BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
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SANDRA D. KENNEDY

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS ANTHEM WATER AND SUN CITY WATER DISTRICTS	DOCKET NO. W-01303A-09-0343
IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS ANTHEM / AGUA FRIA WASTEWATER, SUN CITY WASTEWATER AND SUN CITY WEST WASTEWATER DISTRICTS	DOCKET NO. SW-01303A-0343

REBUTTAL TESTIMONY
OF
BENTE VILLADSEN

ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY

MARCH 22, 2010

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EXECUTIVE SUMMARY

Dr. Bente Villadsen, a Principal at *The Brattle Group*, filed direct testimony on the cost of capital for Arizona-American's Anthem and Sun City water districts as well as for its Anthem / Agua Fria, Sun City, and Sun City West waste water districts (collectively, "Arizona-American Water") in July 2009, and is now filing rebuttal testimony in response to the testimony submitted by Mr. William A. Rigsby on behalf of the Residential Utility Consumer Office ("RUCO"). As Arizona-American Water has accepted Staff's recommended cost of equity, Dr. Villadsen is not responding to the Direct Testimony of Staff Witness Juan C. Manrique.

Mr. Rigsby's recommended 9.5% return on equity on 39.15% equity is too low to be reasonable. It does not afford Arizona-American Water the opportunity to earn a reasonable return on its assets and to successfully raise equity capital. The main reasons, Mr. Rigsby finds such a low cost of equity is that he (i) fails to take Arizona-American's financial risk into account, (ii) relies on an unconventional adjustment in his DCF analysis, and (iii) includes cost of equity estimates below the cost of debt plus a minimum equity risk premium of 100 basis points in his Capital Asset Pricing Model. Simple modifications to Mr. Rigsby's cost of equity estimation methodology increases the calculated cost of equity by at least 100 basis points.

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME AND ADDRESS FOR THE RECORD.

A1. My name is Bente Villadsen. My business address is *The Brattle Group*, 44 Brattle Street, Cambridge, MA 02138.

Q2. ARE YOU THE SAME BENTE VILLADSEN WHO FILED DIRECT TESTIMONY IN THIS PROCEEDING?

A2. Yes I am.

Q3. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A3. I have been asked by Arizona-American Water Company ("Arizona-American Water" or the "Company") to review and comment on the Direct Testimony of William C. Rigsby ("Rigsby Testimony") on behalf of RUCO and to review the Direct Testimony of Juan C. Manrique ("Manrique Testimony") on behalf of the Arizona Corporation Commission ("Commission") Staff in this proceeding.

Q4. PLEASE SUMMARIZE THE RECOMMENDATIONS OF MR. MANRIQUE AND MR. RIGSBY.

A4. The Manrique Testimony recommends that Arizona-American Water Company be allowed a return on equity of 10.7% and a weighted average cost of capital of 7.2% while the Rigsby Testimony recommends the an allowed return on equity of 9.5% and a weighted average cost of capital of 6.77%.[1]

Q5. DO YOU BELIEVE A RETURN ON EQUITY OF 9.5% REFLECTS ACCURATELY THE COST OF EQUITY FOR ARIZONA-AMERICAN WATER COMPANY?

A5. No. First and foremost, I believe investors require a return that is higher than 9.50% and that is especially true because financial markets remain turbulent. Second, the Rigsby Testimony arrives at its recommendation using methods and procedures that are

[1] Manrique Testimony, Executive Summary and Rigsby Testimony p. 7.

unreasonable and unconventional such as relying on cost of equity estimates below the cost of investment grade debt.

Q6. HOW IS THE REMAINDER OF YOUR REBUTTAL TESTIMONY ORGANIZED?

A6. Section III discusses the reasonableness of the return on equity Mr. Rigsby recommends. Section IV discusses specifics of the Rigsby Testimony and re-calculates its cost-of-equity estimates using more reasonable assumptions. Section V concludes.

II. A RETURN ON EQUITY OF 9.5% IS NOT REASONABLE

Q7. HOW DOES THE RIGSBY TESTIMONY ARRIVE AT ITS RECOMMENDED 9.5% RETURN ON EQUITY?

A7. The Rigsby Testimony applies several cost of equity estimation techniques to a sample of 4 water utilities and to a sample of 10 gas LDC companies resulting in a range of estimates from 5.24 to 9.75 percent.[2] First, combining historical and forward looking growth rates, the Rigsby Testimony uses a sustainable growth DCF model to determine a cost of equity figure for its water sample and for its gas LDC sample. The Rigsby Testimony averages these two estimates to come up with a DCF-based cost of equity of 9.65%. Second, the Rigsby Testimony uses two versions of the Capital Asset Pricing Model ("CAPM") to determine two cost of equity estimates for each of the two samples. As for the DCF method, the Rigsby Testimony averages the four CAPM-based cost of equity estimates and finds an average CAPM-based cost of equity of 6.28%.[3] The average of Mr. Rigsby's DCF and CAPM estimates is 7.96%, which the Rigsby Testimony increases by approximately 150 basis points to get a recommendation of 9.50%, which "falls within the range of results that I obtained."[4]

Q8. CAN YOU ELABORATE ON WHY YOU THINK THE RIGSBY TESTIMONY'S RECOMMENDATION IS TOO LOW?

[2] Rigsby Testimony p. 9.
[3] *Rigsby Testimony, Schedule* WAR-1.
[4] Rigsby Testimony p. 6.

A8. There are several reasons why I believe the recommendation is too low. First, the financial crisis of 2008-09 has eased but financial markets remain volatile and, as explained in my Direct Testimony, volatility increases the risk premium investors require to hold equity. Second, if I make simple and conservative adjustments to cost-of-equity estimates provided in the Rigsby Testimony, I find a much more reasonable estimate. Specifically, (i) discarding cost-of-equity estimates below the cost of investment grade debt, (ii) taking Arizona-American Water Company's higher leverage into account, (iii) eliminating the market-to-book adjustment in Mr. Rigsby's DCF estimates, lead to cost of equity estimates in the range of 10.5 to 11.2 percent. This range is consistent with Staff's recommended cost of equity, which Arizona-American Water Company has accepted.

Q9. DO YOU HAVE A VIEW ON THE APPROPRIATENESS OF STAFF'S RECOMMENDED ROE?

A9. Yes. The ROE level recommended by Staff is consistent with the ROE allowed by other jurisdictions and within the range of what credit rating agencies consider appropriate for a utility such as Arizona-American Water. For example, in Q4 2009, the average allowed ROE for natural gas distribution companies was 10.4% and those companies had on average higher equity and thus less financial risk than Arizona-American Water.[5]

Q10. PLEASE COMMENT ON THE IMPACT OF THE FINANCIAL CRISIS ON THE COST OF CAPITAL AND SPECIFICALLY ON THE DISCUSSION IN THE TESTIMONY OF MR. RIGSBY.

A10. As acknowledged in the Rigsby Testimony (pp. 49-51), the second half of 2008 and all of 2009 were turbulent times in financial markets with substantial government action. Among the consequences of the financial turbulence were a very large increase in the spread between utility and government bond yields, highly volatile stock prices, and limited access to liquidity for many companies. While financial markets certainly have improved, they have yet to fully recover. For example, Figure R-1, which is an updated version of Figure 7 from my Direct Testimony shows that the spread between utility

[5] Regulatory Research Associates, Major Rate Case Decisions – January 2009-December 2009, issued January 8, 2010. According to this publication, the average equity percentage for the gas utilities was 49.4%. I do not know of public data that summarize allowed rates of return for water and wastewater utilities.

borrowing rates and risk-free rates remains higher than in the recent past. The Figure is attached to this testimony.

Because the borrowing rate for a utility is related to the yield on utility bonds, information about utility bonds is, in my view, an important consideration, when determining the cost of capital for a utility.

Q11. MORE BROADLY WHAT HAPPENS TO INVESTOR EXPECTATIONS DURING TIMES OF FINANCIAL TURMOIL?

A11. The facts that financial markets are in turmoil and stock market volatility has increased dramatically mean that equity investors face increased uncertainty. Increased uncertainty leads them to seek lower risk investments or to demand a higher expected rate of return before they are willing to invest their money. In part, this is an explanation of why market prices have fallen. The financial market distress means that the current market risk premium ("MRP") is higher than it would otherwise be. Dimson, Marsh, and Staunton (2008) appear to agree as they note:

- Although credit spreads widened, credit fundamentals as measured by low default rates remained at historically strong levels. This may indicate higher defaults to come, an increase in risk aversion, a bigger premium for liquidity, or all three.[6]
- As investors' risk aversion also increases during times of financial distress, there can be little doubt that the MRP is currently higher than in the recent past.

Q12. WHAT BEARING DOES THIS HAVE ON WATER UTILITIES, WHICH HISTORICALLY HAVE BEEN VIEWED AS RELATIVELY LOW RISK?

A12. Debra G. Coy, a senior research analyst at the investment firm Janney Montgomery specializing in the water industry, noted, in testimony before the California PUC,

> Water utilities have historically been viewed as low-risk, predictable, regulated monopolies, and they have attracted equity

[6] Elroy Dimson, Paul Marsh, and Mike Staunton, 2008, *Global Investment Returns Yearbook 2008*, p. 25.

> investors who appreciated those characteristics. Now, investors are more wary

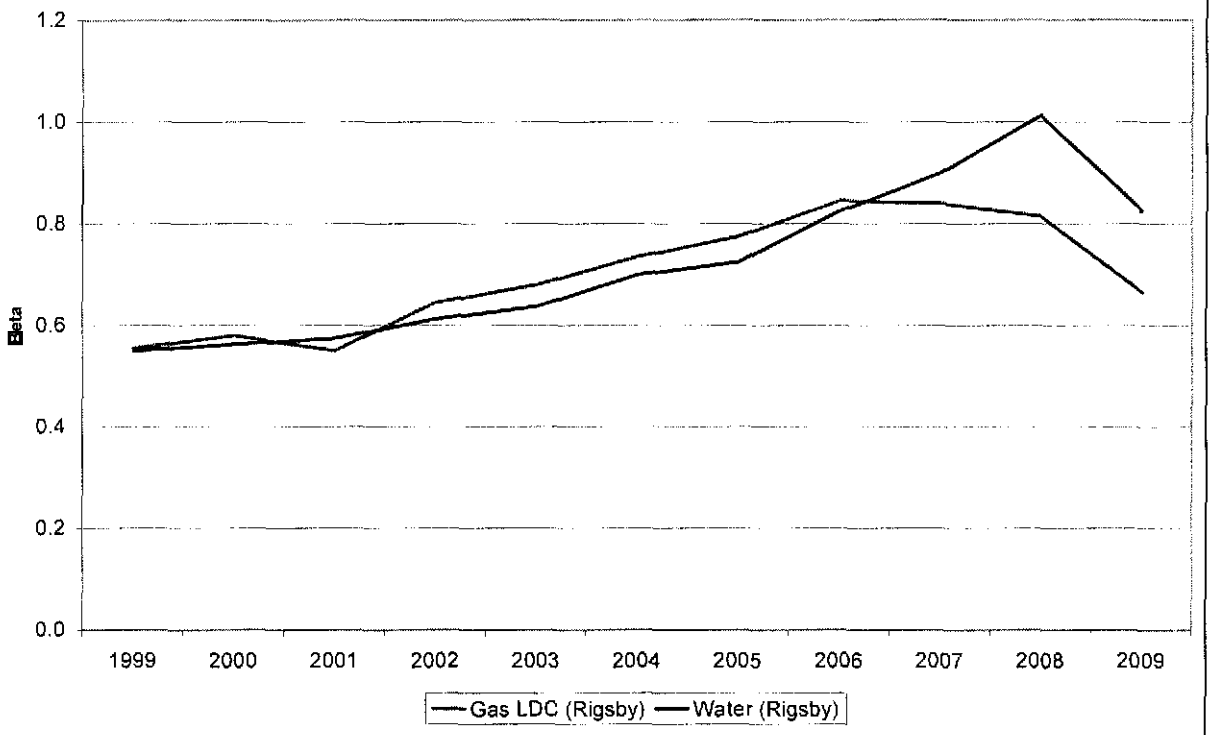
and

> [i]nvestors have come to understand that 'low risk' water utilities in fact carry a variety of potential risks, the largest of which is their raising need to repair and replace aging infrastructure, resulting in high capex requirements, low depreciation rates, and negative free cash flow, along with the negative effects of regulatory lag on earnings.[7]

Value Line documents this increase in systematic risk as the betas Value Line estimates for the utility companies in the water sample have increased over time and are now higher than those of, for example, gas LDC companies. Figure R-2 below also demonstrates that water utility betas have not declined to the degree that has, for example those of gas LDCs. Further, the water companies' beta did not decline until well into the financial crisis. This indicate that water utility stock are moving in co-step with the market - - when the market declines, so does utility stock. Put simply, investors in water utility stock can expect to be exposed to substantial systematic risk (i.e., water utility stock is not a safe haven based on this measure).

[7] Debra G. Coy, "A Capital Markets View of Water Utilities," submitted to the California Public Utilities Commission at the request of the CPUC Staff, January 30, 2009 ("Coy Testimony") p. 7.

Figure R-2: Value Line Betas



Source: Value Line; based on Rigsby Samples.

Q13. ARE VALUE LINE BETAS A RELIABLE MEASURE OF THE WATER INDUSTRY'S SYSTEMATIC RISK?

A13. Yes. While the stocks of some publicly traded water companies trade relatively infrequently, the impact hereof on estimated betas do not change significantly over time, so the trend illustrated in Figure R-2 reflects an increase in the water industry's systematic risk albeit the financial crisis impacted the trend. At the same time, there are other indications that the overall risk of the industry is increasing. For example, the industry has a significant need for infrastructure investment[8] and faces unique water supply risks in some jurisdictions. At the same time, the regulatory requirements

[8] A recent discussion of this is found in the *New York Times*, "Saving U.S. Water and Sewer Systems Would be Costly," March 14, 2010. See also, *American Society of Civil Engineers*' Infrastructure Report Card at www.infrastructurereportcard.org

imposed on the water industry are evolving. Hence the water industry is experiencing a transition period which adds to the risk of the industry. As there is a positive relationship between risk and return, the cost of equity necessarily has increased in the last couple of years.

III. REASONABLE ADJUSTMENTS TO THE RECOMMENDED ROE IN THE RIGSBY TESTIMONY

Q14. PLEASE EXPLAIN THE REASONABLE ADJUSTMENTS YOU MAKE TO MR. RIGSBY'S CALCULATIONS.

A14. First, I note that Mr. Rigsby fails to take Arizona-American Water Company's higher financial risk into account. I illustrate the impact of this using the Staff's book value based approach as well as an implementation based on market values. Second, the Rigsby Testimony makes an unconventional adjustment to the DCF model and fails to take the fact that the cost of equity necessarily is higher than the cost of debt plus a risk premium into account. The risk premium simply compensates equity holders for the fact that equity carries more risk than debt.

Q15. PLEASE EXPLAIN THE FIRST ADJUSTMENTS YOU MENTIONED ABOVE.

A15. The Rigsby Testimony fails to consider the additional risk Arizona-American Water faces because it has more debt than comparable companies. It is common to take this feature into account and, in this case, Staff Witness Manrique has taken the difference in Arizona-American Water Company's and the sample companies' book value capital structure into account. I implemented the same procedure as relied upon by staff using Mr. Rigsby's data and found that an upward adjustment of 55 to 60 basis points are warranted using book value capital structures whereas an adjustment of 80 to 120 basis points is warranted using the theoretically more correct market value capital structure

relied upon in the estimation phase.[9] The calculation of this adjustment is presented in Schedules R-1, Panels A and B attached to this testimony.

Q16. PLEASE EXPLAIN HOW THE RIGSBY TESTIMONY DETERMINES ITS DCF RESULTS.

A16. The Rigsby Testimony relies on a constant growth DCF model with a sustainable growth rate where the standard sustainable growth model states that

$$g = b \times r + s \times v \quad \textbf{(1)}$$

where b is the earnings retention ratio
r is the return on common equity
s is the growth in shares
v = [(Market Value per Share) / (Book Value per Share) - 1] **(2-a)**

Rigsby calculates the five-year historical and forecasted retention ratio, book return on equity, book value per share, and growth in shares. Based on five-year historical averages and forecasted growth rates, Rigsby decides on an internal growth rate.[10] He also estimates the share growth. However, the Rigsby Testimony relies on a model where v is replaced by[11]

$$v^* = \{[(\text{Market Value per Share}) / (\text{Book Value per Share}) + 1] / 2 - 1\} \quad \textbf{(2-b)}$$

As v* is less than v whenever the stock price per share is higher than the book value per share, the formula in (2-b) results in a lower growth rate than the standard formula for companies with a market-to-book (or price to book value per share) above one. The simplest way to see the difference between (2-a) and (2-b) is to slightly rewrite the formula. Let M denote the market value per share and B denote the book value per share. Simple algebraic manipulations show that

$$v = s \times (M - B) / B \quad (3\text{-a})$$

[9] The figures are not necessarily consistent with those obtained by Staff because the Rigsby Testimony relied on a different sample.
[10] *See* Rigsby Direct p. 27 and Schedules WAR-4, WAR-5, and WAR-6.
[11] Rigsby Direct, Schedule WAR-4, page 2.

while (2-b) becomes

$$v^* = s \times (M - B) / 2B \qquad (3\text{-b})$$

Equation (3-a) is the standard version of the sustainable growth model that textbooks present. It simply calculates growth in equity that shareholders contribute in excess of book value from external financing. In contrast, the version presented in the Rigsby Testimony (versions (2-a) and (2-b)) do not have a straightforward interpretation. Instead, it arbitrarily reduces the growth contribution by equity holders as it assumes that the market value will drop to approach the book value and do so in a manner that cuts the long-term external growth in half. There is no theory that justifies this formula and the Rigsby Testimony did not cite a textbook or scholarly article that demonstrates the empirical validity of the assumption. Instead Mr. Rigsby cited testimony by another ROE witness.[12] Because Mr. Rigsby's adjustment to the standard sustainable growth has no theoretical support and Mr. Rigsby has not provided empirical evidence that it is an accurate description of real world phenomena, I find the adjustment unsupported and modified the Rigsby Testimony's results using the textbook formula for the sustainable growth.

Q17. WHAT ARE THE CONSEQUENCES OF THE RIGSBY TESTIMONY"S MODIFICATION OF THE SUSTAINABLE GROWTH METHOD?

A17. In essence, the adjustment lowers (increases) the sustainable growth rate when the market-to-book ratio is higher (lower) than one. Table R-2 attached to this testimony reports the results from using the data in the Rigsby Testimony's Schedules WAR-3 and WAR-4 page 2, but removing the adjustment factor. For the water companies the cost-of-equity estimate increases by about 80 basis points while the cost-of-equity estimate for the gas LDC sample increases by about 35 basis points for an average increase of about 60 basis points in the DCF cost-of-equity estimate.

[12] Rigsby Testimony p. 18.

As can be seen from R-2, the impact of this one adjustment is significant and biases the DCF estimates obtained in the Rigsby Testimony downward.

Q18. WHAT IS YOUR POINT THAT THE COST OF EQUITY NEEDS TO BE HIGHER THAN THE COST OF DEBT PLUS A RISK PREMIUM?

A18. First, I note that a cost of equity estimate that is below the cost of debt plus an amount is unreasonable. At the Federal Energy Regulatory Commission ("FERC"), it is common to exclude ROE estimates that are lower than the yield on utility bonds of the same rating as the target company plus 100 basis points.[13] FERC's rationale for this is that equity is riskier than debt and therefore ROE estimates below the cost of debt plus a risk premium are not meaningful.[14] Following FERC's approach of excluding estimates of the cost of equity that are lower than the yield on Baa-rated utility bonds, only two CAPM estimate meets that criteria as the Baa utility bond yield averaged 6.23% for the first 15 days in March.[15] Using this approach to the CAPM, the Rigsby Testimony's results are modified by eliminating all company-specific ROE results that are less than the cost of debt plus 100 basis points. Specifically, I used the average yield on Baa-rated utility bonds for the first 15 days in March. The results of this analysis is presented in Schedule R-3 attached to this testimony and shows that failing to consider that equity is riskier than debt downward biases the ROE estimates by approximately 60 basis points. In this analysis I relied on Mr. Rigsby's analysis using his arithmetic risk premium.

Q19. DO YOU HAVE ANY PRELIMINARY COMMENTS ABOUT THE CAPM RESULTS OBTAINED BY THE RIGSBY TESIMONY?(I WOULD MOVE THIS POINT TO LATER IN YOUR TESTIMONY-I NOTE IT LATER ON PAGE 9)

A19. Yes. Two of CAPM estimates presented in Schedule WAR-1 are lower than the current yield on Baa-rated utility bonds, which simply makes no sense. The cost of equity is higher than the cost of investment grade debt. Further, the average CAPM-based cost of equity estimate is essentially equal to the current yield on Baa-rated utility bonds, which simply indicate that the estimate is flawed. As of March 15, 2010, the yield on Moody's

[13] FERC has not ordered a specific number of basis points but used 100 bps in several orders.
[14] See, for example, *FERC Order 445, 92 FERC ¶61,007.*
[15] See Rigsby Schedule WAR-7.

Baa-rated utility bonds was approximately 6.2% or 8 basis points below the average CAPM estimate provided in the Rigsby Testimony.[16] Even though the Rigsby Testimony recommends a return on equity in the high end of its estimated range, it is too low to reflect the return investors currently require.

Q20. DID YOU FIND ANY OTHER PROBLEMS WITH MR. RIGSBY'S CAPM?

A20. Yes. In addition to relying on cost of equity estimates that are below the cost of debt, the Rigsby Testimony relies on a medium term government bond in its estimation of the CAPM. While the theoretical CAPM was developed using short-term risk-free rates, most practitioners rely on long-term risk-free rates because long-term risk-free rates are less influenced by current monetary policy. It is uncommon to see intermediate risk-free rates relied upon. At the moment, all shorter term government instruments have a very low yield, this downward biases the results. Also, the Rigsby Testimony presents two versions of the CAPM of which one relies on geometric measures of the market risk premium. While the magnitude of the market risk premium currently is the subject of scrutiny in the academic literature,[17] there is little doubt among academics that the geometric market risk premium does not apply to cost-of-capital estimation. For example, Ibbotson Associates state

> The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for the reporting past performance, since it represents the compound average return.[18]

Similarly, the *New Regulatory Finance* text by Roger A. Morin (2006) argues that

[16] Bloomberg as of March 17, 2010.
[17] See Villadsen Appendix C for a detailed discussion.
[18] Morningstar Ibbotson SBBI 2009 Valuation Yearbook, p. 59.

> Only arithmetic means are correct for forecasting purposes and for estimating the cost of capital. There is no theoretical or empirical justification for the use of geometric mean rates of returns as a measure of the appropriate discount rate in computing the cost of capital or in computing present values. There is no dispute in academic circles as to whether the arithmetic or geometric average should be used for purposes of computing the cost of capital.[19]

Finally, the text by Bode, Kane, and Marcus (2005) states:

> [I]f our focus is on future performance, then the arithmetic average is the statistic of interest because it is an unbiased estimate of the portfolio's expected return (assuming, of course, that the expected return does not change over time). In contrast, because the geometric return over a sample period is always less than the arithmetic mean, it constitutes a downward-biased estimator of the stock's expected return in any future year.[20]

For these reasons and because all estimated figures are below the cost of debt plus 100 basis points, this analysis should be ignored.

Q21. PLEASE SUMMARIZE YOUR MODIFICATIONS TO THE RIGSBY TESTIMONY'S CALCULATIONS.

A21. Table 1 below summarizes the impact of the three adjustments discussed above.

[19] Roger A. Morin (2006), *New Regulatory Finance*, Public Utilities Reports, Inc., ("Morin (2006)"), pp. 116-117.
[20] Zvi Bode, Alex Kane, and Alan J. Marcus (2005), *Investments*, 6'th Edition, McGraw-Hill, p. 865.

Table 1: Rigsby Modified Analysis

	Water		Gas LDC
Rigsby DCF	9.75%		9.55%
Reversing M/B Adjustment	0.80%		0.36%
Revised DCF	10.56%		9.91%
Rigsby Arithmetic CAPM	7.46%		6.52%
Eliminating Estimates below CoD + 1%	0.76%		nmf
Revised CAPM	8.23%		nmf
Median	9.91%		
Adjustment for financial Risk - book value	0.56%		0.56%
Adjustment for financial Risk - market value	1.28%		0.79%
Median Range after Adjustment	10.47%	to	11.19%

I note that all three adjustments are warranted. Because the modification to the CAPM model leaves only two companies available for the estimation process, of which one has recently restated its financials, I believe the median is more representative of the results than the average, which would assign a very large weight to those two companies. The median result of the modified Rigsby analysis result in a ROE range of 10.5 to 11.2%, so that Staff's recommendation falls within that range.

IV. CONCLUDING REMARKS

Q22. DO YOU HAVE ANY OTHER COMMENTS ON THE TESTIMONY OF MR. RIGSBY?

A22. Yes. On pages 37-39, the Rigsby Testimony cites recent improvements in capital markets as one reason why an ROE of 9.5% is appropriate for Arizona-American Water. While I certainly agree that financial markets have improved substantially over the last year, I believe investors remain cautious about investing because of the recent experience and because the economy faces many risks going forward with a record level federal debt, a continual troubled real estate market, etc. Therefore, the necessity to ensure that Arizona-American Water Company earns a return that enables it to maintain access to

financial markets to finance infrastructure and operating needs continues to be a critical factor.

Q23. YOU DID NOT ADDRESS STAFF'S APPROACH TO COST OF EQUITY ESTIMATION. DOES THAT MEAN YOU AGREE WITH THE METHODOLGY?

A23. Not necessarily. Because the Company has accepted Staff's recommendation, I did not include a rebuttal of Staff's Testimony.

Q24. YOU DO NOT ADDRESS ALL ISSUES OR FINDINGS DISCUSSED IN THE RIGSBY TESTIMONY. DOES THAT IMPLY THAT YOU ACCEPT THEIR POSITIONS OR FINDINGS?

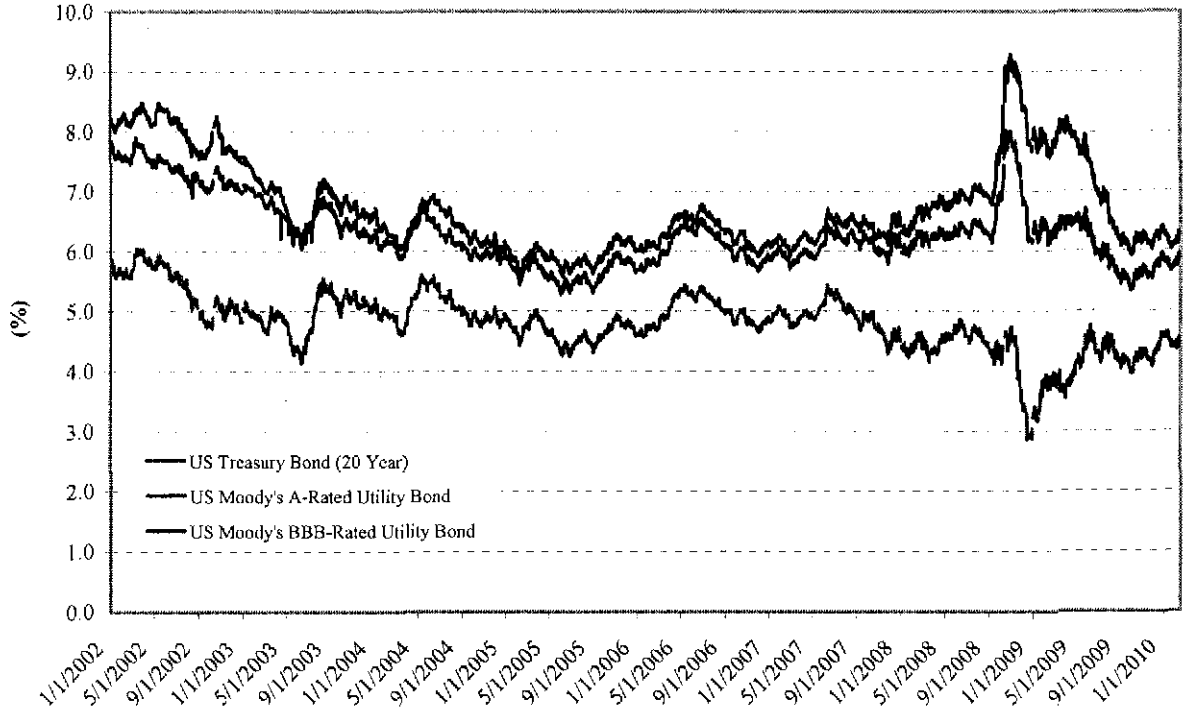
A24. No, not necessarily.

Q25. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A25. Yes.

SUPPORTING FIGURES AND SCHEDULES

Figure R-1: US Bond Yields from January 2002 to February 2010



Source: Bloomberg as of February, 2010.

Schedule R-1, Panel A: Adjusting for Financial Risk
(book value capital structure)

	Water Utilities	Gas LDC
Value Line Beta	0.83	0.67
Raw Beta	0.71	0.48
Average Book Equity	49%	53%
Tax Rate	34%	34%
Unlevered Beta	0.42	0.30
Company Book Equity	39.15%	39.15%
Relevered Beta	0.85	0.61
Relevered Adj. Beta	0.92	0.76
Risk Free Rate	2.43%	2.43%
Market Risk Premium	6.10%	6.10%
CoE with Relevered Beta	8.02%	7.07%
Original CoE	7.46%	6.52%
Leverage Adjustment	0.56%	0.56%

Sources: Rigsby WAR-7 and WAR-9
Staff Workpapers provide methodology

Schedule R-1, Panel B: Adjusting for Financial Risk (market value capital structure)

	Water Utilities	Gas LDC
Value Line Beta	0.83	0.67
Raw Beta	0.71	0.48
Average Book Equity	62%	60%
Tax Rate	34%	34%
Unlevered Beta	0.50	0.33
Company Book Equity	39.15%	39.15%
Relevered Beta	1.02	0.67
Relevered Adj. Beta	1.04	0.80
Risk Free Rate	2.43%	2.43%
Market Risk Premium	6.10%	6.10%
CoE with Relevered Beta	8.74%	7.31%
Original CoE	7.46%	6.52%
Leverage Adjustment	1.28%	0.79%

Sources: Rigsby WAR-7 and WAR-9
Staff Workpapers provide methodology
Villadsen Direct Testimony Table BV-4 and BV-16

Schedule R-2: Recalculating Rigsby Sustainable Growth

Revisiting Rigsby DCF	Dividend Yield [1]	Internal Growth [2]	Share Growth [3]	Market to Book [4]	External Growth [5]	Sustainable Growth [6]	Estimated Cost of Equity Capital [7]
Water Utilities							
AMERICAN STATES WATER CO.	2.99%	6.25%	5.00%	1.78	3.88%	10.13%	13.12%
CALIFORNIA WATER SERVICE GROUP	3.19%	6.00%	1.75%	1.85	1.48%	7.48%	10.68%
SOUTHWEST WATER COMPANY	3.29%	5.75%	1.10%	1.35	0.39%	6.14%	9.43%
AQUA AMERICA, INC.	3.34%	5.00%	0.55%	2.20	0.66%	5.66%	9.00%
AVERAGE							10.56%
Gas LDC							
AGL RESOURCES, INC.	4.72%	5.50%	1.00%	1.62	0.62%	6.12%	10.84%
ATMOS ENERGY CORP.	4.62%	4.10%	3.75%	1.23	0.86%	4.96%	9.59%
LACLEDE GROUP, INC.	4.62%	4.50%	3.25%	1.41	1.34%	5.84%	10.45%
NEW JERSEY RESOURCES CORPORATION	3.66%	5.25%	1.25%	2.27	1.59%	6.84%	10.49%
NICOR, INC.	4.45%	4.50%	0.25%	1.87	0.22%	4.72%	9.17%
NORTHWEST NATURAL GAS CO.	3.74%	4.25%	1.00%	1.78	0.78%	5.03%	8.78%
PIEDMONT NATURAL GAS COMPANY	4.14%	5.75%	0.01%	2.07	0.01%	5.76%	9.90%
SOUTH JERSEY INDUSTIES, INC.	4.27%	7.00%	1.50%	2.05	1.57%	8.57%	12.84%
SOUTHWEST GAS CORPORATION	3.33%	4.50%	2.50%	1.10	0.25%	4.75%	8.08%
WGL HOLDINGS, INC.	4.51%	4.40%	0.10%	1.49	0.05%	4.45%	8.96%
AVERAGE							9.91%
Average of Water and Gas LDC							**10.23%**

[1] Rigsby WAR-3.
[2] Rigsby WAR-4, page 1
[3]-[4] Rigsby WAR-4 page 2.
[5] = [3] x ([4] - 1)
[6] = [2] + [5]
[7] = [1] + [6]

Schedule R-3: Modifying Rigsby's CAPM

	As Filed [1]	Modified [2]
Water Using Geometric MRP	5.90%	nmf
Gas LDC Using Geometric MRP	5.24%	nmf
Water Using Arithmetic MRP	7.46%	8.23%
Gas LDC Using Aritmetic MRP	6.52%	nmf

[1]: Rigsby Schedule WAR-7
[2]: Eliminating all results below cost of debt plus 100 bps