 1 - 1.00)	+67.5%	+75.5%	+72.5%

As shown in the table above, there is expected to be an increase in total plant in service of 72.5% (combined water and wastewater) between December 31, 1995 and December 31, 2000. Because of the long-lived nature of the property of water/wastewater utilities, their cash flows are much lower due to lower depreciation rates. This problem is exacerbated by their capital intensity.

It is true that water/wastewater utilities tend to have more stable revenues and face little competition and thus their earnings tend to be less volatile than those of electric, gas or telephone companies. Nonetheless, investors do not consider water/wastewater utilities to be less risky as is evidenced by their lower price/earnings multiples and market-to-book ratios vis-a-vis electric, gas, and telephone utilities. It seems clear that the greater capital intensity, lower cash flows, smaller size, greater financial risk, and lack of liquidity of water/wastewater utilities more than offset the benefits of stable revenues and earnings.

ELIMINATION OF THE TWO-STAGE GROWTH DCF MODEL IS APPROPRIATE

As indicated in the Comments presented at the Workshop, there is no basis for assuming a second stage growth rate. The water and wastewater industries are mature and stable and not in a period of transition as are electric utilities. Moreover, the estimation of the second stage growth rate as presently calculated in the leverage formula is the result of reliance upon a five-year projected ROE which is the product of the projected growth in EPS and the implicit retention growth rate. To assume that retention growth rate so calculated is really a long-term future growth rate, i.e., an independent stage of growth beyond the fifth year is nothing more than a case of self-delusion. The best estimate of future growth for use in the DCF model is analysts' forecasts of growth in EPS as recommended in my report which was presented at the March 12th Workshop.

RELIANCE ON FORECASTED GROWTH IN EPS
IS APPROPRIATE FOR USE IN THE DCF MODEL

OPC believes that the use of dividends per share (DPS) is appropriate for use in the DCF model and not EPS. It must be kept in mind that the growth in the DCF model is growth in market price. Market prices are most influenced by the expected growth in EPS as well as any expected change in the price/earnings multiple. In contrast, expected growth in DPS has little impact on market prices. As shown in Attachments 7 and 8 of United Water Florida, Inc.'s Comments presented at the workshop on March 12, 1999, analysts' forecasts of growth in EPS are superior to other measures when estimating the growth rate for use in the DCF model. Analysts' forecasts of EPS growth incorporate historical information which is distilled into knowledgeable, sophisticated estimates of EPS growth which are investor-influencing.

USE OF THE LONG-TERM EARNED RETURNS
FROM THE IBBOTSON ASSOCIATES' ANNUAL YEARBOOKS
IS APPROPRIATE IN ESTIMATING EQUITY RISK PREMIUM

OPC believes that the use of the long-term data from the Ibbotson Associates' Annual Yearbooks (e.g., Attachments 4 and 5 to United Water Florida, Inc.'s Comments presented on March 12th at the Workshop) for use in estimating equity risk premium is incorrect.

The use of the long-term, historical data is correct and appropriate. As Ibbotson Associates have demonstrated statistically, equity risk premiums are random, i.e., there is no serial correlation. Because equity risk premiums are random, the best expectation of equity risk premium which may be expected on average during a future period is the arithmetic mean of actually-experienced holding period equity risk premium returns over a very long historical period of time. The use of a very long historical period to estimate the long-term average future equity risk premium is appropriate due to its randomness and also because the standard DCF model assumes an infinite (i.e., very long) investment horizon. That approach should be preferred over the use of an equity risk premium estimate derived from a DCF-calculated common equity cost rate which is nothing more than an exercise in circular reasoning.

IT IS APPROPRIATE TO REVIEW THE
AWARDED RATES OF RETURN ON COMMON EQUITY
TO WATER UTILITIES BY OTHER STATE REGULATORY COMMISSIONS

OPC does not believe it is appropriate to consider the rates of return on common equity (ROE) awarded to water utilities by other commissions. OPC also referred to the analysis contained in

ADDITIONAL COMMENTS OF UNITED WATER FLORIDA, INC.
Docket No. 990006-WS

Attachment 6 to United Water Florida, Inc.'s Comments presented on March 12th at the Workshop as earned returns. OPC is incorrect on both counts. It is entirely appropriate to consider recent awards on common equity made by other regulatory commissions as a reality check on the results produced by application of the leverage formula as presently applied. Those returns are not earned returns; rather, they are opportunity rates of return afforded to those water utilities by their respective regulatory commissions. If experience is any guide, they will not be achieved due to the impacts of attrition and regulatory lag. Thus, use of such ROEs as a reality check is no different than comparing product prices before making a significant purchase in order to determine if the price under consideration is fair. One should always be as suspect of extraordinarily low prices (ROEs) as well as extraordinarily high prices (ROEs). Each should sound a warning signal. The result of the leverage formula as presently applied sounds a warning signal to me that it is too low.

The Paradox of State Regulatory Opinions and Investor Behavior

Relative Investment Risk of Water Utilities

The Paradox

Water Versus Electric, Gas and Telephone
Lower Allowed Returns, But Lower Price-Earnings Multiples and Lower Market/Book Ratios

Factors Influencing Regulators-Water

- No Close Substitutes
- No Competitive Pressure
- Less Volatility of Revenue and Earnings

Other Factors Influencing Investors Not Fully Taken into Account by Regulators-Water

- Higher Financial Risk
- Much Lower Cash Flow
- Very Small Size
- Lack of Securities Liquidity

Suggested Solution

Management of Water Utility Must Present More Relevant Information to Regulators

Overview

The following *financial paradox* exists concerning water utilities. Regulators and investors clearly have different perceptions concerning the relative risk of water utilities. State regulatory commissions have consistently approved lower rates of return on common equity, in the range of 30 to 70 basis points, for water utilities as compared to electric, natural gas, and telephone utilities. However, in the marketplace, investors assign lower market-to-book ratios and price-earnings multiples to water utilities compared to electric, natural gas, and telephone utilities. This paper explores the factors and considerations which give rise to the Financial Paradox and offers a solution for the consideration of water utility management.

From the perspective of state regulators, water utilities provide a product for which there is no substitute and face no competitive pressures and associated increased business risk. Therefore, financial concerns relating to by-pass problems, stranded investment risk, competition, and related potential earnings instability and uncertainty are not considered relevant. State regulators therefore perceive an increasing relative risk and associated return gap between water utilities and the energy and telephone utilities.

From the perspective of the investors, considerations other than competitive pressures and earnings instability are clearly influencing financial judgment and behavior concerning the relative risk of investing in common equity of water utilities. Fundamental analysis reveals that the following important characteristics or factors associated with water utilities relative to energy and telephone utilities drive and therefore influence investors' behavior:

- higher financial risk,
- much lower cash flow,
- very small size, and
- lack of liquidity for securities.

Investors apparently believe the collective impact related to these four water utility characteristics more than offset and overcome lower business risk related to lower volatility of revenue and earnings occasioned by lack of competition and no substitute for the product or service.

There exists a clear and pressing need for management of water utilities to present additional financial information and analysis to state regulatory commissions concerning the relative risk of their companies. Past presentations have not presented in-depth fundamental analyses relative to each of these four factors, particularly in terms of impact on common equity cost rate. The data needed to make presentations as to impact on common equity cost rate exists. Unless this evidence is presented in a persuasive manner, the likely end result will be an even greater gap in terms of allowed rates of return on common equity for water utilities compared to energy and telephone utilities, particularly in light of the on-going movement from a monopoly to a competitive environment for energy and telephone utilities.

The Paradox

A review of almost 400 state regulatory commission decisions in fully-litigated rate cases over the past several years reveals that the average authorized return on common equity awarded water utilities was about 30 basis points lower than electric and natural gas distribution utilities and about 70 basis points lower than telephone utilities. However, a review of investor sentiment, based upon a comparison of the August 1995 market-to-book ratios and price-earnings multiples, shown in Figure 1 below, reveals that investors do not share the state regulatory view that the relative risk of investing in the common stock of water utilities, is lower than energy and telephone utilities. Investors are willing to pay more for each dollar of earnings and a higher premium over book value for the common stock of energy and telephone utilities than for water utilities.

Figure 1

	Price-Earnings Multiple	Market/Book Ratio
Telephone	15.4	266
Gas	16.0	143
Electric	13.5	139
Water	12.8	128

Comparison Groups

In our study, we employed all of the water, electric, natural gas distribution and integrated and telephone utilities whose common stock is publicly traded and reported by C.A. Turner Utility Reports. C.A. Turner Utility Reports publishes monthly, quarterly and annually an array of financial data pertaining to the universe of domestic public utility common stocks that are actively traded. In total, our study group includes 146 utility companies including 57 electric, 52 gas, 15 water, and 22 telephone utilities.

Factors that may Influence the Opinion of Regulators

State regulators believe the business risk of investor-owned water utilities is lower than the business risk of investor-owned electric, natural gas distribution and telephone utilities. Regulators know there is no substitute for water and that investor-owned water utilities serve a protected government-provided franchise territory. Under such circumstances, water utilities are presumed to be in a position which requires price regulation to protect the public from monopoly pricing. Weather may cause water usage to vary from year to year. However, over time, the amount of water consumed is reasonably predictable. Thus, at a regulatory-established price, water utility revenue is presumed by state regulators to be less volatile and more certain compared to energy and telephone utilities. Business risk is defined as the uncertainty inherent in the projections of operating income, or EBIT[1]. Calculations of volatility of revenues and EBIT confirm less volatility in both water utility revenues and earnings compared to energy and telephone utilities. Therefore, state regulators are correct in their belief that water utility revenue and earnings are less volatile than energy and telephone utilities, which supports the notion that business risk is lower for water utilities.

It should be noted that there is a much smaller difference in the volatility of earnings of energy versus water utilities than there is in the volatility of their revenues. This is most likely the result of the adjustment clauses afforded the energy utilities. Adjustment clauses exist because the fuel costs of electric utilities and the purchased gas costs of gas distribution utilities average about 30% and 50%, respectively, of

[1]EBIT (Earnings Before Interest and Taxes) Eugene F. Brigham, *Financial Management Theory and Practice*, The Dryden Press, Chicago, 1985, p. 485.

operating revenues. As a result of the volatility and relative size of the fuel costs and purchased gas costs being beyond the control of management, most regulatory agencies allow a fuel and purchase gas adjustment clause. Since these large costs are essentially "pass throughs", their variability has little or no effect on earnings. Unfortunately, most water utilities are not provided similar "pass throughs" even though the total costs of energy, chemical and/or purchased water can be a large and volatile percentage of operating costs.

The price of long distance service (inter-state regulated by the Federal Communications Commission) has been deregulated, forcing some telephone utilities to operate in a competitive environment. Further, some telephone utilities now also face intra-state (local service regulated by states) competition and the prospects of intra-state competition for most other telephone utilities is just around the corner. The movement from a monopoly to a competitive environment in the telephone industry has been primarily driven by great technology changes. No similar great technology change has or is likely to take place in regard to the water utility industry.

Most electric utilities compete with natural gas utilities and both now compete with other energy purveyors that are not regulated, such as, but not limited to, independent power producers and non-utility generators. Prospectively, there may soon be electric to electric and natural gas to natural gas competition. However, most water utilities face no competition.

State regulators are aware of the current policy of the Federal Energy Regulatory Commission (FERC) of moving towards a competitive environment for both electric and natural gas utilities. In this regard, FERC Order 636 is the latest in a long series of federal measures intended to foster competition in the natural gas industry. Order 636, issued in April 1992 and effective November 1993, completed a decade-long transformation of the relationship of natural gas producers, transporters and distributors. Local gas distributors now bear total responsibility for buying, storing and arranging transportation for their own gas customers. Some large natural gas distribution customers have bypassed their local distribution utility completely while others purchase their gas supplies elsewhere and may use the services of the local distribution utility only for transportation purposes.

In Mega-NOPR[2], the FERC proposed a competitive environment for the wholesale segment of the electric utility industry through open access transmission. Wholesale customers may purchase electricity from anyone, and not unlike the natural gas industry, the electric utility may only receive transportation revenues. If the FERC's proposal is implemented as expected, the end result may be write-offs of uneconomic generation capacity referred to in the industry as stranded investment. The FERC has proposed recovery of prudently incurred stranded investment.

Many states are currently exploring retail competition. If state regulators allow competition at the retail level, it is far from certain if investors will be insulated from write-offs related to stranded investment.

In summary, for telephone, natural gas distribution and electric utilities, a protected franchise territory has become or may soon be, a thing of the past and each face competition, giving rise to revenue and earnings uncertainty. Water utilities do not face similar impending competition. It is little wonder that state regulatory commissions believe water utilities are exposed to less business risk than other types of utilities. However, is less volatile water utility revenue and earnings the sole basis for investor judgment?

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[2] Federal Energy Regulatory Commission, *Notice of Proposed Rulemaking and Supplemental Notice of Proposed Rulemaking*, 70 FERC ¶61,357 (1995).

Factors Which May Influence Investor Opinion

Fundamental Analysis

The price of the common stock of water utilities established by investors appears to reflect factors not taken into account by regulators. The result is an authorized earnings rate out of keeping with the verdict of the marketplace. We know that investors are willing to pay more for the earnings and a higher premium over the book value of common stock of other utilities compared to water utilities. Something in addition to the lower revenue or earnings variability or the lack of competition must influence investor judgment regarding the risk of investing in water utilities. If regulation is intended to be a substitute for the market, then the determination of risk should not be what regulators think it is, but what the market says it is.

Fundamental analyses reveal there are several water utility characteristics which likely influence investor behavior and may cause a higher investor-required return on common equity having nothing to do with either the volatility of revenues and earnings, lack of competition, or no substitute for the product. These characteristics are:

- Higher financial risk
- Low cash flow
- Small size
- Lack of Securities Liquidity

Financial Risk Difference

Typically, water utilities are more highly leveraged than energy or telephone utilities. The greater use of fixed cost capital, such as debt, and the related reduced use of common equity increases financial risk to both the debt and equity investor. That view is not just the verdict of the market, but is supported by the academic community[3]. The use of lower common equity ratios require a higher common equity cost rate, all else equal, in recognition of the higher financial risk to which common stockholders are exposed, given that another class of securities, such as debtholders, have a first claim on earnings and assets. The average water utility common equity ratio is about 5 percentage points lower than the average common equity ratio of the energy and telephone companies studied.

The investor-required cost rate for fixed cost capital is readily determined. An estimate of the investor-required cost rate for common equity is the product of subjective judgment. We can say with certainty that the investor-required cost rate for common equity is almost always higher than is the cost rate for long term debt attracted at the same time by the same utility. We can also say that the investor required cost rate for utility long term debt and equity usually move in the same direction but not necessarily basis point for basis point. Based upon current market-determined yields of public utility long-term debt and Standard & Poor's Corporation-published criteria for public utility long-term debt rating of A and BBB, the predominant rating for all the utilities included in our study, it can be calculated that the typical water utility common equity cost rate is between 30 to 40 basis points higher than the typical energy and telephone utility rather than the 30 to 70 basis points lower respectively, as found by regulators, if only the financial risk difference is taken into account.

Cash Flow

Capital intensity, or how many dollars of investment is required to produce a dollar of revenue, is an initial step in the development of the relative business risk assessment of different kinds of public utilities. Figure 2 on page 6 reveals a comparison of the capital intensity of the utility study group companies. Water utili-

[3] Richard A. Brealy and Stewart C. Meyers, *Principles of Corporate Finance*, McGraw-Hill Book Company, New York, NY, 1988, pp. 390-394.

ties are nearly twice as capital intensive as telephone and natural gas utilities and about one and one-quarter more capital intensive than electric utilities.

One principal source of internal cash flow for utilities is depreciation. The amount of internally-generated funds derived from depreciation is a function of not only the amount of assets to be depreciated, but the life of the asset and the related capital recovery or depreciation rate. As shown in Figure 2, the annual composite depreciation rate for telephone utilities is 6.6%, or near three times that of a water utility. The composite depreciation rate of electric and natural gas distributors falls between telephone and water utilities. Water utilities' assets have the longest life and thus the longest capital recovery period, namely 43 years, compared to but 15 years for a telephone utility. Unfortunately, the gap between water and the other kinds of utilities is even more than appears by a comparison of the composite depreciation rates. As shown in Figure 2, more than 23% of the net water utility plant is financed by contributions and customer advances. Depreciation expense related to contributions and customer advances is not allowed as a recoverable expense for ratemaking purposes. The end result is that water utility depreciation as a source of internally-generated cash is far less than energy and telephone utilities. There is yet another factor which further exacerbates the situation.

If inflation in construction costs is assumed to occur at a compound annual rate of just 4%, as shown in Figure 2, based on an average water utility asset life of 43 years, the replacement cost per dollar of investment is $5.40, or three times that of a telephone utility asset. The reality is the additional investor-required capital is much more than appears on the surface. Assume $4 of assets financed for a water utility, $3 provided by investors and $1 provided by contributions and customer advances. At the end of the useful property life, the water utility will have collected from customers $3 through depreciation expense reflected in the revenue requirement, but investors would have to additionally invest $21.50, or 4 times $5.40, or more than 7 times as much as the original $3 investment. A similar calculation for electric, natural gas, and telephone utility investors indicate a ratio not of 7 times, but 3.2, 3 and 1.8 times, respectively. There should be recognition of the fact that cash flow from water utility operations related to low depreciation rates and the obligation to replace property not investor financed exposes water utility common stock

Figure 2
1994 Data

Type of Utility	Net Plant at Book Cost Per $1 of Revenue	Annual Composite Depreciation Rate	Years of Indicated Capital Recovery	Contributions and Customer Advances as a Percent of Gross Plant	Future Replacement Cost per $1.00 Net Plant at 4.0% Compound Inflation Rate
Telephone	$1.31	6.6	15	0.0	$1.80
Gas	1.37	3.6	28	0.4	3.00
Electric	2.08	3.3	30	0.5	3.24
Water	2.54	2.3	43	23.7	5.40

investors to more business risk compared to investors in the other utilities.

Another indication of poor cash flow experienced by water utilities compared to other kinds of utilities is a comparison of net internally-generated cash flow to construction expenditures and net internally-generated cash flow expressed as a percent of average common equity. The data is shown in Figure 3 below:

Figure 3

Net Internally-Generated Cash Flow Expressed as a Percent of Construction Expenditures and Common Equity

Type of Utility	Five Year Average 1990-94 Construction	Common Equity
Telephone	101%	31%
Gas	102	15
Electric	68	17
Water	59	12

Once again, water is at the bottom, telephone at the top, and electric and natural gas are in-between. No longer do investors worship only at the earnings per share altar. Increasingly, investors cherish cash flow. Financial publications discuss cash flow as much or more than they discuss earnings. Little wonder, given the multiplicity of factors that can influence reported earnings per share which often depend on ever-changing accounting rules and earnings restatements. Water utility low cash flow combined with the highest capital intensity, compared to energy and telephone utilities, clearly exposes its investors to greater risk, particularly in light of the obligation to serve with a regulatory ceiling on earnings. It should be remembered that in a wholly or partially deregulated environment there is no longer a ceiling on earnings for all the services offered by energy and telephone utilities nor is there necessarily an obligation to serve all customers. Water utilities have a ceiling on earnings and have a full obligation to serve all customers. An alternative to allowing a water utility to earn a higher return on common equity as a result of very low internally-generated cash flows is to reduce the common stockholder risk by permitting a more rapid capital recovery rate and/or allow depreciation as a recoverable expense related to property financed by customer contributions and advances.

The Small Firm Effect

Figure 4 on page 8 highlights the small size of the average water compared to the average energy and telephone utilities.

The large size difference is further highlighted by relating the average size of the other utilities to the average water utility. As is evident from the information shown below, the other utilities are many times larger than the average water utility.

Book Capitalization	2 to 25 times larger
Market Capitalization of Common Stock	2 to 70 times larger
Common Shares Outstanding	10 to 60 times more
No. of Shareholders	7 to 10 times more
No. of Shares Traded	40 to 400 times more
% of Institutional Holdings	67% to 114% more

It is important to note that the size of the water companies used in our examination are the very largest. In fact, one of the water utilities accounts for about half the size of the entire water group. Further, the *entire* water group's market value of common equity is about the same size as the *average* size electric and only about 20% of the size of the *average* telephone utility studied.

Figure 4

Description	Electric	Gas	Telephone	Water
	Type of Utility			
Total Book Capitalization ($ Billion)	4.505	0.774	11.209	0.432
Common Equity Market Capitalization ($ Billion)	2.501	0.548	15.075	0.220
Common Shares Outstanding ($ Million)	5.851	1.268	7.826	0.129
No. of Common Shareholders ($ Million)	3.544	0.742	10.061	0.099
No. of Common Shares Traded ($ Million)	2.745	0.449	3.213	0.017
Common Stock Turnover (Years)	3.0	4.7	4.1	6.4
Institutional Holding of Common Stock (%)	33.1	30.8	39.3	18.4

Empirical research has demonstrated the existence of the small firm effect[4]. That is, on average, investments in small firms have provided investors higher returns than similar investments in large firms. Although historical stock returns are not necessarily synonymous with investor-required returns, it is reasonable to conclude that, over time, investors' expectations reflect the highly-publicized existence of the small firm effect. For example, numerous mutual funds classify their investment strategy as small capitalization in an attempt to profit from the existence of the small firm effect.

Regulators need to recognize the reality of the existence of a small firm effect in order to be consistent with the behavior observed in the competitive financial markets. That is, it is necessary for regulators to reflect the greater risk and hence higher required return attributable to the small firm effect when setting authorized rates of return for water utilities. Otherwise, water utilities will not be afforded the opportunity to operate on a competitive basis with other utilities, particularly for the institutional investor dollar, where water utilities significantly lag behind. As previously discussed, water utilities are more capital intensive, and have lower internal cash flow generation compared to other kinds of utilities. Water utilities need to raise significant amounts of capital to finance often non-revenue producing assets to meet ever-increasing environmental and safety standards[5] mandated by the government. Because the replacement cost of existing facilities is several times original cost, there is typically a greater need to attract additional capital compared to other utilities. These factors highlight the need for water utilities to become more attractive to institutional investors.

There is yet another factor related to size which may explain why investors may believe there is more risk associated with a water utility compared to energy and telephone utilities. That factor is diversification with regard to the

[4] Banz, Rolf, W., "The Relationship Between Return and Market Value of Common Stocks," *Journal of Financial Economics*, 9:3-18 1981.

[5] Safe Drinking Water Act of 1974 (amended 1986) and Clean Water Act of 1972 (amended in 1977, 1981 and 1986).

economy of the territory served and in some instance, regulatory diversification as well. Investors are risk averse. Economic theory holds risk can be reduced by diversification[6]. Typically, the telephone utilities used in our study serve several different states and are price regulated by numerous state and federal commissions. Most electric utilities serve entire regions of a particular state. Natural gas utilities do likewise, but to a lesser extent. Water utilities usually serve a particular individual community or area which is much smaller than the area served by the telephone and energy utilities used in our study. Therefore, the small size of water utilities result in no diversification of regulatory risk and no diversification of the economy of the territory served, thereby resulting in greater risk for water utilities.

Firm size is measured through market capitalization or share price times the number of shares outstanding. On average, telephone companies' market capitalization is almost 70 times and electric companies' average capitalization is over 11 times that of the water utilities included in our study. And there is an on-going merger trend in the electric utility industry which will increase the existing size difference between electric and water utilities[7]. The closest in terms of size to water utilities are the gas distribution utilities, whose market capitalization is almost 3 times that of the average water utility included in this study. It should again be remembered that most investor-owned water utilities are much smaller than the average size of the water utilities used in this study. Thus, however lack of size impacts investor judgment in terms of a higher required return, it is even greater for the average investor-owned water utility.

[6]Jack Clark Francis, *Investments Analysis and Management*, Third Edition, McGraw-Hill Book Company, New York, NY, p. 455

[7]There have been no less than 13 mergers either consummated or proposed during the past few years within the electric utility industry. Many more are expected.

Ibbotson Associates[8] indicates that over the last five years companies listed on the New York Stock Exchange with market capitalization similar to that of the water companies experienced a return which was about 140 basis points greater than the companies listed on the New York Stock Exchange which are similar in size to the telephone companies. In any given year, the return differential based upon firm size varies greatly. However, over multiple years of study, it is evident that investors in firms the size of water utilities have consistently experienced returns in excess of the other larger market capitalized utilities. Since water utilities must compete for capital with other small market capitalized firms and should be afforded an opportunity to experience rates of return on common equity sufficient to attract institutional investors' capital at least at parity with other kinds of utilities, it is essential that water utility investors be provided rate of return opportunities which recognize size difference between electric, natural gas distribution and telephone utilities. To do otherwise will likely continue to doom water utilities to be at a competitive disadvantage in their ability to attract capital in competition with energy and telephone utilities.

Securities Liquidity

The small firm effect may be the result of a liquidity premium that investors require for compensation for the lack of marketability and liquidity of their investments. If no compensation is provided, then investors, or at least sophisticated investors, shy away.

The average water utility currently has an average of 10 million shares of common stock outstanding, the average telephone utility averages over 391 million, average electric utilities average 103 million, and average local gas distribution utilities average 24 million. The much

[8]*Stocks, Bonds, Bills and Inflation - 1995 Yearbook*, Ibbotson Associates, Chicago, IL.

lower number of water company shares outstanding prevent or hinder the investments by large institutional investors. Due to the small number of shares outstanding, it is almost impossible to "unwind" or trade a large block of shares without disrupting the market for the water company segment's share of stock. If an institutional investor were to unwind a large block of water utility common stock it could cause supply and demand equilibrium problems. The data shown in Figure 5 below reveal the relative lack of institutional investor interest in water utilities.

Trading of a block of shares of stock by institutions include single market transactions in excess of 10,000 shares. On a typical day, 12 blocks of an average telephone utility's shares are traded involving over 270,000 shares of stock with the average block size being 22,000 shares of stock. The typical daily block of electric utility stock traded is over 83,000 shares with the average block size being about 27,000 shares, while the typical daily block of gas utility shares involves 10,000 shares. Rarely does a block of a water utility's share trade.

Due to the small size and the lack of liquidity, very few security analysts follow the water industry. I/B/E/S[9] reports that, on average, only one security analyst follows the average water company, while on average four follow the gas distributors, seven follow the electrics, and twelve follow the telephone companies. With few institutions and security analysts involved with the water industry, it may well be that the price of a typical water stock is often the result of the interaction of non-sophisticated individual investors who more than likely invest without performing much, if any, fundamental analysis and most likely, do not employ any market valuation models.

To test this assumption, we looked at the average number of trades and the volume of shares traded for each company in each group studied. The five items analyzed include the number of daily trades, the average daily volume, the average size of daily trades, the average daily volume as a percent of total shares outstanding, and the average number of trades as a percent of total shares outstanding. The data is shown in Figure 6 below.

[9] Institutional Brokers Estimate System, a consensus forecast publication widely relied upon by, among others, regulatory commissions in the determination of an estimate of the market-required cost rate for common equity.

Figure 5

Average Institutional Holdings

	Telephone	Electric	Gas	Water
Number of Institutions	592	240	126	55
Percent of Shares Held by Institutions	39	33	31	18

Figure 6

	Telephone	Electric	Gas	Water
Number of Trades	407	88	31	14
Volume	569,220	143,000	31,090	5,550
Average Size of Trades	300	250	150	90
Volume as % of Shares Outstanding	0.15%	0.13%	0.11%	0.06%
Trades as % Shares Outstanding	0.10	0.11	0.13	0.15

Although the larger utilities, such as telephone, electric, and gas distribution have many more trades involving a much higher volume of stock, the average water utility has more trades as a percent of the shares outstanding. This fact buttresses the notion that the average water utility share price is determined through the interaction of individual investors because of the relative frequent trades of the water utilities involves a small number of shares. In addition, it is likely the Efficient Market Hypothesis (EMH) is largely inapplicable in regard to water utility stock prices[10]. This brings into question sole reliance upon market-based valuation models typically employed by state regulators to estimate the investor-required rate of return on common equity such as the Discounted Cash Flow (DCF) model[11].

Valuation models such as DCF are affected by not only light trading volume, but also by the possibility that water utility share prices established by mostly unsophisticated investors do not reflect every element of risk. These facts strongly suggest state regulators should give less weight to DCF and more weight to other methods to estimate the market-required cost rate for common equity for water utilities.

It should also be remembered that the return on equity and related income taxes reflected in the allowed revenue requirement provide the margin for interest coverage. Interest coverage and measures of cash flow adequacy are two of the principal criteria employed by rating agencies and financial institutions with respect to the risk evaluation of utility long-term debt. Thus, it is reasonable to conclude that large institutional investors will not invest heavily in the average water company unless the lack of liquidity and cash flow is recognized in the form of a competitive rate of return on common equity which is at least at parity with electric and gas distribution utility awards.

Conclusion

There are some valid reasons why state regulators believe water utilities face less risk than energy and telephone utilities. Water utilities have little or no competition, there is no substitute for the product, and there is less volatility of water utility revenue and earnings. State regulators are well aware of the increased business risk facing telephone, natural gas distribution, and electric utilities including the movement from a monopoly to a government-fostered competitive environment. No such similar change is on the horizon or is likely even possible in regard to water utilities. Absent any consideration other than greater predictability of water utility revenue and earnings state regulators may make future awards to water utilities even further below past awards compared to other utilities.

A regulatory-determined price for utility service is intended to be the substitute for the marketplace. The price established by regulators for utility service is the opportunity to earn a fair rate of return including a return on common equity. The authorized return on equity should be sufficient to maintain credit, attract capital on reasonable terms, and be comparable to returns earned by similar risk enterprises[12]. The lower awards granted water utilities compared to the other utilities has led to an investor judgment that water utility earnings and the price of

10 "A body of theory, EMH, holds (1) that stocks are always in equilibrium and (2) that it is impossible for an investor to consistently 'beat the market'", Eugene F. Brigham, *Fundamentals of Financial Markets*, Fifth Edition, The Dryden Press, 1989, p. 225.

11 Information derived from the National Association of Regulatory Utility Commissioners' Compilation of Utility Regulatory Policy 1994-1995, p. 615, reveals that almost all state regulators employ a DCF model to estimate the cost rate for common equity and that about 80% of state regulatory commissions employ at least one other method. However, in the circumstance of the use of multiple methods, no information is revealed with respect to any weighting give to DCF or some other method or model.

12 *Bluefield Water Works Improvement Co. v. Public Service Commission*, 262 U.S. 679 (1922) and *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 519 (1994).

water utility stock is worth less than telephone, electric and natural gas utility stock as evidenced by the lower price-earnings multiples and market-to-book ratios for water utilities.

Apparently, investors do not conclude water utilities are less risky than other utilities because their revenue and earnings are less volatile and more certain, or because water utilities do not operate in a competitive environment. Fundamental analysis reveals several other considerations which also affect investor judgment regarding water utilities including higher financial risk, greater capital intensity, the need to employ longer lived property with related low capital recovery rates resulting in lower cash flow, and small size resulting in less liquidity for water utility securities. There is considerable evidence to support the belief that these other factors more than offset the lower volatility of revenues and earnings resulting in the conclusion that the risk of water utilities is similar to the risk of energy utilities. However, water utilities have not presented in a meaningful way these investor-influencing factors for consideration by state regulatory commissions.

The water utility industry must communicate convincingly, in a persuasive way, a rational explanation as to why investors require returns which are at least similar and not below the returns authorized for most other types of utilities. The typical presentation of the past were heavily dependent upon DCF or CAPM valuation models which clearly alone do not adequately or reliably capture investor judgment with respect to the market required rate of return for common equity, particularly for water utilities. The small size, and the lack of liquidity of water utility securities largely negates the exclusive use of these in forming judgments. When all considerations are taken into account, and a complete fundamental analysis is presented, there is a rational explanation of the paradox of the regulatory conventional wisdom compared to the verdict of the money market. Water utility awards need to be relatively higher if the water utility industry is to achieve price-earnings multiples and market-to-book ratios at competitive levels. If competitive levels cannot be achieved by water utilities, capital necessary to finance facilities needed to serve consumers and ensure reliable service may not be available over the long-term.

For clarification, it should be stated these conclusions are based on industry data. Individual companies within the water, telephone, natural gas distribution and electric utility industry could be exceptions. Conclusions regarding relative investment risk requires company-specific fundamental analyses. Given the on-going relatively rapid, almost revolutionary change in the electric, natural gas distribution and telephone industries taking place, conclusions that are valid today, may not be valid tomorrow.

It should be noted that any attempt on the part of the water utility industry to present for regulatory consideration company-specific fundamental analysis intended to explain the paradox discussed in this paper must recognize that such explanations will not likely be successful if presented once, if history is a guide. This is true if for no other reason than the fact that the average state regulator serves less than five years and thus the process, to be successful, must be on-going.

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