BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF DELAWARE

IN THE MATTER OF THE APPLICATION   )
OF TIDEWATER UTILITIES, INC.   )   PSC DOCKET NO. 13-466
FOR A GENERAL RATE INCREASE   )

DIRECT TESTIMONY

OF

GLENN A. WATKINS

ON BEHALF OF THE

DIVISION OF THE PUBLIC ADVOCATE

MAY 20, 2014

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DIRECT TESTIMONY OF
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TIDEWATER UTILITIES, INC.
PSC DOCKET NO. 13-466

I. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A.   My name is Glenn A. Watkins. My business address is 9030 Stony Point Parkway, Suite 580, Richmond, Virginia 23235.

Q. WHAT IS YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND?

A.   I am Vice President and Senior Economist of Technical Associates, Inc., which is an economic research and consulting firm with offices in Richmond, Virginia. Except during 1987 when I was employed by Old Dominion Electric Cooperative as its forecasting and regulatory economist, I have worked in varying capacities with Technical Associates continuously since 1980.

During my career at Technical Associates, I have conducted cost of capital, revenue requirement, load forecasting, cost of service, and rate design studies involving numerous electric, gas, water/wastewater, and telephone utilities, and have presented expert testimony on these and other topics in Alabama, Arizona, Delaware, Georgia, Illinois, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Vermont, Virginia, South Carolina, Washington, and West Virginia.

1   I hold an M.B.A. and B.S. in economics from Virginia Commonwealth University

2   and am a Certified Rate of Return Analyst. A more complete statement of my

3   professional and educational background appears in my Schedule GAW-1.

4

5 **Q.   HAVE YOU PREVIOUSLY APPEARED BEFORE THIS COMMISSION?**

6 A.   Yes. I have provided testimony before this Commission on issues pertaining to

7   cost of capital, revenue requirement, and rate structure in Tidewater Utilities' last rate

8   case as well as Artesian Water and Delmarva Power & Light (Gas) rate cases.

9

10 **Q.   WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

11 A.   I have been retained by the State of Delaware Division of the Public Advocate

12   ("DPA") to evaluate all aspects of the current water rate case filing of Tidewater Utilities,

13   Inc. ("Tidewater" or "Company"), relating to fair rate of return, class revenue

14   responsibility and rate design.

15

16 **II.   <u>SUMMARY OF RECOMMENDATIONS</u>**

17

18 **Q.   PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS.**

19 A.   Based on my analyses of Tidewater's capital costs, I recommend an overall rate of

20   return of 7.59%. My cost of capital recommendation is based on a cost of equity of

21   9.10% and reflects the following capital structure and cost of long-term debt:

22

23

	Percent of Capital	Cost	Weighted Cost
Long-Term Debt	49.04%	6.01%	2.95%
Common Equity	50.96%	9.10%	4.64%
Total	100.00%		7.59%

With regard to class revenue responsibility and rate design, I recommend a somewhat different distribution of revenue to the various customer classes and service categories than that proposed by Tidewater and recommend no change in fixed monthly/quarterly customer charges.

III.   COST OF CAPITAL

A.   Economic/Legal Principles and Methodologies

Q.   WHAT IS YOUR UNDERSTANDING OF THE ECONOMIC AND LEGAL PRINCIPLES WHICH UNDERLIE THE CONCEPT OF A FAIR RATE OF RETURN FOR A REGULATED UTILITY?

A.   Rates for regulated public utilities are traditionally based on a revenue requirement/rate of return on rate base concept. The revenue requirement establishes a level of operating expenses, taxes and depreciation deemed reasonable for rate setting purposes. In addition, the revenue requirement includes a provision for a fair and reasonable profit level to investors. This profit level is usually referred to as a fair rate of return, or cost of capital. Because of the monopoly status of public utilities, and hence their ability to reap excessive profits absent proper regulation, the fair rate of return is considered to be the rate at which a utility can maintain its existing capital and attract

1 new capital. Anything more is considered monopoly profits, and anything less is not

2 sufficient compensation for the risks undertaken by investors.

3 Two U.S. Supreme Court decisions are universally cited as providing the

4 standards for a fair rate of return. The first is Bluefield Water Works and Improvement

5 Company v. Public Service Commission of the State of West Virginia, 262 U.S. 679,

6 692-693 (1923). In this decision, the Court stated:

> 7 What annual rate will constitute just compensation depends upon many
> 8 circumstances and must be determined by the exercise of a fair and
> 9 enlightened judgment, having regard to all relevant facts. A public utility
> 10 is entitled to such rates as will permit it to earn a return on the value of the
> 11 property which it employs for the convenience of the public equal to that
> 12 generally being made at the same time and in the same general part of the
> 13 country on investments in other business undertakings which are attended
> 14 by corresponding risks and uncertainties; but it has no constitutional right
> 15 to profits such as are realized or anticipated in highly profitable enterprises
> 16 or speculative ventures. The return should be reasonably sufficient to
> 17 assure confidence in the financial soundness of the utility, and should be
> 18 adequate, under efficient and economical management, to maintain and
> 19 support its credit and enable it to raise the money necessary for the proper
> 20 discharge of its public duties. A rate of return may be reasonable at one
> 21 time, and become too high or too low by changes affecting opportunities
> 22 for investment, the money market, and business conditions generally.

23

24 This decision established the following standards for a fair rate of return:

25 comparable earnings, financial integrity, and capital attraction. It also noted the changing

26 level of required returns over time as well as an underlying assumption that the utility be

27 operated in an efficient manner.

28 The second decision is Federal Power Commission v. Hope Natural Gas

29 Company, 320 U.S. 591, 603 (1942). In that decision, the Court stated:

> 30 The rate-making process under the [Natural Gas] Act, i.e., the fixing of
> 31 'just and reasonable' rates, involves a balancing of the investor and
> 32 consumer interests . . . From the investor or company point of view it is
> 33 important that there be enough revenue not only for operating expenses

1   but also for the capital costs of business. These include service on debt
2   and dividends on the stock . . . By that standard the return to the equity
3   owner should be commensurate with returns on investments in other
4   enterprises having corresponding risks. That return, moreover should be
5   sufficient to assure confidence in the financial integrity of the enterprise,
6   so as to maintain its credit and to attract capital.

7

8   This case affirmed the primary standards of the Bluefield case as well as the public

9   interest standard. The Hope case is also credited with the establishment of the "end

10   result" doctrine, which maintains that the methods utilized to develop a fair return are not

11   important as long as the end result is reasonable.

12   It is apparent that these standards reflect the economic criteria encompassed in the

13   "opportunity cost" principle of economics, which holds that a utility and its investors

14   should be afforded an opportunity (not a guarantee) to earn a return commensurate with

15   returns they could expect to achieve on investments of similar risk. The opportunity cost

16   principle is consistent with the fundamental premise on which regulation rests, namely

17   that it is intended to act as a surrogate for competition.

18

19   **B.**   **Capital Structure**

20 **Q.**   **PLEASE EXPLAIN WHAT A UTILITY'S CAPITAL STRUCTURE IS AND WHY**

21   **IT IS IMPORTANT IN DETERMINING THE COST OF CAPITAL.**

22 A.   Capital structure refers to the types and percentages of various capital supplied by

23   investors. Utilities employ two basic types of capital – debt and equity. Financial theory

24   tells us that each firm has an optimal capital structure such that its overall cost of capital

25   is minimized. This is because debt capital (which is deductible for income tax purposes)

26   is considered to have a lower cost than equity capital. However, as a firm's debt load

1		increases, the firm's debt and equity costs will rise due to increased risk of default or not
2		earning a reasonable level of equity return resulting from higher interest and debt
3		repayment obligations.
4		
5	**Q.**	**WHAT CAPITAL STRUCTURE DOES TIDEWATER PROPOSE IN THIS RATE**
6		**CASE?**
7	A.	The Company's filing requests the following capital structure for ratemaking:
8		

	Percent of Capital
Long-Term Debt	49.04%
Common Equity	50.96%
Total	100.00%

11		
12	**Q.**	**IS THE COMPANY'S PROPOSED CAPITAL STRUCTURE REASONABLE?**
13	A.	Yes. The Company's proposed capital structure is closely aligned with the capital
14		structures of similar water utilities utilized in my proxy group for determining
15		Tidewater's cost of equity. As such, I have accepted the Company's proposed capital
16		structure.
17		
18		**C.** **Cost of Debt**
19	**Q.**	**WHAT IS TIDEWATER'S PROPOSED LONG-TERM DEBT COST?**
20	A.	The Company has utilized a long-term cost of debt of 6.01%.
21		
22	**Q.**	**HAVE YOU ACCEPTED TIDEWATER'S COST OF DEBT?**
23	A.	Yes.

1	**D.**	**Cost of Common Equity**

2 **Q. HOW CAN THE COST OF COMMON EQUITY FOR A UTILITY BE**

3 **ESTIMATED?**

4 A. Neither the courts nor economic/financial theory have developed exact procedures

5 for precisely determining the cost of common equity. This is the case since the cost of

6 equity is an opportunity cost and is prospective or forward looking, which indicates it

7 must be estimated.

8 There are several useful models which can be employed to assist in estimating the

9 cost of equity capital, which is the capital cost item that is the most difficult to determine.

10 In performing analyses of the cost of common equity, it is customary and appropriate to

11 consider the results of more than one method. The analyst and/or Commission must then

12 decide upon the appropriate weight to give the results of each method in the

13 determination of the cost of common equity. This follows, since each method requires

14 judgment as to the reasonableness of its assumptions and inputs; each model has its own

15 way of examining investor behavior; each model proceeds from different fundamental

16 premises, most of which cannot be validated empirically; and each model may not at all

17 times be representative of current investor behavior.

18

19 **Q. WHICH METHODS HAVE YOU EMPLOYED IN YOUR ANALYSES OF**

20 **TIDEWATER'S COST OF COMMON EQUITY?**

21 A. I have the employed Discounted Cash Flow ("DCF"), the Capital Asset Pricing

22 Model ("CAPM"), and Comparable Earnings ("CE") methods to determine the cost of

23 equity for Tidewater.

1.   Selection of Proxy Groups

2   **Q.   HOW HAVE YOU ESTIMATED THE COST OF COMMON EQUITY FOR**

3   **TIDEWATER?**

4   A.   Because Tidewater is not publicly traded, it is necessary to analyze groups of

5   comparison or "proxy" companies as a substitute for Tidewater to determine its cost of

6   common equity. The most frequently used method is to select a group of comparison

7   companies. My group of proxy companies is derived from the group of water utility

8   companies analyzed by Value Line. Nine companies meet this criterion. This group

9   reflects a representative sample of water utilities, and is a proper proxy group for

10   Tidewater. In this regard, my group of proxy companies is identical to that used by

11   Company witness Ahern.

12

13   **2.   DCF Analysis**

14   **Q.   WHAT IS THE THEORY AND METHODOLOGICAL BASIS OF THE DCF**

15   **MODEL?**

16   A.   The DCF model is perhaps the most commonly-used model for estimating the

17   cost of common equity for public utilities. It is based on the "dividend discount model" of

18   financial theory, which maintains that the value (price) of any security or commodity is

19   the discounted present value of all future cash flows. When applied to common stocks,

20   the dividend discount model describes the value of a stock as follows:

$$P = \frac{D_1}{(1+K_1)} + \frac{D_2}{(1+K_2)^2} + ... + \frac{D_n}{(1+K_n)^n} = \sum_{i=1}^{n} \frac{D}{(1+K_i)^i}$$

22

23

1	where: P = current price
2	D_1 = dividends paid in period 1, etc.
3	K_1 = discount rate in period 1, etc.
4	n = infinity

5

6   This relationship can be simplified if dividends are assumed to grow at a constant rate of

7   "g." This variant of the dividend discount model is known as the constant growth or

8   Gordon DCF model. In this framework, the price of a stock is determined as follows:

9
$$P = \frac{D}{(K - g)}$$

10	where: P = current price
11	D = current dividend rate
12	K = discount rate (cost of common equity)
13	g = constant rate of expected growth

14

15   This equation can be solved for K (i.e., the cost of common equity) to yield the following

16   formula:

17
$$K = \frac{D}{P} + g$$

18   This formula essentially states that the return expected or required by investors is

19   comprised of two factors: the dividend yield (current income) and expected growth

20   (future income).

21

22   **Q.   PLEASE EXPLAIN HOW YOU HAVE EMPLOYED THE DCF MODEL.**

23   A.   I have utilized the constant growth DCF model. In doing so, I have combined the

24   current dividend yield for the group of utility stocks described previously with several

1   indicators of expected growth. Moreover, I will present my preferred approach to

2   estimating growth (g).

3

4   **Q.**   **HOW DID YOU DERIVE THE DIVIDEND YIELD COMPONENT OF THE DCF**

5   **EQUATION?**

6   A.   Several methods can be used to calculate the yield component. These methods

7   generally differ in the manner in which the dividend rate is employed, i.e., current versus

8   future dividends or annual versus quarterly compounding of dividends. I believe the most

9   appropriate yield component is a quarterly compounding variant which is expressed as

10   follows:

11

$$Yield = \frac{D_o(1 + 0.5g)}{P_o}$$

12   This yield component recognizes the timing of dividend payments as well as dividend

13   increases.

14   The P_o in my yield calculation is the average daily closing stock price for each

15   company for the most recent three month period (February 2014-April 2014). The D_o is

16   the current annualized dividend rate for each company.

17

18   **Q.**   **HOW HAVE YOU ESTIMATED THE GROWTH COMPONENT OF THE DCF**

19   **EQUATION?**

20   A.   The growth rate component of the DCF model is usually the most crucial and

21   controversial element involved in using this methodology. The objective of estimating

22   the growth component is to reflect the growth expected by investors which is embodied

23   in the price (and yield) of a company's stock. As such, it is important to recognize that

1   individual investors have different expectations and consider alternative indicators in

2   deriving their expectations. A wide array of techniques exists for estimating investors'

3   growth expectations. As a result, it is evident that no single indicator of growth is always

4   used by all investors. Therefore, it is necessary to consider alternative indicators of

5   growth in deriving the growth component of the DCF model.

6   I have considered and employed five indicators of growth in my DCF analyses.

7   They are:

8   1.   historical (five-year average) earnings retention, or fundamental growth;

9   2.   five-year average historic growth in earnings per share ("EPS"), dividends

10   per share ("DPS"), and book value per share ("BVPS");

11   3.   projected earnings retention growth;

12   4.   projections of EPS, DPS, and BVPS; and,

13   5.   five-year projections of EPS growth as reported by Thomson First Call

14   (formerly I/B/E/S).

15   I believe this combination of growth indicators is a representative and appropriate set

16   with which to estimate investor expectations of growth for Tidewater and the group of

17   comparison companies.

18

19   **Q.   PLEASE DESCRIBE YOUR VARIOUS DCF CALCULATIONS.**

20   A.   Schedule GAW-3 presents my DCF analysis. Page 1 shows the calculation of the

21   "raw" dividend yield (i.e., prior to adjustment for growth). Pages 2-3 show the growth

22   rates for the groups of comparison companies. Page 4 shows my recommended DCF

| 1 | approaches and calculations using recent historical growth rates and forecasted growth |
| 2 | rates. |

| 3 | |

| 4 | **Q.** | **PLEASE EXPLAIN WHY A THREE-MONTH AVERAGE STOCK PRICE IS** |
| 5 | | **APPROPRIATE FOR DETERMINING A COMPANY'S COST OF EQUITY.** |

6	A.	Even though the stock market may be efficient over time, significant day to day
7		variations can and do occur in the market. Because the DCF method is a market
8		determined approach to estimate the cost of equity, a proper market price must be used.
9		In my opinion, a recent three-month average stock price smoothes day to day random
10		oscillations in stock prices, yet is a short enough time period to reflect current market
11		conditions.

| 12 | |

13	**Q.**	**YOUR ANALYSIS SHOWN ON PAGE 4 OF YOUR SCHEDULE GAW-3 IS**
14		**COMPRISED OF DCF RATES CALCULATED ON BOTH HISTORICAL AND**
15		**PROSPECTIVE GROWTH RATES. PLEASE EXPLAIN WHY YOU**
16		**CONSIDERED BOTH HISTORIC AND PROSPECTIVE GROWTH WITHIN**
17		**YOUR DCF ANALYSIS.**

18	A.	The products, services, and customer mix of public utilities are generally well
19		established and they tend to have reasonably stable and reliable growth in regulated
20		markets. Thus, most utility analysts agree that, in general, historical growth is a
21		reasonable barometer of future growth. This, of course, is not without exception, and as
22		with forecasted growth rates, should be considered on a case by case basis, and evaluated
23		carefully.

1   **Q.   PLEASE EXPLAIN YOUR DCF ANALYSIS EMPLOYING FORECASTED OR**

2   **PROSPECTIVE GROWTH RATES.**

3   A.   As indicated on page 4 of Schedule GAW-3, my prospective analysis includes

4   Value Line forecasted retention growth, EPS, DPS, and BVPS and Thomson/First Call

5   growth rates.

6

7   **Q.   PLEASE SUMMARIZE YOUR DCF FINDINGS.**

8   A.   The following is a summary of my DCF findings from page 4 of Schedule GAW-

9   3.

10
	DCF Results	
Growth		Highest
Measure	Mean	Growth
Historic	6.6%	7.5%
Prospective	8.2%	8.7%

13

14 Based on this range of results, I have relied primarily on prospective growth rates and

15 determined that a proper DCF cost of equity for Tidewater is in the range of 8.2% to

16 8.7%.

17

18   **3.   <u>CAPM Analysis</u>**

19 **Q.   PLEASE DESCRIBE THE THEORY AND METHODOLOGICAL BASIS OF**

20 **THE CAPITAL ASSET PRICING MODEL.**

21 A.   The Capital Asset Pricing Model ("CAPM") is a version of the risk premium

22 method.   The CAPM describes and measures the relationship between a security's

23 investment risk and the market rate of return. The CAPM was developed in the 1960s

1		and 1970s as an extension of modern portfolio theory which studies the relationships
2		among risk diversification and expected returns.
3		
4	Q.	**HOW IS THE CAPM DERIVED?**
5	A.	The general form of the CAPM is:

$$K = R_f + \beta(R_m - R_{f)}$$

where: K = cost of equity
     R_f = risk free rate
     R_m = return on market
     β = beta
     R_m - R_f = market risk premium

12		
13	Q.	**PLEASE EXPLAIN WHAT THE TERM BETA REPRESENTS.**
14	A.	Beta is an indicator of investment risk as it is a measure of the expected amount of

change in a security's (common stock's) return that results from a change in general
security market returns. As such, beta indicates the security's variability of return
relative to the return variability of the overall market.

Variability of market returns is a measure of risk and is caused by two general
factors. First, changes in economic, social, and political conditions affect the risk
structure and market prices of all securities. Changes in these factors consequently cause
the market return to vary. This is referred to as systematic or non-diversifiable risk.
Second, each company and industry has unique business and financial attributes which
also cause returns and prices to vary. This is known as non-systematic or diversifiable
risk.

1   Investors can, through diversification of their security holdings, substantially

2   reduce or eliminate the return variation caused by the second general factor (i.e., the non-

3   systematic or diversifiable risk). However, the return variance or risk caused by the first

4   factor (i.e., the systematic or non-diversifiable risk) cannot be eliminated because

5   changes in these factors impact all securities to some degree.

6   Beta, the indicator of a security's investment risk, serves as a measure by which

7   the security's market return requirements can be identified. Securities with high betas

8   require relatively higher returns because these securities exhibit a greater volatility than

9   do securities with relatively lower market betas.

10   Accordingly, each security's market required rate of return is proportional to its

11   respective beta. The additional return (above the overall market return) required by a

12   high beta security (greater than one) is a return premium required to attract capital. The

13   return premium is required because of the higher level of market risk embodied in that

14   security. Hence, the premium is generally referred to as a risk premium. The opposite is

15   true for securities with a beta less than one.

16   The CAPM, by identifying the specific relationship between non-diversifiable or

17   systematic risk and its associated risk premium requirements, can be used to determine

18   the required rate of return on equity.

19

20 **Q.   WHAT GROUPS OF COMPANIES HAVE YOU UTILIZED TO PERFORM**

21   **YOUR CAPM ANALYSES?**

22 A.   I have performed CAPM analyses for the same group of companies evaluated in

23   my DCF analyses.

24

| 1 | Q. | **WHAT RATE DID YOU USE FOR THE RISK-FREE RATE?** |

2   A.   The first term of the CAPM is the risk free rate (R_f). The risk-free rate reflects the

3   level of return which can be achieved without accepting any risk.

4   In reality, there is no such thing as a truly riskless asset. In CAPM applications,

5   the risk-free rate is generally recognized by use of U.S. Treasury securities. This follows

6   since Treasury securities are default-free owing to the government's ability to print

7   money and/or raise taxes to pay its debts.

8   Two types of Treasury securities are often utilized as the R_f component: short-

9   term U.S. Treasury bills and long-term U.S. Treasury bonds. I have performed CAPM

10   calculations using the three month average yield (February 2014-April 2014) for 20-year

11   U.S. Treasury bonds. Over this three month period, these bonds had an average yield of

12   3.33%.

13

14   Q.   **WHAT BETAS DID YOU EMPLOY IN YOUR CAPM?**

15   A.   I utilized the most current Value Line betas for each company in the comparison

16   groups. These are shown on Schedule GAW-4 and are seen to be within a range of 0.60

17   to 0.85 (the beta for the entire market is 1.00). Betas of less than 1.0 are considered less

18   risky than the market, while companies with betas greater than 1.0 are more risky. Public

19   utility stocks traditionally have had betas below 1.0.

20

21   Q.   **HOW DID YOU ESTIMATE THE MARKET RISK PREMIUM COMPONENT?**

22   A.   The market risk premium component (R_m-R_f) represents the investor-expected

23   premium of common stocks over the risk-free rate, or government bonds. For purposes

		1	of estimating the market risk premium, I considered alternative measures of returns of the
2	S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S. Treasury
3	bonds.

4	First, I have compared the actual annual returns on equity of the S&P 500 with the
5	actual annual yields of U.S. Treasury bonds. Schedule GAW-5 shows the return on
6	equity for the S&P 500 group for the period 1978-2012 (all available years reported by
7	S&P). This schedule indicates the annual differentials (i.e., risk premiums) between the
8	S&P 500 and U.S. Treasury 20-year bonds. Based upon these returns, I conclude that the
9	risk premium resulting from this estimation method is about 6.6%.

10 I have also considered the total returns (i.e., dividends/interest plus capital

11 gains/losses) for the S&P 500 group as well as for the long-term government bonds, as

12 tabulated by Ibbotson Associates, using both arithmetic and geometric means. I have

13 considered the total returns for the entire 1926-2012 period, which produce the following

14 risk premiums:

15

	S&P 500	L-T Gov't Bonds	Risk Premium
Arithmetic	11.8%	6.1%	5.7%
Geometric	9.8%	5.7%	4.1%

18

19 Based on these three methods, I conclude that the expected risk premium is about 5.47%

20 (i.e., average of all three risk premiums). Schedule GAW-4 shows my CAPM

21 calculations, which produce a CAPM result of 6.9% to 7.1%.

22

23

24

1		**4.** **CE Analysis**

2 **Q. PLEASE EXPLAIN THE THEORETICAL FOUNDATION OF UTILIZING**

3 **COMPARABLE EARNINGS IN DETERMINING A UTILITY'S COST OF**

4 **EQUITY.**

5 A. The CE method is based upon the economic concept of opportunity cost and

6 utilizes the "corresponding risk" standard established in the <u>Bluefield</u> and <u>Hope</u> cases

7 discussed earlier.

8 The CE approach to establish a firm's cost of equity is designed to measure the

9 returns expected to be earned on the book value of similar risk enterprises. This method

10 examines the experienced and/or projected returns on book common equity. The logic

11 for examining returns on book equity follows from the use of original-cost, rate-base

12 regulation for public utilities. Under traditional ratemaking practices, a utility's fair cost

13 of capital (weighted average of debt and equity costs) is applied to its rate base which is

14 based on original (book) costs.

15

16 **Q. PLEASE EXPLAIN YOUR CE ANALYSIS RELATING TO TIDEWATER.**

17 A. In conducting my CE analysis I examined the realized returns on equity for

18 several groups of companies in conjunction with investor acceptances of these returns by

19 reference to the resulting market-to-book ("M/B") ratios. In this manner it is possible to

20 assess the degree to which a given level of return equates to the cost of equity. It is

21 generally recognized for utilities that M/B ratios of greater than one (i.e., 100%) reflect a

22 situation where a company is able to attract new equity capital without dilution (i.e.,

1	above book value). As a result, one objective of a fair cost of equity is the maintenance
2	of stock prices above book value.
3	
4	**Q.**	**WHAT TIME PERIODS DID YOU EXAMINE IN YOUR CE ANALYSIS?**
5	A.	My analysis utilizes a study period of 1992 through 2013 and reflects the
6		experienced equity returns of the proxy groups of utilities. The CE analysis requires that
7		I examine a relatively long period of time in order to determine trends in earnings over at
8		least a full business cycle. Moreover, it is important to examine earnings over a diverse
9		period of time in order to avoid any undue influence from unusual or abnormal conditions
10		that may have occurred in a single year or short time period. As such, my CE analysis is
11		segregated into the current cost of equity for three periods: 2009-2013 (the current
12		business cycle), 2002-2008 (the most recent complete business cycle) and 1992-2001 (the
13		prior complete business cycle).
14		
15	**Q.**	**PLEASE DESCRIBE YOUR CE ANALYSIS.**
16	A.	Schedule GAW-6 provides historical and projected returns on book equity during
17		the study period (page 1), as well as the average M/B ratios for the peer group companies
18		over the study period (page 2). As a point of comparison, Schedule GAW-7 provides the
19		annual returns on equity and M/B ratios of the S&P 500 Composite Index over this same
20		time period. Schedules GAW-8 and GAW-9 provide a comparison of various risk
21		indicators between the peer group companies and the S&P 500 companies.
22		As indicated in the above referenced schedules, the earned returns on average
23		common equity and M/B ratios for the groups of proxy utilities are summarized below:
24		

1	Historic ROE	9.5-10.9%
2	Historic M/B	179-232%
	Prospective ROE	10.3-10.6%
3		

4   These results indicate that historic returns of 9.5% to 10.9% have produced M/B ratios

5   well in excess of 100%; i.e., 179% to 232%, for the group of proxy utilities.

6   Furthermore, projected returns on equity for 2014, 2015, and 2017-2019 are within a

7   range of 10.3% to 10.6% for the utility groups. These projections relate to a 2013

8   average M/B ratio of 204%. Based on this analysis of the relationship between historic

9   ROEs and M/B ratios, it is apparent that the proxy group of water utilities has been able,

10   and is expected to continue, to earn returns on equity above their true "costs" of equity.

11

12 **Q.**   **HAVE YOU ALSO REVIEWED THE EARNINGS OF UNREGULATED FIRMS?**

13 A.   Yes. As an alternative, I also examined a group of largely unregulated firms. I

14   have examined the Standard & Poor's 500 Composite group, since this is a well-

15   recognized group of firms that is widely utilized in the investment community and is

16   indicative of the competitive sector of the economy. Schedule GAW-7 presents the

17   earned returns on equity and M/B ratios for the S&P 500 group over the past twenty

18   years. As this schedule indicates, over the three periods studied, this group's average

19   earned returns ranged from 12.4% to 14.7% with M/B ratios ranging between 204% and

20   341%.

21

22 **Q.**   **HOW DID YOU USE THE ABOVE INFORMATION TO ESTIMATE THE COST**

23   **OF EQUITY FOR TIDEWATER?**

1   A.   The recent earnings of the peer groups and S&P 500 can be utilized as an

2   indication of the level of return realized and expected in the regulated and competitive

3   sectors of the economy. In order to apply these returns to the cost of equity for proxy

4   utilities, however, it is necessary to compare the risk levels of the utility industry with

5   those of the competitive sector. I have done this in Schedules GAW-8 and GAW-9,

6   which compares several risk indicators for the S&P 500 group and the utility group. The

7   information in this schedule indicates that the S&P 500 group is more risky than the

8   water peer group.

9

10   **Q.   WHAT RETURN ON EQUITY IS INDICATED BY YOUR CE ANALYSIS?**

11   A.   Based on recent earnings and M/B ratios, a cost of equity for the proxy utilities of

12   no more than 9.0% to 10.0% is indicated and appropriate. Recent returns of 9.5% to

13   10.9% have resulted in M/B ratios of 179% and greater. Prospective returns of 10.3% to

14   10.6% result in M/B ratios of over 204% based on 2013 experience. As a result, it is

15   apparent that returns below this level would result in M/B ratios of well above 100%. An

16   earned return of 9.0% to 10.0% should thus result in a M/B ratio of over 100%. As

17   indicated earlier, the fact that market-to-book ratios substantially exceed 100% indicates

18   that historic and prospective returns of 10% and above reflect earnings levels that exceed

19   the cost of equity for those regulated companies.

20   Please also note that my CE analysis is not based on a mathematical formula

21   approach, as are the DCF and CAPM methodologies. Rather, it is based on recent trends

22   and current conditions in equity markets. Further, it is based on the direct relationship

23   between returns on common stock and M/B ratios of common stock. In utility rate

1	setting, a fair rate of return is based on the utility's assets (*i.e.*, rate base) and the book
2	value of the utility's capital structure. As stated earlier, maintenance of a financially
3	stable utility's M/B ratio at 100%, or a bit higher, is fully adequate to maintain the
4	utility's financial stability. On the other hand, a market price of a utility's common stock
5	that is 175% or more above the stock's book value is indicative of earnings that exceed
6	the utility's reasonable cost of capital. Thus, actual or projected earnings do not directly
7	translate into a utility's reasonable cost of equity. Rather, they must be viewed in relation
8	to the M/B ratios of the utility's common stock.

My 9.0% to 10.0% CE recommendation is not designed to result in M/B ratios as low as 1.0 for any peer group company. Rather, it is based on current market conditions and the proposition that ratepayers should not be required to pay rates based on earnings levels that result in excessive M/B ratios.

Q. **PLEASE SUMMARIZE THE RESULTS OF YOUR THREE MARKET-BASED COST OF EQUITY ANALYSES.**

A. My three methodologies produce the following:

Discounted Cash Flow	8.2-8.7%
Capital Asset Pricing Model	6.9-7.1%
Comparable Earnings	9.0-10.0%

5. **<u>Recommended Cost of Equity</u>**

Q. **BASED ON THE RESULTS OF YOUR DCF, CAPM, AND CE METHODS, WHAT COST OF COMMON EQUITY DO YOU RECOMMEND FOR TIDEWATER IN THIS PROCEEDING?**

1 A.   Given the exceptionally low results of the CAPM model of 6.9% to 7.1%, I

2   recommend primary weight be given to my DCF and CE analyses. The results of these

3   analyses suggest a cost of equity range of 8.2% to 10.0% that is applicable to investor-

4   owned utilities. With regard to Tidewater, I recommend the mid-point of this range for

5   ratemaking purposes (9.1%).

6

7   **E.   Total Cost of Capital**

8 **Q.   BASED ON YOUR RECOMMENDED CAPITAL STRUCTURE, COST OF**

9   **DEBT, AND COST OF EQUITY RANGE, WHAT IS YOUR RECOMMENDED**

10   **OVERALL COST OF CAPITAL TO TIDEWATER IN THIS RATE CASE?**

11 A.   For purposes of establishing revenue requirements, the following reflects my

12   recommended overall cost of capital for this case.

13

	Percent of Capital	Cost	Weighted Cost
Long-Term Debt	49.04%	6.01%	2.95%
Common Equity	50.96%	9.10%	4.64%
Total	100.00%		7.59%

17

18   **F.   Comments on the Testimony of Pauline Ahern**

19 **Q.   DO YOU HAVE ANY DISAGREEMENTS WITH MS. AHERN'S USE OF**

20   **FORECASTED INTEREST RATES IN HER RISK PREMIUM AND CAPM**

21   **ANALYSES?**

22 A.   Yes. In conducting her risk premium and CAPM analyses, Ms. Ahern relies upon

23   forecasts of future interest rates applicable to Moody's Triple-A Corporate Bonds and 30-

24   year Treasury Bonds. In support of her use of these forecasts, Ms. Ahern claims that the

1   low interest rate environment our economy has enjoyed for the last several years is

2   coming to an end. In large part, Ms. Ahern believes that all interest rates are, and have

3   been, artificially low due to the Federal Reserve's monetary policy to stimulate the

4   economy. While the Federal Reserve's monetary policy clearly is a driving factor for

5   short-term interest rates, longer-term interest rates are largely market-driven. In this

6   regard, the current yields and interest rates of long-term interest rates reflect forward-

7   looking expectations of inflation and all other factors influencing the future opportunity

8   cost of money.

9   To avoid debate regarding theoretical differences of opinion concerning interest

10 rates, we can simply evaluate the reasonableness of Ms. Ahern's forecasted interest rates

11 based on the same approach she used in Tidewater's last rate case during 2011. That is,

12 in the 2011 case, Ms. Ahern made essentially the same arguments and relied upon the

13 same consensus forecast of interest rates. The following table provides a comparison of

14 the forecasted interest rates Ms. Ahern utilized in the 2011 case to those that actually

15 transpired (again the sources for her forecasted interest rates in 2011 are the same as

16 those used in this case):

17

18

19

20

24

	Comparison of Ahern Forecasted vs. Actual Interest Rates From 2011 Rate Case				
	Moody's AAA Corporate Bonds		30-Year Treasury Bonds		
Quarterly Time Period	Ahern Forecast[1]	Actual[2]	Ahern Forecast[3]	Actual[4]	
Q3-2011	↑	4.46%	↑	3.70%	
Q4-2011		3.93%		3.04%	
Q1-2012	5.28%	3.90%	4.67%	3.14%	
Q2-2012		3.80%		2.94%	
Q3-2012		3.46%		2.75%	
Q4-2012	↓	3.54%	↓	2.86%	

As can be seen, the forecasts that Ms. Ahern relied upon in Docket No. 11-397 were

substantially higher than the actual results, lending credence to my contention that

forecasts are overly optimistic.

Q.   DO YOU HAVE ANY COMMENTS CONCERNING THE REQUIRED

PREMIUM OVER AND ABOVE BOND YIELDS THAT MS. AHERN

CALCULATED WITHIN HER RISK PREMIUM ANALYSIS?

A.   Yes.   Ms. Ahern conducted risk premium analyses utilizing two approaches.

However, as indicated on page 35 of her direct testimony, she has given greater weight to

what she refers to as the "PRPM[TM]" approach.[5] As indicated on page 2 of her Schedule

7, Ms. Ahern's predicted risk premiums range from a low of 5.99% to 22.38% for each of

the proxy comparison companies. When these risk premiums are added to her forecasted

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[1] Pauline Ahern direct testimony, page 37, PSC Docket No. 11-397.

[2] Per Mergent (Moody's) Bond Record.

[3] Per Ahern direct testimony Schedule 13, page 2, Note (2), PSC Docket No. 11-397.

[4] Per Board of Governors of the Federal Reserve System, Statistical Releases and Historical Data.

[5] The acronym PRPM[TM] stands for Predictive Risk Premium Model.

1	risk-free interest rate, her calculated cost of equity under this approach range from
2	10.30% for Connecticut Water to 26.69% for American Water Works. A quick glance at
3	Ms. Ahern's Schedule 7, page 2 will show the unreasonableness of her approach given
4	current capital costs.
5	
6	**Q.**	**DO YOU HAVE ANY COMMENTS REGARDING THE UPWARD**
7		**ADJUSTMENTS MS. AHERN MAKES OVER AND ABOVE HER MARKET-**
8		**BASED ANALYSES?**
9	A.	Yes. Ms. Ahern applies three upward adjustments to her "indicated" common
10	equity cost rates. These adjustments include a Credit Rate adjustment (0.04%), a
11	Business Risk adjustment (0.35%), and a Flotation Cost adjustment (0.13%). I disagree
12	with each of these upward adjustments for the following reasons.
13	First, Ms. Ahern's Credit Risk adjustment of 0.04% is so small that it is not worth
14	consideration given the subjective nature of cost of equity. Second, Ms. Ahern's
15	Business Risk adjustment primarily relates to Ms. Ahern's concern that Tidewater
16	Utilities is a much smaller company than those used in her proxy comparison group. I
17	have a fundamental disagreement with "size adjustments" in that Ms. Ahern is asking
18	captive ratepayers to pay more in utility rates simply because they are served by a
19	monopoly utility that happens to be smaller in size than other publicly traded utilities. In
20	addition, Ms. Ahern's small size adjustment is based on an analysis of all stocks, the
21	majority of which are unregulated and include industries that are much more risky than
22	public utilities. While it may be true that on an overall market basis, smaller publicly-
23	traded firms exhibit more risk than larger firms, these smaller company stocks tend to be

26

| 1 | engaged in riskier businesses as a whole than do larger businesses. Indeed, an academic |
| 2 | study conducted by Professor Annie Wong found that: |

3	"… utility and industrial stocks do not share the same characteristics.
4	First, given firm size, utility stocks are consistently less risky than
5	industrial stocks. Second, industrial betas tend to decrease with firm size
6	but utility betas do not. These findings may be attributed to the fact that
7	all public utilities operate in an environment with regional monopolistic
8	power and regulated financial structure. As a result, the business and
9	financial risks are very similar among the utilities regardless of their sizes.
10	Therefore, utility betas would not necessarily be expected to be related to
11	firm size."[6]
12	
13	Finally, Ms. Ahern provides anecdotal circumstances that may increase a water
14	utility's risk over electric or natural gas utilities, but she fails to mention or consider risk
15	reducing factors enjoyed by Tidewater. For example, Tidewater's source of supply is
16	ground water wells. Tidewater is not confronted with the costs and risks of building,
17	operating, and maintaining surface water treatment plants that have much more
18	environmentally stringent requirements than those for ground water. Furthermore, the
19	economy and demographics of Tidewater's service area is very stable, and much less
20	risky, than those of water utilities serving customers with a much less robust economy, or
21	those serving a much larger industrial-base of customers.
22	With regard to Ms. Ahern's Flotation Cost adjustment of 0.13%, this add-on to
23	the cost of equity is simply inappropriate. First, I am advised that this Commission has
24	repeatedly rejected flotation cost adjustments, most recently in its deliberations in a case
25	involving Delmarva Power & Light Company. Second, even if this Commission did
26	consider flotation cost adjustments, no such adjustment would be warranted here. In
27	response to DPA-ROR-2, the Company provided an accounting of its three most recent

---

[6] Wong, Annie, "Utility Stocks and The Size Effect: An Empirical Analysis," Journal of the Midwest Finance Association, 1993, at 98.

1 common equity issues for Tidewater's parent, Middlesex. The table below provides a

2 summary of the gross and net proceeds per share of new stock, the issuance costs per new

3 share, and the book value per existing share at the time of issuance:

4

	Issuance		
	2004	2006	2010
(a) Gross Proceeds Per Share	$19.80	$18.46	$15.21
(b) Net Proceeds Per Share	$19.01	$17.76	$14.61
(c) Issuance Costs Per Share[7]	$0.54	$0.21	$0.08
(d) Book Value Per Share	$7.46	$8.57	$10.24
(e) Net Proceeds To Book Value Ratio: (b)÷(d)	255%	207%	143%

9   As can be seen, each of these stock issuances sold well above book value. This is

10 especially important because Ms. Ahern claims that stock issuance expenses are a cost to

11 shareholders that must be compensated. While it is true that any company will incur

12 expenses associated with a new stock issue, shareholders only bear a cost if the net

13 proceeds are below book value. In other words, when one considers the fact that

14 Middlesex has been able to offer new shares of stock net of its issuance expenses well in

15 excess of its book value, it is clear that shareholders have not borne any flotation costs.

16 As such, no Flotation Cost adjustment is appropriate in this case.

17

18 **IV. COST ALLOCATIONS, CLASS REVENUE RESPONSIBILITY AND RATE**
19 **DESIGN**
20

21 **Q. DID THE COMPANY CONDUCT A CLASS COST ALLOCATION STUDY,**

22 **WHICH IS OFTEN REFERRED TO AS CLASS COST OF SERVICE STUDY**

23 **("CCOSS"), FOR PURPOSES OF THIS CASE?**

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[7] Issuance costs do not equal the difference between gross and net proceeds for reasons that are unclear, but this is what the Company reported in response to this data request.

1   A.   Yes. Company witness Gary Shambaugh conducted and sponsored a class cost

2   allocation study in which he allocated the Company's revenue, expense, and rate base

3   accounts to various types of service: general metered service; private fire; and public fire.

4   Furthermore, although Mr. Shambaugh did not fully allocate all costs to the Company's

5   three contract sales customers, he did assign some cost responsibility to this group of

6   customers.[8] However, unlike most public utility cost allocation studies in which costs are

7   assigned to various residential, commercial, and industrial rates, Mr. Shambaugh grouped

8   all metered water service into a single cost category. I will discuss how Mr. Shambaugh

9   relied upon his cost allocation study as well as provide recommendations to improve

10   future cost allocations later in my testimony.

11

12   Q.   **PLEASE BRIEFLY EXPLAIN THE CONCEPT OF A CCOSS AND ITS**

13   **PURPOSE IN A RATE PROCEEDING.**

14   A.   Generally there are two types of CCOSSs used in public utility ratemaking:

15   marginal cost studies and embedded, or fully allocated, cost studies. Consistent with the

16   practices of this Commission, Tidewater has utilized a traditional embedded CCOSS for

17   purposes of establishing the overall revenue requirement in this case, as well as for class

18   cost of service purposes.

19   Embedded CCOSSs are also referred to as fully allocated cost studies because the

20   majority of a public utility's plant investment and expense is incurred to serve all

21   customers in a joint manner. Accordingly, most costs cannot be specifically attributed to

22   a particular customer or group of customers. To the extent that certain costs can be

---

[8] Specifically, Mr. Shambaugh assigned all variable costs of providing service to these customers as well as a portion of the Company's fixed common costs. The allocated costs assigned to special contract customers were then deducted from the Company's total costs and allocated to the service categories described above.

1   specifically attributed to a particular customer or group of customers, these costs are

2   directly assigned in the CCOSS. The costs are jointly incurred to serve all or most

3   customers; therefore, they must be allocated across specific customers or customer rate

4   classes.

5   It is generally accepted that to the extent possible, joint costs should be allocated

6   to customer classes based on the concept of cost causation. That is, costs are allocated to

7   customer classes based on analyses that measure the causes of the incurrence of costs to

8   the utility. Although the cost analyst strives to abide by this concept to the greatest

9   extent practical, some categories of costs, such as corporate overhead costs, cannot be

10   attributed to specific exogenous measures or factors, and must be subjectively assigned

11   or allocated to customer rate classes. With regard to those costs in which cost causation

12   can be attributed, there is often disagreement among cost of service experts on what is an

13   appropriate cost causation measure or factor; e.g., peak demand, volumetric or

14   throughput usage, number of customers, etc.

15

16   **Q.   IN YOUR OPINION, HOW SHOULD THE RESULTS OF A CCOSS BE**

17   **UTILIZED IN THE RATEMAKING PROCESS?**

18   A.   Although there are certain principles used by all cost of service analysts, there are

19   often significant disagreements on the specific factors that drive individual costs. These

20   disagreements can and do arise as a result of the quality of data and level of detail

21   available from financial records. There are also fundamental differences in opinions

22   regarding the cost causation factors that should be considered to properly allocate costs

23   to rate schedules or customer classes. Furthermore, and as mentioned previously, cost

1   causation factors cannot be realistically ascribed to some costs such that subjective

2   decisions are required.

3   In these regards, two different cost studies conducted for the same utility and time

4   period can, and often do, yield different results. As such, regulators should consider

5   CCOSSs only as a guide, with their results being just one of many tools to assign class

6   revenue responsibility.

7

8 **Q. HAVE THE HIGHER COURTS OPINED ON THE USEFULNESS OF COST**

9 **ALLOCATIONS   FOR   PURPOSES   OF   ESTABLISHING   REVENUE**

10 **RESPONSIBILITY AND RATES?**

11 A.   Yes. In <u>Colorado Interstate Gas Co. v. Federal Power Commission</u> (predecessor

12   to FERC), the United States Supreme Court stated:

13   "But where as here several classes of services have a common use
14   of the same property, difficulties of separation are obvious.
15   Allocation of costs is not a matter for the slide-rule. It involves
16   judgment on a myriad of facts. It has no claim to an exact
17   science.[9]
18

19 **Q. DOES YOUR OPINION, AND THE FINDINGS OF THE U.S. SUPREME**

20 **COURT, IMPLY THAT COST ALLOCATIONS SHOULD PLAY NO ROLE IN**

21 **THE RATEMAKING PROCESS?**

22 A.   Not at all. It simply means that regulators should consider the fact that cost

23   allocation results are not surgically precise and that alternative, yet equally defensible,

24   approaches may produce significantly different results. In this regard, when all cost

25   allocation approaches consistently show that certain classes are contributing more or less

---

[9] 324 U.S. 581, 590 (1945).

1		to costs and/or profits, there is a strong rationale for assigning smaller or greater
2		percentage rate increases to these classes. On the other hand, if one set of cost allocation
3		approaches shows dramatically different results than another approach, caution should be
4		exercised in assigning disproportionately larger or smaller percentage increases to the
5		classes in question.
6		
7	Q.	**PLEASE EXPLAIN THE BASIC CONCEPTS OF COST ALLOCATION FOR**
8		**PUBLIC UTILITIES IN GENERAL.**
9	A.	As I mentioned earlier, the majority of any public utility's plant investment serves
10		customers in a joint manner. In this regard, a utility's infrastructure is a system designed
11		and operated to benefit all customers. If all customers were the same size and had
12		identical usage characteristics, cost allocation would be simple (even unnecessary).
13		However, in reality, a utility's customer base is not so simple. Customers (or customer
14		groups) tend to vary greatly in the amount of service required throughout the year such
15		that there are small usage and large usage customers. Therefore, differences in usage
16		should be considered. Because different groups of customers also utilize the system at
17		varying degrees during the year, consideration should also be given to the demands
18		placed on the system during peak usage periods.
19		
20	Q.	**WITH REGARD TO UTILITIES GENERALLY, AND WATER UTILITIES**
21		**SPECIFICALLY, ARE THERE A COMMON SET OF EXTERNAL FACTORS,**
22		**OR DRIVERS, USED IN VIRTUALLY EVERY CCOSS?**

1   A.   Virtually every utility cost allocation study rests on the analysts' selection of three

2   primary external (exogenous) allocation factors: number of customers; peak demand;

3   and, annual (average day) usage.[10] From these three exogenous factors, a host of

4   internally generated allocation factors are developed based on previously allocated plant

5   and expenses. In this regard, it is important to understand that the relative relationship

6   across classes between these external allocators can be dramatically different.

7

8   **Q.**   **WITH REGARD TO WATER UTILITIES, IS THERE ANY ASPECT OF CLASS**

9   **COST ALLOCATIONS THAT TENDS TO OVERSHADOW OTHER ISSUES OR**

10   **IS OFTEN CONTROVERSIAL?**

11   A.   Yes. As indicated earlier, most analysts agree that some recognition should be

12   given to peak load requirements placed on a water system. For water utilities, these peak

13   loads are usually expressed as peak day demand or peak hour demand requirements.

14   Unfortunately, and unlike the electric and natural gas industries, load studies are rarely

15   conducted by individual water utilities. Rather, rules of thumb or reliance on other utility

16   estimations (which are then usually based on rules of thumb and/or other prior studies)

17   are most often used as surrogates for developing class load demands for water utility cost

18   allocation studies. In other words, it is rare for water utilities to have any reasonable

19   knowledge of class loads (demands) specific to their utility and customer base.

20   Furthermore, and notwithstanding data limitations concerning absolute or relative class

21   demands specific to the water utility in question, questions and controversy arise as to the

22   degree in which maximum demands should be utilized within the cost allocation process.

23   There are a multitude of accepted cost allocation methodologies that consider class

---

[10] It should be noted that "weighted" customer counts are often used for certain plant and expense accounts.

1   maximum demands in various ways and in relative importance *vis a vis* annual usage

2   and/or number of customers.

3

4 **Q.**   **HAS TIDEWATER CONDUCTED A CLASS LOAD STUDY FOR PURPOSES**

5   **OF THIS CASE?**

6 A.   No. Similar to most water utilities, Mr. Shambaugh estimated maximum day and

7   hour peak demands based on more subjective analyses. However, as noted earlier, Mr.

8   Shambaugh's CCOSS does not differentiate classes of service between the traditional

9   residential, commercial, and industrial separations, but rather, only between general

10   metered service, fire (private and public separately), and to some extent, contract sales.

11

12 **Q.**   **WHICH METHOD DID THE COMPANY USE TO ALLOCATE COSTS TO THE**

13   **VARIOUS TYPES OF SERVICE FOR THIS CASE?**

14 A.   Company witness Shambaugh utilized what is known as the Base/Extra Capacity

15   method to allocate demand-related costs in his study. In my experience, this is the most

16   widely-used cost allocation methodology in the water utility industry. However, there

17   are other generally accepted cost allocation approaches that are sometimes utilized.

18

19 **Q.**   **YOU INDICATED EARLIER THAT MR. SHAMBAUGH GROUPED ALL**

20   **METERED SERVICE INTO A SINGLE "CLASS." DOES TIDEWATER HAVE**

21   **VARIOUS METERED CUSTOMER CLASSES WITH DIFFERENT RATE**

22   **SCHEDULES?**

1   A.   To some extent, yes. With respect to traditional metered water service, Tidewater

2   has different usage (volumetric) rate structures for residential and non-residential

3   customers. That is, while all traditional metered customers pay the same fixed monthly

4   customer charge based on size of meter, residential usage rates are based on an inverted

5   block rate structure, whereas non-residential customers pay a flat rate per 1,000 gallons

6   of usage.

7

8   Q.   **FOR COST ALLOCATION PURPOSES, SHOULD TIDEWATER SEPARATE**

9   **GENERAL METERED SERVICE INTO MORE THAN ONE CLASS?**

10 A.   Yes. Although Tidewater's customer base is predominately residential, it does

11   serve a number of apartments and commercial customers served under a separate rate

12   schedule. By grouping all metered service together as a single class there is no way to

13   distinguish any cost differences between residential and non-residential customers. As

14   such, currently there is no way to evaluate the reasonableness of Tidewater's residential

15   versus commercial (metered) rates.   In this regard, and consistent with my

16   recommendations in Tidewater's last rate case, the Company should be directed to

17   separate general metered service cost assignment between residential and non-residential

18   customers in its next base rate case.

19

20 Q.   **HOW DID MR. SHAMBAUGH RELY UPON HIS COST ALLOCATION STUDY**

21   **TO ASSIGN REVENUE RESPONSIBILITY IN THIS CASE?**

22 A.   With the exception of private fire service, it appears that Mr. Shambaugh did not

23   rely on his cost allocation study in developing his proposed class revenue or specific

1   rates. To illustrate, the following is a comparison of Mr. Shambaugh's allocated cost of

2   service (revenue requirement) study, present revenue, and his proposed revenue for each

3   service category:

4
	($000)			
Service Category	Allocated Revenue Requirement		Revenue b/	
			Present	Proposed
General Water	$25,500	a/	$21,086	$24,452
Public Fire	$1,596	a/	$1,864	$2,203
Private Fire	$315	a/	$976	$756
Subtotal	$27,411		$23,926	$27,411
Contract Sales		c/	$1,261	$1,450
Connection Fees		c/	$1,540	$1,772
Other Revenue		c/	$347	$347
TOTAL COMPANY	$30,979		$27,075	$30,979

a/ Per Shambaugh Exhibit No. T-8, Schedule 6.
b/ Per Shambaugh Exhibit No. T-8, Schedule 11.
c/ Not specifically calculated. However, variable and some fixed costs were allocated to contract sales.

15   As can be seen, Mr. Shambaugh's proposals move general metered and private fire

16   service closer to his allocated cost of service (revenue requirement). However, we see

17   that under current rates, public fire is contributing more revenue than is required under

18   Mr. Shambaugh's CCOSS, yet he proposes to further widen this disparity, and indeed

19   proposes a larger percentage increase to public fire than other class or service category.

20   Furthermore, and as discussed earlier, Mr. Shambaugh does not separate general metered

21   service between residential and non-residential service, even though there are separate

22   rates for each of these customer classes.

23

1   **Q.**   **ON PAGE 12, LINES 12 THROUGH 28 OF HIS DIRECT TESTIMONY, MR.**

2   **SHAMBAUGH STATES THAT THE GENERAL METERED SERVICE CLASS'**

3   **INDICATED COST OF SERVICE IS $24.451 MILLION, PUBLIC FIRE'S COST**

4   **OF SERVICE IS $2.203 MILLION, AND PRIVATE FIRE'S COST OF SERVICE**

5   **$0.756 MILLION. ARE THESE ACCURATE STATEMENTS?**

6   **A.**   No. As shown in the table above, as well as in Mr. Shambaugh's own CCOSS

7   (Exhibit No. T-8, Schedule 6), the indicated cost of service for each of these categories is

8   significantly different. Indeed, what Mr. Shambaugh refers to on page 12 of his direct

9   testimony as "cost of service indication" is nothing more than the revenue generated at

10   his proposed rates.

11

12   **Q.**   **IS MR. SHAMBAUGH'S PROPOSED RATE DESIGN AND CLASS REVENUE**

13   **RESPONSIBILITY REASONABLE?**

14   **A.**   In large part, no. That is, while I do agree with some of Mr. Shambaugh's

15   recommendations, I disagree in other respects.

16

17   **Q.**   **PLEASE EXPLAIN THOSE AREAS OF REVENUE RESPONSIBILITY IN**

18   **WHICH YOU AGREE WITH MR. SHAMBAUGH.**

19   **A.**   With regard to non-rate revenue (connection fees and miscellaneous other

20   revenue), Mr. Shambaugh recommends approximately the system wide average

21   percentage increase to connection fee rates (14.95%) and no increase in other (non-rate)

22   revenues. I concur with Mr. Shambaugh's proposed increase to connection fees of

1   approximately the system wide average. DPA witness Howard Woods addresses his

2   recommendations regarding miscellaneous other revenues.

3   With regard to Tidewater's three contract sales customers, I have reviewed each

4   service contract[11] as well as each customer's usage patterns over the last five years.

5   While I do not necessarily agree with Mr. Shambaugh's method to selectively include

6   certain costs and exclude others, these customers' demands and usage patterns vary

7   considerably from year to year. From a practical standpoint, Mr. Shambaugh proposes to

8   increase each of the contract sales customers' rates by approximately the same percentage

9   as the overall increase in rate revenues requested in this case; i.e., 14.95% increase to

10   contract sales customers compared to 14.59%.[12] As such, I find his proposed increases to

11   contract sales reasonable.

12

13 **Q.   PLEASE   DISCUSS   AND   EXPLAIN   YOUR   RECOMMENDATIONS**

14 **REGARDING REVENUE RESPONSIBILITY FOR THOSE CLASSES OR**

15 **SERVICE   CATEGORIES   IN   WHICH   YOU   DISAGREE   WITH   MR.**

16 **SHAMBAUGH.**

17 A.   With regard to private fire protection, Mr. Shambaugh's cost allocation study

18   indicates that this service is currently contributing considerably more revenue than is

19   required; i.e., $0.976 million current revenue compared to $0.315 million allocated cost

20   of service. While Mr. Shambaugh does not propose to reduce private fire service rates all

21   the way to his calculated cost of service, he does propose a significant rate reduction to

22   this service category (22.59%). In my opinion, Mr. Shambaugh's proposed 22.59%

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[11] Tidewater's affiliate, Southern Shores, does not have a specific contract or service agreement.

[12] Tidewater's proposed percentage increase in general metered, public fire, private fire, and contract sales.

1	reduction in rates to private fire service does not reasonably comport with gradualism. In
2	this regard, I recommend that private fire rates be reduced by no more than 10.00% in
3	this case.

4	With regard to public fire protection, it should first be understood how public fire
5	protection revenues are collected. Unlike many other water utilities in the United States
6	wherein public fire protection service is billed to, and paid by, the local governments
7	providing public fire protection, Tidewater's rates are structured such that those general
8	metered customers that have a fire hydrant located near their facility (home or business)
9	are assessed an additional flat charge per month or quarter. In other words, for most of
10	Tidewater's customers, the total fixed monthly/quarterly charge is equal to the facility
11	(customer charge) plus a public fire protection charge. Under current rates, for a
12	residential customer with a 5/8" meter, the total fixed quarterly charge is $52.86 plus
13	$15.09, or $67.95 per quarter.

14	As discussed earlier, Mr. Shambaugh calculates a public fire protection revenue
15	requirement (allocated cost of service) of $1.596 million as compared to $1.864 million
16	generated under present rates. Even though public fire is currently producing revenue
17	well in excess of its allocated cost of service, Mr. Shambaugh proposes an 18.26%
18	increase to public fire protection rates, which is substantially larger than the system
19	average percentage increase. Given public policy considerations, the public need for fire
20	protection, and the fact that public fire protection is already generating more than its
21	allocated cost of service at current rates, Mr. Shambaugh's proposed increase to public
22	fire is simply unreasonable. I recommend no increase to public fire protection rates in
23	this case.

1   The remaining service category relates to general metered service. As mentioned

2   earlier, there are two usage rate schedules under general metered service – residential and

3   non-residential. Furthermore, all general metered service customers pay the same fixed

4   monthly/quarterly facilities (customer) charge that varies with meter size. I have several

5   disagreements with Mr. Shambaugh's proposed revenue responsibility and rate design

6   associated with general metered service.

7

8   **Q.   PLEASE   DISCUSS   AND   EXPLAIN   YOUR   RECOMMENDATIONS**

9   **REGARDING REVENUE RESPONSIBILITY AND RATE DESIGN FOR**

10   **GENERAL METERED SERVICE.**

11   A.   I will first discuss general metered service usage charges. The following is a

12   comparison of this rate schedules' usage charges under current and Mr. Shambaugh's

13   proposed rates:

14

Rate Per 1,000 Gallons	Present Rate	Tidewater Proposed Rate	Percent Change
Residential:			
0-5	$7.9469	$9.1389	15.00%
5.1-20	$8.0493	$9.3790	16.52%
> 20	$8.1517	$9.6254	18.08%
Apts. & Comm.:			
All Usage	$8.1519	$9.3709	14.95%

20

21   As can be seen, residential usage rates are structured with inverted blocks. I agree with

22   and support this basic rate structure as it comports with water conservation policies and

23   sends a higher price signal to customers for discretionary water usage. However, as can

40

1   be seen above, Mr. Shambaugh proposes varying percentage increases to each residential

2   usage block, as well as a smaller percentage increase to the apartment/commercial rate

3   than that proposed for residential rates. As discussed earlier in my testimony, Mr.

4   Shambaugh did not separate residential and apartment/commercial customers for cost

5   allocation purposes. Rather, he simply grouped all general metered service as a single

6   class. As such, there is no cost or other basis to assign differing percentage increases

7   across the various general metered service usage charges. Therefore, I recommend that

8   all general metered service usage charges be changed by the same percentage increase.

9   With regard to fixed monthly/quarterly facilities (customer) charges, Mr.

10   Shambaugh proposes a 15.70% increase to each meter size rate. For example, under his

11   proposal, the quarterly 5/8" meter facilities charge would increase from $52.86 to $61.16.

12   I disagree with Mr. Shambaugh's proposed increase to fixed facilities charges and

13   recommend no change to the current rates.

14

15 Q.   **DOES MR. SHAMBAUGH PROVIDE ANY SUPPORT FOR HIS PROPOSED**

16   **15.70% INCREASE TO FIXED FACILITIES CHARGES?**

17 A.   Yes. Mr. Shambaugh discusses qualitatively his desire for higher fixed charges

18   and sponsors a cost analysis that he alleges provides support for his proposed fixed

19   facilities charges. However, I disagree with Mr. Shambaugh's qualitative rationale

20   regarding fixed facilities charges that do no vary with usage and I have found that his cost

21   analysis is severely flawed.

22

1 **Q.   PLEASE DISCUSS MR. SHAMBAUGH'S QUALITATIVE REASONS TO**

2 **SUPPORT HIGHER FIXED FACILITIES OR CUSTOMER CHARGES.**

3 A.   First, Mr. Shambaugh refers to short passages contained in the AWWA Water

4 Rates Manual M-1 and a National Regulatory Research Institute publication that state

5 common, or a portion of demand costs, are "sometimes" or "can be" included within

6 fixed charges. I will not quibble with Mr. Shambaugh as to how "sometimes" or "can

7 be" should be interpreted, nor will I dwell on other aspects of the positions of AWWA or

8 National Regulatory Research Institute. The reality is the determination and level of

9 customer charges is a matter of regulatory policy. Many jurisdictions have a policy of

10 maintaining minimal fixed charges for public utility services, while some jurisdictions

11 have move to straight-fixed variable pricing, wherein all distribution service is collected

12 from fixed charges. As an economist and public policy advisor, I am of the opinion that

13 public utility fixed customer charges should be set at reasonably low levels to recover the

14 costs of connecting and maintaining a customer's account.

15   Second, Mr. Shambaugh observes that the majority of a water utility's costs is

16 fixed and would be incurred regardless of the amount of water produced. From this

17 statement, I conclude that Mr. Shambaugh infers that a large portion of a water utility's

18 revenues should then be collected in fixed charges that do not vary with usage. I have

19 seen this argument very often in the last few years, and it is simply directly at odds with

20 accepted economic price theory as well as the pricing practice of competitive firms in our

21 economy. While I will not discuss the details of economic price theory and why the

22 presence (or absence) of fixed costs has nothing to do with marginal cost pricing, or

23 efficient pricing structure consistent with economic theory, I will simply refer the

1   Commission to the general pricing of competitive products in our economy that include a

2   myriad of industries which are faced with high levels of "fixed costs" and yet price their

3   products or services entirely on a volumetric basis. For example, consider the

4   automobile, rail, airline, steel, mining, and virtually every other heavy industry. Each of

5   these firms' cost structures in these competitive markets are comprised largely of fixed

6   costs. It is well known that they cannot survive under anything other than a volumetric

7   pricing structure. Indeed, the only reason that public utilities can achieve high fixed

8   charges regardless of consumption is due to the monopoly power that they exhibit over

9   consumers.

10   Third, on page 14 of his direct testimony, Mr. Shambaugh claims that higher fixed

11   charges are "appropriate due to the number of seasonal customers who only use water

12   during part of a year but have water service available throughout the entire year." With

13   regard to this statement, I acknowledge and have considerable experience with utilities

14   that have a large percentage of seasonal customers. Based on my discussions with DPA,

15   it is my understanding that the vast majority of Tidewater's customers are year-round and

16   that only a small percentage of its residential customers are seasonal. However, Mr.

17   Shambaugh provided no analyses or indication of the level of seasonal versus year-round

18   customers. Nonetheless, and even if Tidewater did have a significant level of seasonal

19   customers, his approach to collecting a higher percentage of the Company's revenue

20   requirement through fixed charges is akin to the tail wagging the dog. That is, the vast

21   majority of customers who purchase water year-round will pay higher fixed charges due

22   to a potential situation created by relatively few seasonal customers. Where a utility has

1   a significant percentage of seasonal customers, a much better and preferred approach is to

2   structure rate design with either seasonal rates or seasonal surcharges.[13]

3   In addition, it should be noted that the Company's tariff requires seasonal turn-off

4   charges. That is, seasonal customers that do not require water service during a portion of

5   the year and desire to avoid monthly or quarterly facilities charges must pay a seasonal

6   turn-off charge. For 5/8" metered customers, this turn-off charge is $175.58.

7

8 Q. **PLEASE EXPLAIN THE CUSTOMER COST ANALYSIS CONDUCTED BY MR.**

9   **SHAMBAUGH AS PRESENTED IN HIS EXHIBIT NO. T-8, SCHEDULE 9,**

10   **WHICH HE ALLEGES PROVIDES SUPPORT FOR HIS PROPOSED**

11   **INCREASE TO FIXED CUSTOMER CHARGES.**

12 A.   Mr. Shambaugh's customer cost analysis consists of two components. First, his

13   analysis includes costs for functional categories (bills/commercial; meters; and, services),

14   which essentially represent his fixed customer costs based on his cost of service analysis.

15   Second, he then adds a component he refers to as a "measure of capacity" to his

16   functional categories to determine an overall facilities cost. Mr. Shambaugh's "measure

17   of capacity" costs are calculated as 78% of general water service maximum day costs.

18   With regard to Mr. Shambaugh's measure of capacity costs, Data Request DPA-RD-11

19   asked for an explanation and determination of what is represented by the 78% of general

20   water service maximum day costs. However, the response to this request clearly shows

21   that the 78% of general water service maximum day costs is merely a plug such that the

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[13] Seasonal surcharges are often structured similar to those of demand charge ratchets. In other words, minimum-usage charges are established based on each customer's maximum periodic usage within the last 12 months.

1		total customer "costs" equals the revenue produced from his proposed 15.70% increase to
2		fixed customer charges.
3		
4	Q.	**MR. WATKINS, IN YOUR OPINION HOW SHOULD CUSTOMER COSTS BE**
5		**ANALYZED IN EVALUATING THE LEVEL IN WHICH FIXED CUSTOMER**
6		**CHARGES SHOULD BE ESTABLISHED?**
7	A.	Customer costs should only reflect those costs that are required to connect a new
8		customer and maintain that customer's account. The approach that I use and which is
9		widely used in the industry is often referred to as a "Direct Customer Cost" analysis.
10		
11	Q.	**HAVE YOU CONDUCTED A DIRECT CUSTOMER COST ANALYSIS FOR**
12		**PURPOSES OF THIS CASE?**
13	A.	Yes. Schedule GAW-10 provides the details of my direct customer cost analysis.
14		Consistent with accepted practice in the water industry as well as that of Mr. Shambaugh,
15		I have expressed customer costs in terms of 5/8" meter equivalence. As shown on
16		Schedule GAW-10, I have determined that the quarterly customer cost for a 5/8" meter is
17		$19.33. My calculated "customer cost" of $19.33 per quarter compares to the current
18		quarterly customer charge of $52.86. In this regard, it should be remembered that the
19		current quarterly customer charge of $52.86 does not include the fixed quarterly charge
20		of $15.09 imposed for public fire protection.
21		
22		

| 1 | Q. | **IN VIEW OF YOUR CUSTOMER COST ANALYSIS AND RECOGNIZING THE** |

1 Q. **IN VIEW OF YOUR CUSTOMER COST ANALYSIS AND RECOGNIZING THE**

2   **FACT THAT MOST CUSTOMERS MUST ALSO PAY A FIXED PUBLIC FIRE**

3   **PROTECTION CHARGE, WHAT IS YOUR RECOMMENDATION**

4   **REGARDING FIXED MONTHLY/QUARTERLY CUSTOMER CHARGES IN**

5   **THIS CASE?**

6 A.   Even though my calculated customer cost are considerably lower than the current

7   customer charges, in recognition of gradualism, I recommend no change in the fixed

8   monthly/quarterly customer charges.

9

10 Q. **PLEASE PROVIDE A COMPARISON OF THE COMPANY'S AND YOUR**

11   **RECOMMENDED CLASS REVENUE RESPONSIBILITY UTILIZING**

12   **TIDEWATER'S PROPOSED OVERALL $3.903 MILLION INCREASE.**

13 A.   Schedule GAW-11 provides a comparison of Mr. Shambaugh's and my class/

14   service category revenue distribution utilizing the Company's proposed overall increase.

15

16 Q. **DPA WITNESS WOODS RECOMMENDS AN OVERALL REVENUE**

17   **REDUCTION IN THIS CASE. IN THE EVENT THE COMMISSION AGREES**

18   **WITH THE DPA, HOW SHOULD THIS OVERALL REDUCTION BE**

19   **REFLECTED IN INDIVIDUAL RATES?**

20 A.   In the event the Commission orders an overall reduction in revenues, this should

21   be spread across individual classes, service categories, and rate elements as follows: (a)

22   maintain the current fixed monthly/quarterly customer charges at the current levels; (b)

23   limit the decrease to private fire protection to 10.00%; (c) maintain the current level of

1		connection fees; and, (d) reduce contract sales, general metered service usage, and public
2		fire protection on an equal percentage basis.
3		
4	Q.	**WHAT IS YOUR RECOMMENDED CLASS REVENUE RESPONSIBILITY**
5		**SHOULD THE COMMISSION AUTHORIZE AN OVERALL INCREASE OF**
6		**LESS THAN $3.903 MILLION?**
7	A.	If the Commission authorizes any overall increase of less than $3.903 million, I
8		recommend that the overall increase be spread across the customer classes as follows:
9		(a) maintain the current fixed monthly/quarterly customer charges at the current levels;
10		(b) limit the decrease to private fire protection to 10.00%; and, (c) reduce the increase to
11		contract sales, general metered service usage, public fire protection, and connection fees
12		on an equal percentage basis. With regard to other revenues, DPA witness Woods'
13		recommendation should be considered by the Commission as an adjustment to this
14		customer class/service category.
15		
16	Q.	**DO YOU HAVE ANY CONCLUDING COMMENTS REGARDING RATE**
17		**STRUCTURE AND RATE DESIGN?**
18	A.	Yes. DPA witness Woods recommends a sales and revenue adjustment to those
19		forecasted by the Company. As such, the billing determinants recommended by Mr.
20		Woods should be used as the basis for designing rates in this case.
21		
22	Q.	**DOES THIS COMPLETE YOUR TESTIMONY?**
23	A.	Yes.