

**BEFORE THE
DELAWARE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF)
THE APPLICATION OF)
DELMARVA POWER & LIGHT) DOCKET NO. 12-546
COMPANY TO INCREASE)
ITS GAS SERVICE RATES)**

DIRECT TESTIMONY

OF

J. RANDALL WOOLRIDGE, Ph.D.

June 3, 2013

DELMARVA POWER & LIGHT COMPANY

Docket No. 12-546

Direct Testimony of
J. Randall Woolridge, Ph.D.

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1 **Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.**

2 A. My name is J. Randall Woolridge. My business address is 120 Haymaker Circle, State
3 College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P.
4 Smeal Endowed University Fellow in Business Administration at the University Park
5 Campus of the Pennsylvania State University. I am also the Director of the Smeal College
6 Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational
7 background, research, and related business experience is provided in Appendix A.

8 **I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS**

9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

10
11 A. I have been asked by the Delaware Division of Public Advocate ("DPA") (now being
12 prosecuted by the Attorney General's office during the vacancy of the Public Advocate's office)
13 to provide an opinion as to the overall fair rate of return or cost of capital for the gas distribution
14 operations of Delmarva Power & Light Company ("Delmarva" or "Company") and to evaluate
15 Delmarva's rate of return testimony in this proceeding.

16 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

17 A. First, I will review my cost of capital recommendation for Delmarva, and detail the
18 primary areas of contention between Delmarva's rate of return position and the DPA's. Second,
19 I provide an assessment of capital costs in today's capital markets. Third, I discuss my proxy
20 group of gas distribution companies for estimating Delmarva's cost of capital. Fourth, I present
21 my recommendations for the Company's capital structure and debt cost rate. Fifth, I discuss the
22 concept of the cost of equity capital and then estimate the equity cost rate for Delmarva.
23 Finally, I critique the Company's rate of return analysis and testimony.

1 **Q. PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE**
2 **APPROPRIATE RATE OF RETURN FOR DELMARVA.**

3
4 A. I have employed the Company's proposed capital structure and debt cost rate. I have
5 applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model
6 ("CAPM") to a proxy group of publicly-held gas distribution companies ("Gas Proxy
7 Group"). My analysis indicates an equity cost rate in the range of 7.3% to 8.6%. Within this
8 range, I have used 8.50% as my equity cost rate for Delmarva.

9 Using my capital structure and debt and equity cost rates, I am recommending an
10 overall rate of return of 6.66% for Delmarva. These findings are summarized in Exhibit
11 JRW-1.

12 **Q. PLEASE SUMMARIZE THE PRIMARY ISSUES REGARDING RATE OF**
13 **RETURN IN THIS PROCEEDING.**

14
15 A. The Company's proposed rate of return is inflated primarily due to an overstated equity
16 cost rate.

17 The Company's rate of return testimony is offered by Mr. Kevin M. McGowan and Mr.
18 Robert B. Hevert. Mr. McGowan provides a recommended capital structure, senior capital cost
19 rates, and overall rate of return. Mr. Hevert provides a recommended return on equity in the
20 range of 10.00-10.75%, and within this range the Company has requested a 10.25% return on
21 equity. Mr. Hevert and I both used DCF and CAPM approaches in estimating an equity cost
22 rate for the Company, and Mr. Hevert also used a Bond Yield Plus Risk Premium ("RP")
23 approach to estimate an equity cost rate for Delmarva. We both applied our approaches to
24 groups of companies that are similar to Delmarva.

25 In terms of the DCF approach, the major area of disagreement is the estimation of the
26 expected growth rate. Mr. Hevert used three versions of the DCF model - a quarterly growth

1 DCF model, a constant growth DCF model, and a multi-stage DCF models. In the quarterly
2 and constant growth DCF models, Mr. Hevert relied on the forecasted earnings per share
3 (“EPS”) growth rates of Wall Street analysts and *Value Line* as well as retention growth. In
4 his multi-stage DCF model, Mr. Hevert used a projected GDP growth rate as the long-term
5 growth rate. The primary issues in these DCF results are the DCF growth rate measures. I
6 provide empirical evidence from new studies that demonstrate the long-term earnings growth
7 rates of Wall Street analysts are overly optimistic and upwardly-biased. I also show that the
8 estimated long-term EPS growth rates of *Value Line* are overstated. I also provide empirical
9 evidence that Mr. Hevert’s long-term GDP growth rate of 5.77% is overstated by about 100
10 basis points. In developing my DCF growth rate, I used both historic and projected growth
11 rate measures and evaluated growth in dividends, book value, and EPS.

12 The CAPM approach requires an estimate of the risk-free interest rate, beta, and the
13 equity risk premium. The major areas of disagreement involve the measurement and
14 magnitude of the market or equity risk premium. In short, Mr. Hevert’s market risk premium
15 is excessive and does not reflect current market fundamentals. As I highlight in my
16 testimony, there are three procedures for estimating a market or equity risk premium –
17 historic returns, surveys, and expected return models. Mr. Hevert used projected market risk
18 premiums of 7.53%, 10.06%, and 10.00%. He used a very time-specific Sharpe model to
19 develop his projected market risk premium of 7.53%; however, current measures suggest a
20 much lower risk premium. His projected equity risk premiums of 10.06% and 10.00% use
21 analysts’ EPS growth rate projections to compute an expected market return and market risk
22 premium. These EPS growth rate projections and resulting expected market returns and risk
23 premiums include unrealistic assumptions regarding future economic and earnings growth

1 and stock returns. I use an equity risk premium of 5.0%, which: (1) factors in all three
2 approaches to estimating an equity premium; and (2) employs the results of many studies of
3 the equity risk premium. As I note, my market risk premium reflects the market risk
4 premiums: (1) discovered in recent academic studies by leading finance scholars; (2)
5 employed by leading investment banks and management consulting firms; and (3) that result
6 from surveys of companies, financial forecasters, financial analysts, and corporate CFOs.

7 In the end, the most significant areas of disagreement in measuring Delmarva's cost
8 of capital are: (1) the DCF growth rate, and in particular the use of (a) the EPS growth rates
9 of Wall Street analysts and *Value Line*; and (b) a long-term GDP growth rate of 5.77%; (2)
10 the measurement and magnitude of the market risk premium used in CAPM and RP
11 approaches; and (3) whether or not equity cost rate adjustments are needed to account for
12 size, flotation costs, and the lack of a revenue stabilization mechanism.

13 **II. CAPITAL COSTS IN TODAY'S MARKETS**

14

15 **Q. PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.**

16 A. Long-term capital cost rates for U.S. corporations are a function of the required
17 returns on risk-free securities plus a risk premium. The risk-free rate of interest is the yield
18 on long-term U.S Treasury yields. The yields on ten-year U.S. Treasury bonds from 1953 to
19 the present are provided on page 1 of Exhibit JRW-2. These yields peaked in the early 1980s
20 and have generally declined since that time. These yields have fallen to historically low
21 levels in recent years due to the financial crisis. In 2008 Treasury yields declined to below
22 3.0% as a result of the mortgage and subprime market credit crisis, the turmoil in the
23 financial sector, the monetary stimulus provided by the Federal Reserve, and the slowdown
24 in the economy. From 2008 until 2011, these rates fluctuated between 2.5% and 3.5%. Over

1 the past year, the yields on ten-year Treasuries have declined from 2.5% to below 2.0% as
2 the Federal Reserve has continued to support a low interest rate environment and economic
3 uncertainties have persisted.

4 Panel B on Exhibit JRW-2 shows the differences in yields between ten-year
5 Treasuries and Moody's Baa-rated bonds since the year 2000. This differential primarily
6 reflects the additional risk required by bond investors for the risk associated with investing in
7 corporate bonds as opposed to obligations of the U.S. Treasury. The difference also reflects,
8 to some degree, yield curve changes over time. The Baa rating is the lowest of the investment
9 grade bond ratings for corporate bonds. The yield differential hovered in the 2.0% to 3.5%
10 range until 2005, declined to 1.5% until late 2007, and then increased significantly in
11 response to the financial crisis. This differential peaked at 6.0% at the height of the financial
12 crisis in early 2009, due to tightening in credit markets, which increased corporate bond
13 yields, and the "flight to quality," which decreased treasury yields. The differential
14 subsequently declined and has been in the 2.5% to 3.5% range over the past three years.

15 The risk premium is the return premium required by investors to purchase riskier
16 securities. The risk premium required by investors to buy corporate bonds is observable
17 based on yield differentials in the markets. The market risk premium is the return premium
18 required to purchase stocks as opposed to bonds. The market or equity risk premium is not
19 readily observable in the markets (as are bond risk premiums) since expected stock market
20 returns are not readily observable. As a result, equity risk premiums must be estimated using
21 market data. There are alternative methodologies to estimate the equity risk premium, and
22 these alternative approaches and equity risk premium results are subject to much debate.
23 One way to estimate the equity risk premium is to compare the mean returns on bonds and

1 stocks over long historical periods. Measured in this manner, the equity risk premium has
2 been in the 5% to 7% range. However, studies by leading academics indicate the forward-
3 looking equity risk premium is actually in the 4.0% to 5.0% range. These lower equity risk
4 premium results are in line with the findings of equity risk premium surveys of CFOs,
5 academics, analysts, companies, and financial forecasters.

6 **Q. PLEASE DISCUSS INTEREST RATES AND THE FINANCIAL CRISIS.**

7 A. The yields on Treasury securities decreased significantly at the onset of the financial
8 crisis and have remained at historically low levels. In fact, these yields have declined to
9 levels not seen since the 1940s. The decline in interest rates reflects several factors,
10 including: (1) the “flight to quality” in the credit markets as investors sought out low risk
11 investments during the financial crisis; (2) the very aggressive monetary actions of the
12 Federal Reserve, which have been aimed at restoring liquidity and faith in the financial
13 system as well as maintaining low interest rates to boost economic growth; and (3) the
14 continuing slow recovery from the recession.

15 The credit market for corporate and utility debt experienced higher rates due to the
16 credit crisis. The long-term corporate credit markets tightened during the financial crisis, but
17 have improved significantly since 2009. Interest rates on utility and corporate debt have
18 declined to historically low levels. These low rates reflect the monetary policy actions of the
19 Federal Reserve and the weak economy.

20 Panel A of page 2 of Exhibit JRW-2 provides the yields on A- rated public utility
21 bonds. These yields peaked in November 2008 at 7.75% and have since declined to about
22 4.2% as of February 2013. Panel B of page 2 of Exhibit JRW-2 provides the yield spreads
23 between long-term A- rated public utility bonds relative to the yields on 20-year Treasury

1 bonds. These yield spreads increased dramatically in the third quarter of 2008 during the
2 peak of the financial crisis and have decreased significantly since that time. For example, the
3 yield spreads between 20-year U.S. Treasury bonds and A- rated utility bonds peaked at
4 3.40% in November of 2008, declined to about 1.5% in the summer of 2012, and have since
5 remained in that range.

6 In sum, while the economy continues to face significant problems, the actions of the
7 government and Federal Reserve have had a large effect on the credit markets. The capital
8 costs for utilities, as measured by the yields on 30-year utility bonds, have declined to
9 historically low levels.

10 **Q. ARE INTEREST RATES LIKELY TO REMAIN LOW FOR SOME TIME?**

11 A. Yes. On September 13, 2012, the Federal Reserve released its policy statement
12 relating to Quantitative Easing III (“QE3”). In the statement, the Federal Reserve announced
13 that it intended to expand and extend its purchasing of long-term securities to about \$85B per
14 month.¹ The Federal Reserve also indicated that it intends to keep the target rate for the
15 federal funds rate between 0 to ¼ % through at least mid-2015.

16 In addition, on December 12, 2012, the Federal Reserve reiterated its continuation of
17 its bond buying program and tied future monetary policy moves to unemployment rates and
18 the level of interest rates. With respect to tying monetary policy to interest rates and
19 unemployment, the Fed indicated the following:²

20 In particular, the Committee decided to keep the target range
21 for the federal funds rate at 0 to 1/4 percent and currently
22 anticipates that this exceptionally low range for the federal

¹ Board of Governors of the Federal Reserve System, “Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities,” September 13, 2012.

² Board of Governors of the Federal Reserve System, FOMC Statement,” December 12, 2012.

1 funds rate will be appropriate at least as long as the
2 unemployment rate remains above 6-1/2 percent, inflation
3 between one and two years ahead is projected to be no more
4 than a half percentage point above the Committee's 2 percent
5 longer-run goal, and longer-term inflation expectations
6 continue to be well anchored. The Committee views these
7 thresholds as consistent with its earlier date-based guidance.
8

9 **Q. HAS THE FEDERAL RESERVE BOARD RECENTLY UPDATED ITS**
10 **STANCE ON MONETARY POLICY AND INTEREST RATES?**
11

12 A. Yes. In the March 20, 2013 and April 30, 2013 Federal Open Market Committee
13 ("FOMC") meetings, the Federal Reserve voted to continue its bond buying program policy
14 and stick with its plan to keep interest rates at historically low levels until unemployment
15 falls to 6.5%. In its policy statement, the Federal Reserve acknowledged that the U.S. job
16 market has improved, and that consumer spending and business investment have increased
17 and the housing market has improved; however, it also said it still did not expect
18 unemployment to reach 6.5 percent until 2015.³

19 **Q. WHAT IS YOUR CONCLUSION REGARDING THE FEDERAL RESERVE**
20 **AND PROSPECTIVE INTEREST RATES?**
21

22 A. The recent statements and monetary policy actions of the Federal Reserve, coupled with
23 U.S. economic conditions of slow economic growth, relatively high unemployment, and low
24 inflation, should keep U.S. interest rates and capital costs low for several years. The
25 likelihood that these conditions will keep interest rates and capital costs low for U.S.
26 businesses is reinforced by the economic and political problems in Europe, as the U.S. is
27 viewed as a safe haven for investment capital around the world.

³ Martin Crustinger, "Bernanke: Low interest-rate-policies benefit trade," Associated Press – Mon., Mar 25, 2013 4:20 PM EDT.

1 **Q. HOW DO THE CAPITAL COST INDICATORS COMPARE TODAY TO**
2 **THOSE AT THE TIME OF DELMARVA'S LAST RATE CASE (PSC**
3 **DOCKET NO. 10-237)?**
4

5 A. On page 1 of Exhibit JRW-3, I provide the yields on ten-year Treasury bonds and
6 thirty-year A-rated utility bonds for the six month periods – January 2011 to June 2011, and
7 October 2012 to March 2013. Current interest rates and capital costs are well below those at
8 the time of PSC Docket No. 10-237. Panel A of Exhibit JRW-3 shows the yields on ten-year
9 Treasury bonds. The average ten-year Treasury yields for these two periods are 3.34% and
10 1.81%, respectively. Panel B of page 1 of Exhibit JRW-3 shows the yields on thirty-year A-
11 rated public utility bonds for the same six month periods. The average yields for these
12 periods are 5.49% and 4.04%, respectively. These yields also indicate a decline in utility
13 capital costs. In both cases, the decline in interest rates and capital costs is about 150 basis
14 points.

15 **Q. OVERALL, WHAT DOES YOUR REVIEW OF THE CAPITAL MARKET**
16 **CONDITIONS INDICATE ABOUT THE EQUITY COST RATE FOR**
17 **UTILITIES TODAY?**
18

19 A. The market data suggests that capital costs for utilities are at historically low levels and
20 are likely to stay low for some time. As shown on page 2 of Exhibit JRW-2, the yield on
21 long-term A- rated utility bonds is about 4.2%. In addition, utility bond yields and capital
22 costs are about 150 basis points below their levels at the time of Delmarva's last rate case.

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1 **III. PROXY GROUP SELECTION**

2 **Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE**
3 **OF RETURN RECOMMENDATION FOR DELMARVA.**

4
5 A. To develop a fair rate of return recommendation for Delmarva, I have evaluated the
6 return requirements of investors on the common stock of a proxy group of publicly-held gas
7 distribution companies ("Gas Proxy Group").

8 **Q. PLEASE DESCRIBE YOUR PROXY GROUP.**

9 A. My Gas Proxy Group proxy group consists of eight natural gas distribution companies.
10 These companies meet the following selection criteria: (1) listed as a Natural Gas Distribution,
11 Transmission, and/or Integrated Gas Companies in *AUS Utility Reports*; (2) listed as a Natural
12 Gas Utility in the Standard Edition of the *Value Line Investment Survey*; and (3) an investment
13 grade bond rating by Moody's and Standard & Poor's. As shown on page 1 of Exhibit JRW-4,
14 the companies meeting these criteria include AGL Resources, Atmos Energy Corporation,
15 Laclede Group, Northwest Natural Gas Company, Piedmont Natural Gas Company, South
16 Jersey Industries, Southwest Gas, and WGL Holdings. The only companies that met these
17 criteria and were not included in the group were New Jersey Resources and UGI. These
18 companies were excluded due to their low percentage of revenues from regulated gas
19 operations.

20 Summary financial statistics for the proxy group are listed on page 1 of Exhibit JRW-4.
21 The median operating revenues and net plant for the Gas Proxy Group are \$1,547.3M and
22 \$2,960.8M, respectively. The group receives 70% of revenues from regulated gas operations,
23 has an 'A2/A3' Moody's bond rating and an 'A/A-' bond rating from Standard & Poor's, a
24 current common equity ratio of 46.0%, and an earned return on common equity of 10.5%.

1 On page 2 of Exhibit JRW-4, I have assessed the riskiness of the group using five
2 different risk measures published by *Value Line*. These measures include Beta, Safety,
3 Financial Strength, Earnings Predictability, and Stock Price Stability. On average, these
4 statistics show that the group has a very low Beta, a high degree of safety, average financial
5 strength, a high predictability of earnings, and very stable stock prices. Overall, these *Value*
6 *Line* measures suggest that the companies in the Gas Proxy Group possess a low degree of
7 investment risk relative to stocks in general.

8 **IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES**

9 **Q. WHAT CAPITAL STRUCTURE RATIOS HAS THE COMPANY**
10 **PROPOSED?**

11
12 A. Mr. McGowan provides Delmarva's proposed capital structure and debt cost rate. As
13 shown in Panel A of page 1 of Exhibit JRW-5, this capital structure consists of 50.78% long-
14 term debt and 49.22% common equity. He employs a long-term debt cost rate of 4.91%.

15 **Q. ARE YOU EMPLOYING DELMARVA'S PROPOSED CAPITAL**
16 **STRUCTURE IN DETERMINING YOUR OVERALL RATE OF RETURN?**

17
18 A. Yes. I believe that the capital structure and debt cost rate are reasonable for a gas
19 distribution company.

20 **V. THE COST OF COMMON EQUITY CAPITAL**

21
22 **A. Overview**

23 **Q. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF**
24 **RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?**

25
26 A. In a competitive industry, the return on a firm's common equity capital is determined
27 through the competitive market for its goods and services. Due to the capital requirements
28 needed to provide utility services and to the economic benefit to society from avoiding

1 duplication of these services, some public utilities are monopolies. It is not appropriate to
2 permit monopoly utilities to set their own prices because of the lack of competition and the
3 essential nature of the services. Thus, regulation seeks to establish prices that are fair to
4 consumers and, at the same time, are sufficient to meet the operating and capital costs of the
5 utility (i.e., provide an adequate return on capital to attract investors).

6 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE**
7 **CONTEXT OF THE THEORY OF THE FIRM.**

8

9 A. The total cost of operating a business includes the cost of capital. The cost of common
10 equity capital is the expected return on a firm's common stock that the marginal investor
11 would deem sufficient to compensate for risk and the time value of money. In equilibrium,
12 the expected and required rates of return on a company's common stock are equal.

13 Normative economic models of the firm, developed under very restrictive
14 assumptions, provide insight into the relationship between firm performance or profitability,
15 capital costs, and the value of the firm. Under the economist's ideal model of perfect
16 competition where entry and exit is costless, products are undifferentiated, and there are
17 increasing marginal costs of production, firms produce up to the point where price equals
18 marginal cost. Over time, a long-run equilibrium is established where price equals average
19 cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and
20 because capital costs represent investors' required return on the firm's capital, actual returns
21 equal required returns, and the market value and the book value of the firm's securities must
22 be equal.

23 In the real world, firms can achieve competitive advantage due to product market
24 imperfections. Most notably, companies can gain competitive advantage through product

1 differentiation (adding real or perceived value to products) and by achieving economies of
2 scale (decreasing marginal costs of production). Competitive advantage allows firms to price
3 products above average cost and thereby earn accounting profits greater than those required
4 to cover capital costs. When these profits are in excess of that required by investors, or when
5 a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the
6 firm's equity in excess of its book value.

7 James M. McTaggart, founder of the international management consulting firm
8 Marakon Associates, has described this essential relationship between the return on equity,
9 the cost of equity, and the market-to-book ratio in the following manner:⁴

10 Fundamentally, the value of a company is determined by the
11 cash flow it generates over time for its owners, and the
12 minimum acceptable rate of return required by capital
13 investors. This "cost of equity capital" is used to discount the
14 expected equity cash flow, converting it to a present value.
15 The cash flow is, in turn, produced by the interaction of a
16 company's return on equity and the annual rate of equity
17 growth. High return on equity (ROE) companies in low-growth
18 markets, such as Kellogg, are prodigious generators of cash
19 flow, while low ROE companies in high-growth markets, such
20 as Texas Instruments, barely generate enough cash flow to
21 finance growth.

22
23 A company's ROE over time, relative to its cost of equity, also
24 determines whether it is worth more or less than its book value.
25 If its ROE is consistently greater than the cost of equity capital
26 (the investor's minimum acceptable return), the business is
27 economically profitable and its market value will exceed book
28 value. If, however, the business earns an ROE consistently less
29 than its cost of equity, it is economically unprofitable and its
30 market value will be less than book value.

31
32 As such, the relationship between a firm's return on equity, cost of equity, and
33 market-to-book ratio is relatively straightforward. A firm that earns a return on equity above

⁴ James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

1 its cost of equity will see its common stock sell at a price above its book value. Conversely,
2 a firm that earns a return on equity below its cost of equity will see its common stock sell at a
3 price below its book value.

4 **Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP**
5 **BETWEEN RETURN ON EQUITY AND MARKET-TO-BOOK RATIOS.**

6
7 A. This relationship is discussed in a classic Harvard Business School case study entitled
8 “A Note on Value Drivers.” On page 2 of that case study, the author describes the
9 relationship very succinctly:⁵

10 For a given industry, more profitable firms – those able to
11 generate higher returns per dollar of equity – should have higher
12 market-to-book ratios. Conversely, firms which are unable to
13 generate returns in excess of their cost of equity should sell for
14 less than book value.

15

<i>Profitability</i>	<i>Value</i>
<i>If ROE > K</i>	<i>then Market/Book > 1</i>
<i>If ROE = K</i>	<i>then Market/Book = 1</i>
<i>If ROE < K</i>	<i>then Market/Book < 1</i>

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19
20

21 To assess the relationship by industry, as suggested above, I have performed a
22 regression study between estimated return on equity and market-to-book ratios using natural
23 gas distribution, electric utility and water utility companies. I used all companies in these
24 three industries that are covered by *Value Line* and have estimated return on equity and
25 market-to-book ratio data. The results are presented in Panels A-C of Exhibit JRW-6. The
26 average R-squares for the electric, gas, and water companies are 0.52, 0.71, and 0.77,
27 respectively.⁶ This demonstrates the strong positive relationship between ROEs and market-
28 to-book ratios for public utilities.

⁵ Benjamin Esty, “A Note on Value Drivers,” Harvard Business School, Case No. 9-297-082, April 7, 1997.

⁶ R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another

1 **Q. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY**
2 **CAPITAL FOR PUBLIC UTILITIES?**
3

4 A. Exhibit JRW-7 provides indicators of public utility equity cost rates over the past
5 decade.

6 Page 1 shows the yields on long-term A-rated public utility bonds. These yields
7 decreased from 2000 until 2003, and then hovered in the 5.50%-6.50% range from mid-2003
8 until mid-2008. These yields spiked up to the 7.75% range with the onset of the financial
9 crisis, and remained high and volatile until early 2009. These yields have declined since that
10 time from the 6.0% range to the 4.24% range as of April 2013.

11 Page 2 provides the dividend yields for the Gas Proxy Group over the past decade.
12 The dividend yields for this group have declined slightly over the decade. The Gas Proxy
13 Group yields declined from the year 2000 to 2007, bottomed out at 3.75% in 2007, increased
14 to 4.2% in 2009, and have settled at about 4.0%.

15 Average earned returns on common equity and market-to-book ratios for the Gas
16 Proxy Group are on page 3 of Exhibit JRW-7. The average market-to-book ratios for the
17 group have ranged from 1.5X to 2.3X. As of 2011, the market-to-book average was about
18 1.75X. For the Gas Proxy Group, earned returns on common equity peaked at about 12.0% in
19 2007 and have since declined to about 10.0%. Over the past decade, the average market-to-
20 book ratios for this group have ranged from 1.50X to 1.80X, with a 2012 reading of 1.65X.

21 **Q. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**
22 **RATE OF RETURN ON EQUITY?**
23

24 A. The expected or required rate of return on common stock is a function of market-wide
25 as well as company-specific factors. The most important market factor is the time value of

variable (e.g., expected return on equity). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

1 money as indicated by the level of interest rates in the economy. Common stock investor
2 requirements generally increase and decrease with like changes in interest rates. The
3 perceived risk of a firm is the predominant factor that influences investor return requirements
4 on a company-specific basis. A firm's investment risk is often separated into business and
5 financial risk. Business risk encompasses all factors that affect a firm's operating revenues
6 and expenses. Financial risk results from incurring fixed obligations in the form of debt in
7 financing its assets.

8 **Q. HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH**
9 **THAT OF OTHER INDUSTRIES?**

10

11 A. Due to the essential nature of their service as well as their regulated status, public
12 utilities are exposed to a lesser degree of business risk than other, non-regulated businesses.
13 The relatively low level of business risk allows public utilities to meet much of their capital
14 requirements through borrowing in the financial markets, thereby incurring greater than
15 average financial risk. Nonetheless, the overall investment risk of public utilities is below
16 most other industries.

17 Exhibit JRW-8 provides an assessment of investment risk for 100 industries as
18 measured by beta, which, according to modern capital market theory, is the only relevant
19 measure of investment risk. These betas come from the *Value Line Investment Survey* and
20 are compiled annually by Aswath Damodaran of New York University.⁷ The study shows
21 that the investment risk of utilities is very low. The average betas for electric, water, and gas
22 utility companies are 0.73, 0.66, and 0.66, respectively, well below the *Value Line* average of
23 1.15. As such, the cost of equity for utilities is among the lowest of all industries in the U.S.

⁷ Available at <http://www.stern.nyu.edu/~adamodar>.

1 **Q. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON**
2 **COMMON EQUITY CAPITAL BE DETERMINED?**
3

4 A. The costs of debt and preferred stock are normally based on historical or book values
5 and can be determined with a great degree of accuracy. The cost of common equity capital,
6 however, cannot be determined precisely and must instead be estimated from market data and
7 informed judgment. This return to the stockholder should be commensurate with returns on
8 investments in other enterprises having comparable risks.

9 According to valuation principles, the present value of an asset equals the discounted
10 value of its expected future cash flows. Investors discount these expected cash flows at their
11 required rate of return that, as noted above, reflects the time value of money and the
12 perceived riskiness of the expected future cash flows. As such, the cost of common equity is
13 the rate at which investors discount expected cash flows associated with common stock
14 ownership.

15 Models have been developed to ascertain the cost of common equity capital for a
16 firm. Each model, however, has been developed using restrictive economic assumptions.
17 Consequently, judgment is required in selecting appropriate financial valuation models to
18 estimate a firm's cost of common equity capital, in determining the data inputs for these
19 models, and in interpreting the models' results. All of these decisions must take into
20 consideration the firm involved as well as current conditions in the economy and the
21 financial markets.

22 **Q. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL**
23 **FOR THE COMPANY?**
24

25 A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the
26 investment valuation process and the relative stability of the utility business, I believe that

1 A. Yes. Virtually all investment firms use some form of the DCF model as a valuation
2 technique. One common application for investment firms is called the three-stage DCF or
3 dividend discount model (“DDM”). The stages in a three-stage DCF model are presented in
4 Exhibit JRW-9. This model presumes that a company’s dividend payout progresses initially
5 through a growth stage, then proceeds through a transition stage, and finally assumes a
6 steady-state stage. The dividend-payment stage of a firm depends on the profitability of its
7 internal investments, which, in turn, is largely a function of the life cycle of the product or
8 service.

9 1. Growth stage: Characterized by rapidly expanding sales, high profit margins,
10 and abnormally high growth in EPS. Because of highly profitable expected investment
11 opportunities, the payout ratio is low. Competitors are attracted by the unusually high
12 earnings, leading to a decline in the growth rate.

13 2. Transition stage: In later years increased competition reduces profit margins
14 and earnings growth slows. With fewer new investment opportunities, the company begins to
15 pay out a larger percentage of earnings.

16 3. Maturity (steady-state) stage: Eventually the company reaches a position
17 where its new investment opportunities offer, on average, only slightly attractive returns on
18 equity. At that time its earnings growth rate, payout ratio, and return on equity stabilize for
19 the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the
20 maturity stage of the life cycle.

21 In using this model to estimate a firm’s cost of equity capital, dividends are projected
22 into the future using the different growth rates in the alternative stages, and then the equity

1 the DCF model provides the best measure of equity cost rates for public utilities. It is my
2 experience that this Commission has traditionally relied on the DCF method. I have also
3 performed a CAPM study, but I give these results less weight because I believe that risk
4 premium studies, of which the CAPM is one form, provide a less reliable indication of equity
5 cost rates for public utilities.

6 **B. Discounted Cash Flow Analysis**

7 **Q. DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.**

8 A. According to the DCF model, the current stock price is equal to the discounted value
9 of all future dividends that investors expect to receive from investment in the firm. As such,
10 stockholders' returns ultimately result from current as well as future dividends. As owners of
11 a corporation, common stockholders are entitled to a *pro rata* share of the firm's earnings.
12 The DCF model presumes that earnings that are not paid out in the form of dividends are
13 reinvested in the firm so as to provide for future growth in earnings and dividends. The rate
14 at which investors discount future dividends, which reflects the timing and riskiness of the
15 expected cash flows, is interpreted as the market's expected or required return on the
16 common stock. Therefore, this discount rate represents the cost of common equity.
17 Algebraically, the DCF model can be expressed as:

$$18 \quad P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

19
20
21
22 where P is the current stock price, D_n is the dividend in year n, and k is the cost of common
23 equity.

24 **Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES**
25 **EMPLOYED BY INVESTMENT FIRMS?**

26

1 cost rate is the discount rate that equates the present value of the future dividends to the
2 current stock price.

3 **Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED**
4 **RATE OF RETURN USING THE DCF MODEL?**

5
6 A. Under certain assumptions, including a constant and infinite expected growth rate, and
7 constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the
8 following:

9
10
$$P = \frac{D_1}{k - g}$$

11
12

13 where D_1 represents the expected dividend over the coming year and g is the expected
14 growth rate of dividends. This is known as the constant-growth version of the DCF model.

15 To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in
16 the above expression to obtain the following:

17
18
$$k = \frac{D_1}{P} + g$$

19
20

21 **Q. IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL**
22 **APPROPRIATE FOR PUBLIC UTILITIES?**

23
24 A. Yes. The economics of the public utility business indicate that the industry is in the
25 steady-state or constant-growth stage of a three-stage DCF. The economics include the
26 relative stability of the utility business, the maturity of the demand for public utility services,
27 and the regulated status of public utilities (especially the fact that their returns on investment
28 are effectively set through the ratemaking process). The DCF valuation procedure for
29 companies in this stage is the constant-growth DCF. In the constant-growth version of the
30 DCF model, the current dividend payment and stock price are directly observable. However,

1 the primary problem and controversy in applying the DCF model to estimate equity cost rates
2 entails estimating investors' expected dividend growth rate.

3 **Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF**
4 **METHODOLOGY?**

5
6 A. One should be sensitive to several factors when using the DCF model to estimate a
7 firm's cost of equity capital. In general, one must recognize the assumptions under which the
8 DCF model was developed in estimating its components (the dividend yield and expected
9 growth rate). The dividend yield can be measured precisely at any point in time, but tends to
10 vary somewhat over time. Estimation of expected growth is considerably more difficult.
11 One must consider recent firm performance, in conjunction with current economic
12 developments and other information available to investors, to accurately estimate investors'
13 expectations.

14 **Q. PLEASE DISCUSS EXHIBIT JRW-10.**

15 A. My DCF analysis is provided in Exhibit JRW-10. The DCF summary is on page 1,
16 and the supporting data and analysis for the dividend yield and expected growth rate are
17 provided on the following pages of the Exhibit.

18 **Q. WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF**
19 **ANALYSIS FOR THE PROXY GROUP?**

20
21 A. The dividend yields on the common stock for the companies in the proxy group are
22 provided on page 2 of Exhibit JRW-10 for the six-month period ending May 2013. For the
23 DCF dividend yields for the group, I am using the average of the median six month and May
24 2013 dividend yields. The table below shows these dividend yields.

25
26

	May 2013 Dividend Yield	6-Month Median Dividend Yield	DCF Dividend Yield
Gas Proxy Group	3.7%	3.8%	3.75%

1
2 **Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT**
3 **DIVIDEND YIELD.**

4
5 A. According to the traditional DCF model, the dividend yield term relates to the
6 dividend yield over the coming period. As indicated by Professor Myron Gordon, who is
7 commonly associated with the development of the DCF model for popular use, this is
8 obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2)
9 dividing this dividend by the current stock price to determine the appropriate dividend yield
10 for a firm that pays dividends on a quarterly basis.⁸

11 In applying the DCF model, some analysts adjust the current dividend for growth
12 over the coming year as opposed to the coming quarter. This can be complicated because
13 firms tend to announce changes in dividends at different times during the year. As such, the
14 dividend yield computed based on presumed growth over the coming quarter as opposed to
15 the coming year can be quite different. Consequently, it is common for analysts to adjust the
16 dividend yield by some fraction of the long-term expected growth rate.

17 **Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU USE**
18 **FOR YOUR DIVIDEND YIELD?**

19
20 A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to reflect
21 growth over the coming year. This is the approach employed by the Federal Energy
22 Regulatory Commission ("FERC").⁹ The DCF equity cost rate ("K") is computed as:

⁸ *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

⁹ Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶61,084 (1998).

1
$$K = [(D/P) * (1 + 0.5g)] + g$$

2
3 **Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF**
4 **MODEL.**

5
6 A. There is much debate as to the proper methodology to employ in estimating the growth
7 component of the DCF model. By definition, this component is investors' expectation of the
8 long-term dividend growth rate. Presumably, investors use some combination of historical
9 and/or projected growth rates for earnings and dividends per share and for internal or book
10 value growth to assess long-term potential.

11 **Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY**
12 **GROUPS?**

13
14 A. I have analyzed a number of measures of growth for companies in the proxy groups. I
15 reviewed *Value Line's* historical and projected growth rate estimates for EPS, dividends per
16 share ("DPS"), and book value per share ("BVPS"). In addition, I utilized the average EPS
17 growth rate forecasts of Wall Street analysts as provided by Yahoo, Reuters and Zacks.
18 These services solicit five-year earnings growth rate projections from securities analysts and
19 compile and publish the means and medians of these forecasts. Finally, I also assessed
20 prospective growth as measured by prospective earnings retention rates and earned returns on
21 common equity.

22 **Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND**
23 **DIVIDENDS AS WELL AS INTERNAL GROWTH.**

24
25 A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and
26 are presumably an important ingredient in forming expectations concerning future growth.
27 However, one must use historical growth numbers as measures of investors' expectations
28 with caution. In some cases, past growth may not reflect future growth potential. Also,

1 estimates are \$0.28, \$0.35, and \$0.22, respectively. The second line shows the quarterly EPS
2 estimates for the quarter ending September 30, 2013. Lines three and four show the annual
3 EPS estimates for the fiscal years ending December 2013 and 2014. The quarterly and annual
4 EPS forecasts in lines 1-4 are expressed in dollars and cents. As in the GAS case shown
5 here, it is common for more analysts to provide estimates of annual EPS as opposed to
6 quarterly EPS. The bottom line shows the projected long-term EPS growth rate which is
7 expressed as a percentage. For GAS, three analysts have provided long-term EPS growth rate
8 forecasts, with mean, high and low growth rates of 4.53%, 6.00%, 3.60%. The mean long-
9 term growth rate figure of 4.53% is used in the DCF growth rate analysis.

10 **Q. WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF**
11 **GROWTH RATE?**

12
13 A. The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS.
14 Therefore, in developing an equity cost rate using the DCF model, the projected long-term
15 growth rate is the projection used in the DCF model.

16 **Q. WHY ARE YOU NOT RELYING EXCLUSIVELY ON THE EPS FORECASTS**
17 **OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE**
18 **FOR THE PROXY GROUPS?**

19
20 A. There are several issues with using the EPS growth rate forecasts of Wall Street
21 analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the
22 dividend growth rate, not the earnings growth rate. Nonetheless, over the very long-term,
23 dividend and earnings will have to grow at a similar growth rate. Therefore, consideration
24 must be given to other indicators of growth, including prospective dividend growth and
25 internal growth, as well as projected earnings growth. Second, a recent study by Lacina, Lee,
26 and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not

1 forecasts; or (2) the actual analysts who actually provide the EPS forecasts that are used in the
 2 compilations published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-
 3 based services. These services usually provide detailed reports and other data in addition to
 4 analysts' EPS forecasts. Thompson Reuters and Zacks do provide limited EPS forecasts data
 5 free-of-charge on the internet. Yahoo finance (<http://finance.yahoo.com>) lists Thompson
 6 Reuters as the source of its summary EPS forecasts. The Reuters website (www.reuters.com)
 7 also publishes EPS forecasts from Thompson Reuters, but with more detail. Zacks
 8 (www.zacks.com) publishes its summary forecasts on its website. Zacks's estimates are also
 9 available on other websites, such as msn.money (<http://money.msn.com>).

10 **Q. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.**

11 A. The following example provides the EPS forecasts compiled by Reuters for AGL
 12 Resources. (stock symbol "GAS").

13
 14 **Consensus Earnings Estimates**
 15 **AGL Resources (GAS)**
 16 **www.reuters.com**
 17 **May 8, 2013**

	# of Estimates	Mean	High	Low
Quarter Ending Jun-13	7	0.28	0.35	0.22
Quarter Ending Sep-13	6	0.15	0.23	0.06
Year Ending Dec-13	8	2.63	2.75	2.57
Year Ending Dec-14	9	2.77	3.00	2.65
LT Growth Rate (%)	3	4.53	6.00	3.60

18
 19
 20

21 These figures can be interpreted as follows. The top line shows that seven analysts
 have provided EPS estimates for the quarter ending June 30, 2013. The mean, high and low

1 employing a single growth rate number (for example, for five or ten years) is unlikely to
2 accurately measure investors' expectations due to the sensitivity of a single growth rate
3 figure to fluctuations in individual firm performance as well as overall economic fluctuations
4 (i.e., business cycles). However, one must appraise the context in which the growth rate is
5 being employed. According to the conventional DCF model, the expected return on a
6 security is equal to the sum of the dividend yield and the expected long-term growth in
7 dividends. Therefore, to best estimate the cost of common equity capital using the
8 conventional DCF model, one must look to long-term growth rate expectations.

9 Internally generated growth is a function of the percentage of earnings retained within
10 the firm (the earnings retention rate) and the rate of return earned on those earnings (the
11 return on equity). The internal growth rate is computed as the retention rate times the return
12 on equity. Internal growth is significant in determining long-run earnings and, therefore,
13 dividends. Investors recognize the importance of internally generated growth and pay
14 premiums for stocks of companies that retain earnings and earn high returns on internal
15 investments.

16 **Q. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS**
17 **FORECASTS.**

18
19 A. Analysts' EPS forecasts for companies are collected and published by a number of
20 different investment information services, including Institutional Brokers Estimate System
21 ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among others. Thompson
22 Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S,
23 First Call, and Reuters. Bloomberg, FactSet, and Zacks publish their own sets of analysts' EPS
24 forecasts for companies. These services do not reveal: (1) the analysts who are solicited for

1 more accurate at forecasting future earnings than naïve random walk forecasts of future
2 earnings.¹⁰ Employing data over a twenty year period, these authors demonstrate that using
3 the most recent year's EPS figure to forecast EPS in the next 3-5 years proved to be just as
4 accurate as using the EPS estimates from analysts' long-term earnings growth rate forecasts.
5 In the authors' opinion, these results indicate that analysts' long-term earnings growth rate
6 forecasts should be used with caution as inputs for valuation and cost of capital purposes.
7 Finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts
8 of Wall Street securities analysts are overly optimistic and upwardly biased. This has been
9 demonstrated in a number of academic studies over the years. This issue is discussed at
10 length in Appendix B of this testimony. Hence, using these growth rates as a DCF growth
11 rate will provide an overstated equity cost rate. On this issue, a study by Easton and
12 Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward
13 bias in estimates of the cost of equity capital of almost 3.0 percentage points.¹¹

14 **Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD**
15 **BIAS IN THE EPS GROWTH RATE FORECASTS?**

16
17 A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth rate
18 forecasts, and therefore, stock prices reflect the upward bias.

19 **Q. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF**
20 **EQUITY COST RATE STUDY?**

21
22 A. According to the DCF model, the equity cost rate is a function of the dividend yield and
23 expected growth rate. Since stock prices reflect the bias, it would affect the dividend yield. In

¹⁰ M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

¹¹ Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983-1015 (2007).

1 addition, the DCF growth rate needs to be adjusted downward from the projected EPS growth
2 rate to reflect the upward bias.

3 **Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN**
4 **THE PROXY GROUP AS PROVIDED BY VALUE LINE.**

5
6 A. Page 3 of Exhibit JRW-10 provides the 5- and 10- year historical growth rates for the
7 companies in the group, as published in the *Value Line Investment Survey*. The historical
8 growth measures in EPS, DPS, and BVPS for the Gas Proxy Group, as measured by the
9 medians, range from 2.5% to 5.5%, with an average of 4.3%.

10 **Q. PLEASE SUMMARIZE VALUE LINE'S PROJECTED GROWTH RATES**
11 **FOR THE COMPANIES IN THE PROXY GROUP.**

12
13 A. *Value Line's* projections of EPS, DPS and BVPS growth for the companies in the
14 proxy group are shown on page 4 of Exhibit JRW-10. As previously indicated, due to the
15 presence of outliers, the medians are used in the analysis. For the Gas Proxy Group, the
16 medians range from 2.8% to 5.5%, with an average of 4.4%.

17 Also provided on page 4 of Exhibit JRW-10 is prospective sustainable growth for the
18 proxy group as measured by *Value Line's* average projected retention rate and return on
19 shareholders' equity. As noted above, sustainable growth is significant and a primary driver
20 of long-run earnings growth. For the Gas Proxy Group, the median prospective sustainable
21 growth rate is 4.4%.

22 **Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUP AS MEASURED BY**
23 **ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.**

24
25 A. Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts' long-
26 term EPS growth rate forecasts for the companies in the proxy group. These forecasts are

1 provided for the companies in the proxy group on page 5 of Exhibit JRW-10. The median of
 2 analysts' projected EPS growth rates for the Gas Proxy Group is 5.0%.¹²

3 **Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND**
 4 **PROSPECTIVE GROWTH OF THE PROXY GROUP.**

5
 6 A. Page 6 of Exhibit JRW-10 shows the summary DCF growth rate indicators for the
 7 proxy group.

8 The historical growth rate figures for the Gas Proxy Group suggest a baseline growth
 9 rate of 4.3% for these companies. The projected and sustainable growth rates from *Value*
 10 *Line* are 4.4% and 4.4% for the group. Analysts projected EPS growth is 5.0%. The average
 11 of sustainable and projected EPS growth rate indicators is 4.6%. Giving more weight to the
 12 projected growth rate figures, I will use the 4.75% as the DCF growth rate for the Gas Proxy
 13 Group.

14 **Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED**
 15 **COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE**
 16 **GROUP?**

17
 18 A. My DCF-derived equity cost rate for the group is summarized on page 1 of Exhibit
 19 JRW-10.

20
 21 DCF Equity Cost Rate (k) = $\frac{D}{P}$ + g
 22
 23

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Gas Proxy Group	3.75%	1.02375	4.75%	8.60%

¹² Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate by company.

1 **C. CAPM Results**

2 **Q. PLEASE DISCUSS THE CAPM.**

3 A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital.
4 According to the risk premium approach, the cost of equity is the sum of the interest rate on a
5 risk-free bond (R_f) and a risk premium (RP), as in the following:

6 $k = R_f + RP$

7
8 The yield on long-term Treasury securities is normally used as R_f . Risk premiums are
9 measured in different ways. The CAPM is a theory of the risk and expected returns of
10 common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific
11 risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta.
12 The only risk that investors receive a return for bearing is systematic risk.

13 According to the CAPM, the expected return on a company's stock, which is also the
14 equity cost rate (K), is equal to:

15 $K = (R_f) + \beta * [E(R_m) - (R_f)]$

16 where:

- 17 • K represents the estimated rate of return on the stock;
18 • $E(R_m)$ represents the expected return on the overall stock market.
19 Frequently, the 'market' refers to the S&P 500;
20 • (R_f) represents the risk-free rate of interest;
21 • $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—
22 the excess return that an investor expects to receive above the risk-free
23 rate for investing in risky stocks; and
24 • Beta—(β) is a measure of the systematic risk of an asset.

25
26 To estimate the required return or cost of equity using the CAPM requires three
27 inputs: the risk-free rate of interest (R_f), the beta (β), and the expected equity or market risk

1 premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is represented by the
2 yield on long-term Treasury bonds. β , the measure of systematic risk, is a little more difficult
3 to measure because there are different opinions about what adjustments, if any, should be
4 made to historical betas due to their tendency to regress to 1.0 over time. And finally, an
5 even more difficult input to measure is the expected equity or market risk premium $(E(R_m) -$
6 $(R_f))$. I will discuss each of these inputs below.

7 **Q. PLEASE DISCUSS EXHIBIT JRW-11.**

8 A. Exhibit JRW-11 provides the summary results for my CAPM study. Page 1 shows the
9 results, and the following pages contain the supporting data.

10 **Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.**

11 A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free
12 rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has been
13 considered to be the yield on U.S. Treasury bonds with 30-year maturities.

14 **Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?**

15 A. The yield on 30-year Treasury bonds has been in the 2.5% to 4.0% range over the
16 2011 – 2013 time period. These rates are currently in the middle of this range. Given the
17 recent range of yields, and the prospect of higher rates in the future, I will use 4.0%, as the
18 risk-free rate, or R_f , in my CAPM.

19 **Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?**

20 A. Beta (β) is a measure of the systematic risk of a stock. The market, usually taken to be
21 the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the
22 market also has a beta of 1.0. A stock whose price movement is greater than that of the
23 market, such as a technology stock, is riskier than the market and has a beta greater than 1.0.

1 A stock with below average price movement, such as that of a regulated public utility, is less
2 risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running
3 a linear regression of a stock's return on the market return.

4 As shown on page 3 of Exhibit JRW-11, the slope of the regression line is the stock's
5 β . A steeper line indicates the stock is more sensitive to the return on the overall market.
6 This means that the stock has a higher β and greater than average market risk. A less steep
7 line indicates a lower β and less market risk.

8 Several online investment information services, such as Yahoo and Reuters, provide
9 estimates of stock betas. Usually these services report different betas for the same stock.
10 The differences are usually due to: (1) the time period over which the β is measured; and (2)
11 any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time. In
12 estimating an equity cost rate for the proxy group, I am using the betas for the companies as
13 provided in the *Value Line Investment Survey*. As shown on page 3 of Exhibit JRW-11, the
14 median beta for the companies in the Gas Proxy Groups is 0.65.

15 **Q. PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE**
16 **EQUITY RISK PREMIUM.**

17
18 A. The equity or market risk premium - $(E(R_m) - R_f)$ - is equal to the expected return on
19 the stock market (e.g., the expected return on the S&P 500 $(E(R_m))$ minus the risk-free rate of
20 interest (R_f) . The equity premium is the difference in the expected total return between
21 investing in equities and investing in "safe" fixed-income assets, such as long-term
22 government bonds. However, while the equity risk premium is easy to define conceptually,
23 it is difficult to measure because it requires an estimate of the expected return on the market.

24 **Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING**
25 **THE EQUITY RISK PREMIUM.**

1 A. Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in,
2 estimating the expected equity risk premium. The traditional way to measure the equity risk
3 premium was to use the difference between historical average stock and bond returns. In this
4 case, historical stock and bond returns, also called *ex post* returns, were used as the measures
5 of the market's expected return (known as the *ex ante* or forward-looking expected return).
6 This type of historical evaluation of stock and bond returns is often called the "Ibbotson
7 approach" after Professor Roger Ibbotson who popularized this method of using historical
8 financial market returns as measures of expected returns. Most historical assessments of the
9 equity risk premium suggest an equity risk premium of 5-7% above the rate on long-term
10 U.S. Treasury bonds. However, this can be a problem because: (1) *ex post* returns are not the
11 same as *ex ante* expectations, (2) market risk premiums can change over time, increasing
12 when investors become more risk-averse and decreasing when investors become less risk-
13 averse, and (3) market conditions can change such that *ex post* historical returns are poor
14 estimates of *ex ante* expectations.

15 The use of historical returns as market expectations has been criticized in numerous
16 academic studies.¹³ The general theme of these studies is that the large equity risk premium
17 discovered in historical stock and bond returns cannot be justified by the fundamental data.
18 These studies, which fall under the category "*Ex Ante* Models and Market Data," compute *ex*
19 *ante* expected returns using market data to arrive at an expected equity risk premium. These
20 studies have also been called "Puzzle Research" after the famous study by Mehra and

¹³ The problems with using *ex post* historical returns as measures of *ex ante* expectations will be discussed at length later in my testimony.

1 Prescott in which the authors first questioned the magnitude of historical equity risk
2 premiums relative to fundamentals.¹⁴

3 In addition, there are a number of surveys of financial professionals regarding the
4 equity risk premium. There have been several published surveys of academics on the equity
5 risk premium. *CFO Magazine* conducts a quarterly survey of CFOs which includes
6 questions regarding their views on the current expected returns on stocks and bonds. Usually
7 over 350 CFOs participate in the survey.¹⁵ Questions regarding expected stock and bond
8 returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of
9 financial forecasters which is published as the *Survey of Professional Forecasters*.¹⁶ This
10 survey of professional economists has been published for almost 50 years. In addition, Pablo
11 Fernandez conducts occasional surveys of financial analysts and companies regarding the
12 equity risk premiums they use in their investment and financial decision-making.¹⁷

13 **Q. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM**
14 **STUDIES.**

15
16 A. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most
17 comprehensive reviews to date of the research on the equity risk premium.¹⁸ Derrig and

¹⁴ Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. MONETARY ECON. 145 (1985).

¹⁵ See, www.cfosurvey.org.

¹⁶ Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, (February 15, 2013). The *Survey of Professional Forecasters* was formerly conducted by the American Statistical Association ("ASA") and the National Bureau of Economic Research ("NBER") and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

¹⁷ Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 82 Countries in 2012: A Survey with 7,192 Answers," June 19, 2012.

¹⁸ See Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi

1 Orr's study evaluated the various approaches to estimating equity risk premiums as well as
2 the issues with the alternative approaches and summarized the findings of the published
3 research on the equity risk premium. Fernandez examined four alternative measures of the
4 equity risk premium – historical, expected, required, and implied. He also reviewed the
5 major studies of the equity risk premium and presented the summary equity risk premium
6 results. Song provides an annotated bibliography and highlights the alternative approaches to
7 estimating the equity risk summary.

8 Page 5 of Exhibit JRW-11 provides a summary of the results of the primary risk
9 premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more
10 recent studies of the equity risk premium. In developing page 5 of Exhibit JRW-11, I have
11 categorized the studies as discussed on page 4 of Exhibit JRW-11. I have also included the
12 results of the "Building Blocks" approach to estimating the equity risk premium, including a
13 study I performed, which is presented in Appendix C. The Building Blocks approach is a
14 hybrid approach employing elements of both historical and *ex ante* models.

15 **Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.**

16 A. Page 5 of JRW-11 provides a summary of the results of the equity risk premium studies
17 that I have reviewed. These include the results of: (1) the various studies of the historical
18 risk premium, (2) *ex ante* equity risk premium studies, (3) equity risk premium surveys of
19 CFOs, Financial Forecasters, analysts, companies and academics, and (4) the Building Block
20 approaches to the equity risk premium. Results are reported for over thirty studies. The
21 median equity risk premium is 4.97%.

22 **Q. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK**
23 **PREMIUM STUDIES AND SURVEYS.**

Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

1 6.13% and 3.83%, respectively. This provides an *ex ante* equity risk premium of 2.30%
2 (6.13%-3.83%).

3 **Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE**
4 **EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND COMPANIES?**

5
6 A. Yes. Pablo Fernandez recently published the results of a 2012 survey of financial
7 analysts and companies.¹⁹ This survey included over 7,000 responses. The median equity
8 risk premium employed by U.S. analysts and companies was 5.0% and 5.5%, respectively.

9 **Q. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?**

10 A. The results of my CAPM study for the proxy groups are provided below:

11
$$K = (R_f) + \beta * [E(R_m) - (R_f)]$$

12

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Gas Proxy Group	4.00%	0.65	5.0%	7.3%

13 These results are summarized on page 1 of Exhibit JRW-11.

14
15 **VI. EQUITY COST RATE SUMMARY**

16 **Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.**

17 A. The results for my DCF and CAPM analyses for the proxy group of gas distribution
18 are indicated below:

	DCF	CAPM
Gas Proxy Group	8.6%	7.3%

¹⁹ Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 82 Countries in 2012: A Survey with 7,192 Answers," June 19, 2012.

1 A. The studies cited on page 5 of Exhibit JRW-11 include all equity risk premium studies
2 and surveys I could identify that were published over the past decade and that provided an
3 equity risk premium estimate. Most of these studies were published prior to the financial
4 crisis of the past two years. In addition, some of these studies were published in the early
5 2000s at the market peak. It should be noted that many of these studies (as indicated) used
6 data over long periods of time (as long as fifty years of data) and so they were not estimating
7 an equity risk premium as of a specific point in time (e.g., the year 2001). To assess the
8 effect of the earlier studies on the equity risk premium, on page 6 of Exhibit JRW-11, I have
9 reconstructed page 5 of Exhibit JRW-11, but I have eliminated all studies dated before
10 January 2, 2010. The median for this subset of studies is 4.83%.

11 **Q. GIVEN THESE RESULTS, WHAT MARKET OR EQUITY RISK PREMIUM**
12 **ARE YOU USING IN YOUR CAPM?**

13
14 A. Much of the data indicates that the market risk premium is in the 4.5% to 5.5% range.
15 I use the midpoint of this range, 5.0%, as the market or equity risk premium.

16 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE**
17 **EQUITY RISK PREMIUMS USED BY CFOS?**

18
19 A. Yes. In the March, 2013 CFO survey conducted by *CFO Magazine* and Duke
20 University, the expected 10-year equity risk premium was 4.5%.

21 **Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE**
22 **EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?**

23
24 A. Yes. The financial forecasters in the previously referenced Federal Reserve Bank of
25 Philadelphia survey project both stock and bond returns. As shown on Panels D and E of
26 page 2 of Exhibit JRW-C1, the median long-term expected stock and bond returns were

1 **Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST**
2 **RATE FOR THE GROUP?**

3
4 A. Given these results, I conclude that the appropriate equity cost rate for the companies
5 in the Gas Proxy Groups is in the 7.3% to 8.6% range. However, since I give greater weight
6 to the DCF model, I am using an equity cost rate in the upper end of this range. Therefore, I
7 conclude that the appropriate equity cost rate is 8.5%.

8 **Q. DO YOU HAVE ANY OTHER THOUGHTS ON WHY AN 8.50% RETURN**
9 **ON EQUITY IS APPROPRIATE AT THIS TIME?**

10
11 A. Yes. There are several reasons why an 8.50% return on equity is appropriate for
12 Delmarva in this case. First, as shown on in Exhibit JRW-8, the gas distribution utility
13 industry is the one of the lowest risk industries as ranked by Beta in *Value Line*. As such, gas
14 companies have one of the lowest costs of equity capital of any industry in the U.S.
15 according to the CAPM. Second, as shown in Exhibit JRW-3, capital costs for utilities, as
16 indicated by long-term bond yields, have declined to historically low levels. The current
17 yield on 30-year, A-rated utility bonds is about 4.2%. Finally, while the financial markets
18 have recovered over the past four years, the economy has not. The economic times are
19 viewed as being difficult, with almost 8% unemployment. With the weak economy, interest
20 rates and inflation are at low levels, and hence the expected returns on financial assets – from
21 savings accounts to Treasury Bonds to common stocks – are low. Therefore, in my opinion,
22 an 8.50% return is a very fair and reasonable for a regulated gas distribution company.

23 **VI. CRITIQUE OF DELMARVA'S RATE OF RETURN TESTIMONY**

24 **Q. PLEASE SUMMARIZE DELMARVA'S RATE OF RETURN REQUEST.**

25
26 A. Delmarva's cost of capital recommendation is provided on page 1 of Exhibit JRW-12.
27 The Company is requesting a capital structure consisting of 50.78% long-term debt and

1 49.22% common equity. The Company uses a long-term debt of 4.91% and an equity cost rate
2 of 10.25%.

3 **Q. WHAT ISSUES DO YOU HAVE WITH THE COMPANY'S COST OF**
4 **CAPITAL POSITION?**

5
6 A. The primary issue is the requested 10.25% cost of equity capital.

7 **A. Equity Cost Rate**

8 **Q. PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE APPROACHES.**

9 A. Mr. Hevert estimates an equity cost rate for Delmarva using a proxy group of nine gas
10 distribution companies and employs DCF, CAPM, and RP equity cost rate approaches.

11 **Q. PLEASE SUMMARIZE MR. HEVERT'S EQUITY COST RATE RESULTS.**

12 A. Mr. Hevert's equity cost rate estimates for Delmarva are summarized in Exhibit JRW-
13 13. Based on these figures, he concludes that the appropriate equity cost rate is in the range of
14 10.0% to 10.75%. The Company has used 10.25% as the requested equity cost rate in its rate
15 filing.

16 **Q. PLEASE DISCUSS YOUR ISSUES WITH MR. HEVERT'S REQUESTED**
17 **EQUITY COST RATE.**

18
19 A. Mr. Hevert's requested return on common equity is too high primarily due to: (1) the
20 DCF growth rate, and in particular the use of (a) the EPS growth rates of Wall Street analysts
21 and *Value Line* and (b) a long-term GDP growth rate of 5.77%; (2) the measurement and
22 magnitude of the market risk premium used in CAPM and RP approaches; and (3) whether or
23 not equity cost rate adjustments are needed to account for size, flotation costs, and the lack of
24 a decoupling rate design.

25 **Q. PLEASE INITIALLY REVIEW MR. HEVERT'S GAS GROUP.**

26 A. Mr. Hevert has used a group of nine gas distribution companies. My Gas Proxy Group

1 includes all of the companies with the exception of New Jersey Resources (“NJR”). I have
2 excluded NJR since the company only receives 25% of its revenue from regulated gas
3 operations. Nonetheless, the inclusion of NJR in my Gas Proxy Group would not change my
4 8.50% recommended equity cost rate.

5 **1. DCF Approach**

6 **Q. PLEASE SUMMARIZE MR. HEVERT’S DCF ESTIMATES.**

7 A. On pages 9-25 of his testimony and in Schedules (RBH)-1 – (RBH)-4, Mr. Hevert
8 develops an equity cost rate by applying the DCF model to his group of gas companies. Mr.
9 Hevert’s DCF results are summarized in Panel B of Exhibit JRW-13. Mr. Hevert uses three
10 versions of the DCF model - a quarterly growth DCF model, a constant growth DCF model,
11 and a multi-stage DCF models. Mr. Hevert uses three dividend yield measures (30, 90, and
12 180 days) and reports DCF equity cost rates using the Mean Low, Mean, and Mean High
13 DCF results. He argues that the quarterly model incorporates the time value of money
14 associated with the quarterly compounding of dividend payments. In the constant growth
15 DCF model, the equity cost rate is the sum of the adjusted dividend yield and the expected
16 growth rate. In the quarterly and constant-growth DCF models, Mr. Hevert has relied on the
17 forecasted EPS growth rates of Zacks, First Call, and *Value Line* as well as retention growth.
18 Mr. Hevert’s multi-stage DCF model uses three stages of growth: (1) Stage 1 - the forecasted
19 EPS growth rates of Zacks, First Call, and *Value Line* as well as retention growth; (2)
20 Transition Stage – transition from Stage 1 growth to Terminal growth; and (3) Terminal
21 Stage – a projected GDP growth rate of 5.77%.

22 **Q. WHAT ARE THE ERRORS IN MR. HEVERT’S DCF ANALYSES?**

1 A. The primary issues in Mr. Hevert's DCF analyses are: (1) The asymmetric elimination
2 of low-end DCF results - he has ignored the mean low DCF results for his three different DCF
3 model applications; (2) The use of the EPS growth rate forecasts of Wall Street analysts and
4 Value Line - the DCF growth rate in all three models employ the overly optimistic and
5 upwardly-biased EPS growth rate estimates of Wall Street analysts and *Value Line*; (3) The
6 projected GDP growth rate in the multi-stage DCF model - the projected GDP growth rate of
7 5.77% in his multi-stage DCF model is excessive, is not reflective of economic growth in the
8 U.S., and is about 100 basis points above projections of GDP growth; and (4) The consideration
9 of size, flotation costs, and rate design - Mr. Hevert indicates that he has considered size,
10 flotation costs, and the lack of revenue stabilization mechanisms in making his final ROE
11 recommendation.

12 **Q. BEFORE ADDRESSING THESE ISSUES, DO YOU HAVE ANY COMMENTS**
13 **RELATIVE TO THE THREE DCF MODELS?**

14
15 A. Yes. Mr. Hevert claims that the quarterly model incorporates the time value of
16 money associated with the quarterly compounding of dividend payments. Mr. Hevert's
17 quarterly DCF model is in error and results in an overstated equity cost rate for two reasons.
18 First, as discussed above, the appropriate dividend yield adjustment for growth in the DCF
19 model is the expected dividend for the next quarter multiplied by four. The quarterly
20 adjustment procedure is inconsistent with this approach.

21 Second, Mr. Hevert's approach presumes that investors require additional
22 compensation during the coming year because their dividends are paid out quarterly instead
23 of being paid all in a lump sum. Therefore, he compounds each dividend to the end of the
24 year using the long-term growth rate as the compounding factor. The error in this logic and

1 approach is that the investor receives the money from each quarterly dividend and has the
2 option to reinvest it as he or she chooses. This reinvestment generates its own compounding,
3 but it is outside of the dividend payments of the issuing company. Mr. Hevert's approach
4 serves to duplicate this compounding process, thereby inflating the return to the investor.
5 Finally, the notion that an adjustment is required to reflect the quarterly timing issue is
6 refuted in a study by Richard Bower of Dartmouth College.

7 Bower acknowledges the timing issue and downward bias addressed by Mr. Hevert.
8 However, he demonstrates that this does not result in a biased required rate of return. He
9 provides the following assessment:²⁰

10 ... authors are correct when they say that the conventional cost of
11 equity calculation is a downward-biased estimate of the market
12 discount rate. They are not correct, however, in concluding that it
13 has a bias as a measure of required return. As a measure of
14 required return, the conventional cost of equity calculation (K*),
15 ignoring quarterly compounding and even without adjustment for
16 fractional periods, serves very well.

17
18 (a) The Asymmetric Elimination of Low-End DCF Results

19
20 **Q. PLEASE ADDRESS MR. HEVERT ASYMMETRIC ELIMINATION OF DCF**
21 **RESULTS.**

22
23 A. A significant error with Mr. Hevert's three DCF equity cost rate analyses is that he has
24 ignored the mean low DCF results because he claims they are too low. In other words, for the
25 summary DCF results presented on page 25 of his testimony, he has ignored 1/3 of his DCF
26 results in establishing a range of equity cost rates for his proxy group. Mr. Hevert claims that
27 claims that his three DCF approaches produce the following results: (1) quarterly DCF model -

²⁰ See Richard Bower, "The N-Stage Discount Model and Required Return: A Comment," *Financial Review* (February 1992), pp. 141-9.

1 9.35% to 11.49%; (2) constant growth DCF model - 9.16% to 11.23%; and (3) multi-stage
2 DCF model - 9.98% to 10.99%. By eliminating so-called low-end outliers and not also
3 eliminating the same number of high-end outliers, Mr. Hevert biases his DCF equity cost rate
4 study and reports a higher DCF equity cost rate than the data indicate. I have used the median
5 as a measure of central tendency so as to not give outlier results too much weight while not
6 ignoring the impact of low and/or high results in determining a measure of central tendency.

7 (b) Analysts' EPS Growth Rates

8 **Q. PLEASE REVIEW MR. HEVERT'S DCF GROWTH RATE.**

9 A. In his three DCF models, Mr. Hevert's DCF growth rate is the average of the
10 projected EPS growth rate forecasts: (1) Wall Street analysts as compiled by Zacks and First
11 Call; and (2) *Value Line*. In his multi-stage DCF model, he also employs a long-term GDP
12 growth rate of 5.77%.

13 **Q. PLEASE DISCUSS MR. HEVERT'S USE OF THE PROJECTED EPS**
14 **GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE* IN HIS**
15 **DCF MODELS.**

16
17 A. A very significant issue with Mr. Hevert's DCF analyses is his reliance on the EPS
18 growth rate forecasts of Wall Street analysts and *Value Line*.

19 **Q. WHY IS IT ERRONEOUS TO RELY EXCLUSIVELY ON THE EPS**
20 **FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF**
21 **GROWTH RATE?**

22
23 A. There are several issues with using the EPS growth rate forecasts of Wall Street
24 analysts and *Value Line* as DCF growth rates. First, the appropriate growth rate in the DCF
25 model is the dividend growth rate, not the earnings growth rate. Therefore, in my opinion,
26 consideration must be given to other indicators of growth, including prospective dividend
27 growth, internal growth, as well as projected earnings growth. Second, and most

1 significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street
2 securities analysts are overly optimistic and upwardly biased. This has been demonstrated in
3 a number of academic studies over the years. In addition, I demonstrate that *Value Line's*
4 EPS growth rate forecasts are consistently too high. Hence, using these growth rates as a
5 DCF growth rate will provide an overstated equity cost rate.

6 **Q. PLEASE DISCUSS MR. HEVERT'S RELIANCE ON THE PROJECTED**
7 **GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE*.**

8
9 A. It seems highly unlikely that investors today would rely excessively on the EPS growth
10 rate forecasts of Wall Street analysts and ignore other growth rate measure in arriving at
11 expected growth. As I previously indicated, the appropriate growth rate in the DCF model is
12 the dividend growth rate, not the earnings growth rate. Hence, consideration must be given
13 to other indicators of growth, including historic growth prospective dividend growth and
14 internal growth, as well as projected earnings growth. In addition, a recent study by Lacina,
15 Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not
16 more accurate at forecasting future earnings than naïve random walk forecasts of future
17 earnings.²¹ As such, the weight give to analysts' projected EPS growth rate should be
18 limited. And finally, and most significantly, it is well-known that the long-term EPS growth
19 rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.
20 Hence, using these growth rates as a DCF growth rate produces an overstated equity cost
21 rate. A recent study by Easton and Sommers (2007) found that optimism in analysts' growth
22 rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0

²¹ M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

1 percentage points.²² These issues are addressed in more detail in Appendix B.

2 **Q. MR. HEVERT HAS DEFENDED THE USE OF ANALYSTS' EPS**
3 **FORECASTS IN HIS DCF MODEL BY CITING A STUDY PUBLISHED BY**
4 **VANDER WEIDE AND CARLETON. PLEASE DISCUSS THIS STUDY.**

5
6 A. Mr. Hevert cites the study on page 14 of his testimony. In the study, the authors
7 perform a linear regression of a company's stock price to earnings ratio (P/E) on the dividend
8 yield payout ratio (D/E), alternative measures of growth (g), and four measures of risk (beta,
9 covariance, r-squared, and the standard deviation of analysts' growth rate projections). They
10 performed the study for three one-year periods – 1981-1982, and 1983 – and used a sample
11 of approximately 65 companies. The results indicated that regressions measuring growth as
12 analysts' forecasted EPS growth were more statistically significant than those using various
13 historic measures of growth. Consequently, he concluded that analysts' growth rates are
14 superior measures of expected growth.

15 **Q. PLEASE CRITIQUE THE VANDER WEIDE AND CARLTON STUDY.**

16 A. Before highlighting the errors in the study, it is important to note that the study was
17 published more than 20 years ago, used a sample of only 65 companies, and evaluated a
18 three-year time period (1981-83) that was over 25 years ago. Since that time, many more
19 exhaustive studies have been performed using significantly larger data bases and, from these
20 studies, much has been learned about Wall Street analysts and their stock recommendations
21 and earnings forecasts. Nonetheless, there are several other errors that invalidate the results
22 of the study.

23 **Q. PLEASE DESCRIBE THE ERRORS IN THE STUDY.**

²² Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

1 A. The primary error in the study is that the regression model is misspecified. As a
2 result, the authors cannot conclude whether one growth rate measure is better than the other.
3 The misspecification results from the fact that the authors did not actually employ a modified
4 version of the DCF model; rather, they used a “linear approximation.” They used the
5 approximation so that they did not have to measure k , investors’ required return, directly, but
6 instead they used proxy variables for risk. The error in this approach is there can be an
7 interaction between growth (g) and investors’ required return (k) which could lead one to
8 conclude that one growth rate measure is superior to others. Furthermore, due to this
9 problem, analysts’ EPS forecasts could be upwardly biased and still appear to provide better
10 measures of expected growth.

11 There are other errors in the study as well that further invalidate the results. The
12 authors did not use both historic and analysts’ projections growth rate measures in the same
13 regression to assess if both historic and forecasts should be used together to measure
14 expected growth. In addition, they did not perform any tests to determine if the difference
15 between historic and projected growth measures was statistically significant. Without such
16 tests, the authors cannot make any conclusions about the superiority of one measure versus
17 the other.

18 (c) A Long-Term GDP Growth Rate of 5.77%

19 **Q. PLEASE DISCUSS MR. HEVERT'S GDP GROWTH RATE IN HIS MULTI-**
20 **STAGE DCF MODEL.**

21

1 A. As discussed on pages 21-22 of his testimony, Mr. Hevert calculates a long-term GDP
2 growth rate of 5.77%, which includes: (1) a real GDP growth rate of 3.24% calculated over
3 the 1929-2011 time period, and (2) an inflation rate of 2.45%.

4 **Q. PLEASE DISCUSS HISTORIC GDP GROWTH RATES.**

5 A. An analysis of historic GDP growth rates is provided in Exhibit JRW-14. I have
6 assessed GDP growth for various time periods from 1960 to the present. The table below shows
7 the alternative GDP growth rates over the past 50 years.

8 **Historic GDP Growth Rates**

10-Year Average	4.0%
20-Year Average	4.6%
30-Year Average	5.1%
40-Year Average	6.6%
50-Year Average	6.8%

9
10 The data indicates that more recent trends suggest lower economic growth than the long-
11 term historic GDP growth. The historic GDP growth rates for 10-, 20-, 30-, 40- and 50-years
12 show that more recent decades have experienced much lower growth than the long-term
13 average. These figures clearly suggest that nominal GDP growth in recent decades has slowed
14 and that a figure in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy.
15 Hence, Mr. Hevert's long-term growth GDP growth rate of 5.77% appears to be inflated.

16 **Q. WHAT LEVEL OF GDP GROWTH IS FORECASTED BY ECONOMISTS AND**
17 **VARIOUS GOVERNMENT AGENCIES?**

18
19 A. There are several forecasts of annual GDP growth that are available from economists
20 and government agencies. These are listed in Panel B of page 1 of Exhibit JRW-14. The mean
21 10-year nominal GDP growth forecast (as of February 2013) by economists in the recent *Survey*
22 *of Professional Forecasters* is 4.8%. The Energy Information Administration (EIA), in its

1 projections used in preparing its *Annual Energy Outlook*, forecasts long-term GDP growth of
2 4.5% for the period 2011-2040. The Congressional Budget Office, in its forecasts for the
3 period 2013 to 2023, projects a nominal GDP growth rate of 4.6%. As such, these projections
4 of nominal GDP growth provide additional evidence that Mr. Hevert's long-term GDP
5 growth rate of 5.77% is significantly overstated.

6 **2. CAPM Approach**

7 **Q. PLEASE DISCUSS MR. HEVERT'S CAPM.**

8 A. On pages 26-31 of his testimony and Schedule Nos. (RBH)-5 – (RBH)-7, Mr. Hevert
9 estimates an equity cost rate by applying a CAPM model to his proxy group of gas distribution
10 companies. The CAPM approach requires an estimate of the risk-free interest rate, beta, and
11 the equity risk premium. Mr. Hevert uses two different measures of the risk-free interest rate
12 (a current rate of 2.87% and projected rate of 3.15%), two different Betas (an average
13 Bloomberg Beta of 0.732 and an average *Value Line* Beta of 0.661) and three market risk
14 premium measures (a Bloomberg, DCF-derived market risk premium of 10.06%, a Capital
15 IQ, DCF-derived market risk premium of 10.00%, and a Sharpe ratio premium of 7.53%).
16 Based on these figures, he finds a CAPM equity cost rate ranging from 7.85% to 10.47%.

17 **Q. WHAT ARE THE ERRORS IN MR. HEVERT'S CAPM ANALYSIS?**

18 A. The primary error in Mr. Hevert's CAPM analysis is his three market risk premium
19 measures.

20 **Q. PLEASE ASSESS MR. HEVERT'S MARKET RISK PREMIUM DERIVED**
21 **FROM APPLYING THE DCF MODEL TO THE S&P 500.**

22
23 A. For his Bloomberg and Capital IQ market risk premiums, Mr. Hevert computes
24 market risk premiums of 10.06% and 10.00% by: (1) calculating an expected market return

1 by applying the DCF model to the S&P 500; and (2) subtracting the current 30-year Treasury
2 bond yield. Mr. Hevert's estimated expected market returns from these approaches of
3 12.93% (using Bloomberg long-term EPS growth rate estimates) and 12.87% (using Capital
4 IQ long-term EPS growth rate estimates) are not realistic. He uses (1) a dividend yield of
5 1.93% and an expected DCF growth rate of 10.44% for Bloomberg and (2) a dividend yield
6 of 2.02% and an expected DCF growth rate of 10.76% for Capital IQ. The primary error is
7 that the expected DCF growth rate for these DCF calculations is the projected 5-year EPS
8 growth rate from Wall Street analysts as reported by these two services. As explained
9 previously, this produces an overstated expected market return and equity risk premium.

10 **Q. ARE EPS GROWTH RATES OF 10.44% AND 10.76% CONSISTENT WITH**
11 **THE HISTORIC AND PROJECTED GROWTH IN EARNINGS AND THE**
12 **ECONOMY?**
13

14 A. No. Long-term EPS growth rate of 10.44% and 10.76% are not consistent with
15 historic as well as projected economic and earnings growth in the U.S for several reasons: (1)
16 long-term growth in EPS is far below Mr. Hevert's projected EPS growth rates; (2) more
17 recent trends in GDP growth, as well as projections of GDP growth, suggest slower long-
18 term economic and earnings growth in the future; and (3) over time, EPS growth tends to lag
19 behind GDP growth.

20 The long-term economic, earnings, and dividend growth rate in the U.S. has only
21 been in the 5% to 7% range. I performed a study of the growth in nominal GDP, S&P 500
22 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are
23 provided on page 2 of Exhibit JRW-14, and a summary is provided in the table below.

24

25

1 **GDP, S&P 500 Stock Price, EPS, and DPS Growth**
2 **1960-Present**

Nominal GDP	6.74%
S&P 500 Stock Price	6.35%
S&P 500 EPS	6.96%
S&P 500 DPS	5.39%
Average	6.36%

3
4 The results are presented graphically on page 3 of Exhibit JRW-14. In sum, the
5 historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 5% to 7%
6 range. By comparison, Mr. Hevert's long-run growth rate projections of 10.44% and 10.76%
7 are vastly overstated. These estimates suggest that companies in the U.S. would be expected
8 to: (1) increase their EPS growth rate by over 50% in the future and (2) maintain that growth
9 indefinitely in an economy that is expected to grow at about one-half of his projected growth
10 rates.

11 **Q. DO MORE RECENT DATA SUGGEST THAT THE U.S. ECONOMY**
12 **GROWTH IS FASTER OR SLOWER THAN THE LONG-TERM DATA?**
13

14 A. The more recent trends suggest lower future economic growth than the long-term
15 historic GDP growth. The historic GDP growth rates for 10-, 20-, 30-, 40- and 50-years, as
16 presented in Panel A of page 1 of Exhibit JRW-14, clearly suggest that nominal GDP growth in
17 recent decades has slowed to 4.0% to 5.0%. In addition, as cited above, forecasts of annual
18 GDP growth from the *Survey of Professional Forecasters* (4.8%), the Energy Information
19 Administration (4.5%), and the Congressional Budget Office (4.6%), also suggests GDP
20 growth in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy.

21 **Q. WHY IS GDP GROWTH RELEVANT IN YOUR DISCUSSION OF MR.**
22 **HEVERT'S USE OF THE LONG-TERM EPS GROWTH RATES IN**
23 **DEVELOPING A MARKET RISK PREMIUM FOR HIS CAPM?**
24

1 A. Because, as indicated in recent research, the long-term earnings growth rates of
2 companies are limited to the growth rate in GDP.

3 **Q. PLEASE HIGHLIGHT THE RECENT RESEARCH ON THE LINK**
4 **BETWEEN ECONOMIC AND EARNINGS GROWTH AND EQUITY**
5 **RETURNS.**

6
7 A. Brad Cornell of the California Institute of Technology recently published a study on
8 GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the
9 U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS
10 growth. In addition, he finds that long-term stock returns are determined by long-term
11 earnings growth. He concludes with the following observations:²³

12 The long-run performance of equity investments is fundamentally
13 linked to growth in earnings. Earnings growth, in turn, depends on
14 growth in real GDP. This article demonstrates that both theoretical
15 research and empirical research in development economics suggest
16 relatively strict limits on future growth. In particular, real GDP
17 growth in excess of 3 percent in the long run is highly unlikely in
18 the developed world. In light of ongoing dilution in earnings per
19 share, this finding implies that investors should anticipate real
20 returns on U.S. common stocks to average no more than about 4–5
21 percent in real terms.

22
23 Given current inflation in the 2% to 3% range, the results imply nominal expected
24 stock market returns in the 7% to 8% range. As such, Mr. Hevert's projected earnings
25 growth rates and implied expected stock market returns and equity risk premiums are not
26 indicative of the realities of the U.S. economy and stock market. As such, his expected
27 CAPM equity cost rate is significantly overstated.

28 **Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF MR. HEVERT'S**
29 **PROJECTED EQUITY RISK PREMIUM DERIVED FROM EXPECTED**
30 **MARKET RETURNS.**
31

²³ Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January- February, 2010), p. 63.

1 A. Mr. Hevert's market risk premium derived from his DCF application to the S&P 500
2 is inflated due to errors and bias in his study. Investment banks, consulting firms, and CFOs
3 use the equity risk premium concept every day in making financing, investment, and valuation
4 decisions. On this issue, the opinions of CFOs and financial forecasters are especially relevant.
5 CFOs deal with capital markets on an ongoing basis since they must continually assess and
6 evaluate capital costs for their companies. They are well aware of the historical stock and
7 bond return studies of Ibbotson. The CFOs in the March 2013 *CFO Magazine* – Duke
8 University Survey of over almost 350 CFOs shows an expected return on the S&P 500 of
9 6.5% over the next ten years. In addition, the financial forecasters in the February 2013
10 Federal Reserve Bank of Philadelphia survey expect an annual market return of 6.15% over
11 the next ten years. As such, with a more realistic equity or market risk premium, the
12 appropriate equity cost rate for a public utility should be in the 8.0% to 9.0% range and not in
13 the 10.0% to 11.0% range.

14 **Q. PLEASE REVIEW MR. HEVERT'S SECOND MARKET RISK PREMIUM.**

15 A. Mr. Hevert's second market risk premium of 7.53% uses the Sharpe Ratio, and
16 calculates the expected market risk premium based on a comparison of historical and
17 expected market volatility. The Sharpe Ratio is computed as:

18
$$S(X) = (R_x - R_f) / Std Dev (X)$$

19 where:

- 20 X = the investment;
- 21 R_x = the average return of X ;
- 22 R_f = the best available rate of return of a risk free security; and
- 23 $Std Dev$ = the standard deviation of r_x .
- 24

1 Mr. Hevert defines the constant Sharpe Ratio as the ratio of the historical market risk
2 premium of 6.60% and the historical market volatility of 20.30%. These figures are
3 computed using the Morningstar historical stock and bond market data and use arithmetic
4 mean returns. He then calculates the expected market risk premium as the product of the
5 Sharpe Ratio and the expected market volatility. Mr. Hevert computes the expected market
6 volatility as the thirty-day average of the Chicago Board Options Exchange's ("CBOE")
7 three-month volatility index (*i.e.*, the VXV) and the same thirty-day average of settlement
8 prices of futures on the CBOE's one-month volatility index (*i.e.*, the VIX) for March 2013
9 through May 2013. Mr. Hevert used a "VIX" volatility measure of 23.15.

10 **Q. PLEASE DISCUSS THE VIX.**

11 A. The VIX is the stock ticker symbol for the Chicago Board Options Exchange Market
12 Volatility Index. The VIX, which is quoted as a percentage, is a measure of the implied
13 volatility of S&P 500 index options for the next 30-day period. Higher levels of the VIX
14 imply that investors expect larger market upward or downward movements in the next 30
15 days.

16 Panel A of page 1 of Exhibit JRW-15 shows the historic levels of the VIX since 1990.
17 The data indicate that the current level of the VIX, about 14, is lower than historic norms.
18 Panel B of page 1 of Exhibit JRW-15 shows the VIX over the past year. The VIX was in the
19 25 range in the second quarter of 2012 due primarily to international economic issues. The
20 VIX did spike in late December due to the 'Fiscal Cliff' debate. However, since that time, the
21 short-term volatility of the stock market and VIX has declined to about 14. Panel C of page
22 1 of Exhibit JRW-15 shows the VXV over the past year. The VXV movement has mirrored
23 the VIX movement, and the current level is also about 14.

1 **Q. WHAT IS THE ISSUE OF USING THE VIX TO ESTIMATE A MARKET**
2 **RISK PREMIUM?**

3
4 A. The primary issue with this approach is the use of the VIX in the context of long-
5 term stock market volatility. The VIX is a measure of short-term stock market volatility.
6 Mr. Hevert has used the Sharpe ratio and developed a market risk premium comparing the
7 VIX or short-term volatility measure with the long-term standard deviation of the market.
8 The error is in the comparison of the short-term volatility measure (VIX) with the long-term
9 standard deviation of the market. The VIX is too short-term of a measure to estimate a long-
10 term expected risk and return.

11 **Q. WHAT DO THE CURRENT LEVELS OF THE VIX IMPLY ABOUT THE**
12 **MARKET RISK PREMIUM AND CAPM EQUITY COST RATE USING MR.**
13 **HEVERT'S SHARPE RATIO APPROACH?**

14
15 A. Panel A of page 2 of Exhibit JRW-15 shows Mr. Hevert's market risk premium and
16 CAPM equity cost rate calculations using a VIX level of 23.15. In Panel B of page 2 of
17 Exhibit JRW-15, I have replicated Mr. Hevert's market risk premium and CAPM equity cost
18 rate calculations using a VIX level of 14. As shown on page 1 of Exhibit JRW-15, the
19 current levels of the VIX and the VXV are both about 14. The range of the CAPM equity
20 cost rates using the updated VIX levels are 5.88% to 6.48%. Hence, current VIX levels
21 support an equity cost rate that is even lower than the equity cost rate of 8.50% that I
22 recommend.

23 **3. RP Approach**

24 **Q. PLEASE REVIEW MR. HEVERT'S RP ANALYSIS.**

25 A. On pages 32-34 of his testimony and in Schedule No. (RBH)-8, Mr. Hevert estimates an
26 equity cost rate using a RP model. Mr. Hevert develops an equity cost rate by: (1) regressing

1 the authorized returns on equity from natural gas companies from the January 1, 1980 to
2 October 12, 2012 time period on the 30-year Treasury Yield; and (2) adding the appropriate risk
3 premium established in (1) to three different thirty-year Treasury yields: (a) a current yield of
4 2.87%, (b) a near-term projected yield of 3.15%, and (c) a long-term projected yield of 5.30%.
5 Mr. Hevert's RP results are provided in Panel C of Exhibit JRW-13. He reports RP equity
6 cost rates ranging from 10.12% to 10.74%.

7 **Q. WHAT ARE THE ERRORS IN MR. HEVERT'S RP ANALYSIS?**

8 A. The primary error is the excessive risk premium.

9 **Q. WHAT ARE THE ISSUES WITH MR. HEVERT'S RISK PREMIUM?**

10 A. The risk premium is inflated as a measure of investor's required risk premium. Mr.
11 Hevert's approach is a study of *Commission* behavior, not a study of *investor* behavior. It
12 does not make sense to find the cost of equity in a new proceeding like this one by studying
13 the outcomes of other cases. Such an approach is circular. It tends to perpetuate any past
14 errors, and over time could become entirely disconnected from financial market realities.
15 Evidence of such errors is demonstrated by the market-to-book ratios for gas companies.
16 Gas distribution utilities have been selling at market-to-book ratios in excess of 1.0 for many
17 years. This indicates that the authorized rates of return have been greater than the return that
18 investors require. Therefore, the risk premium produced from the study is overstated as a
19 measure of investor return requirements and produced an inflated equity cost rate.

20

21

22

1 **D. Flotation Costs, Size, and Revenue Stabilization Mechanisms**

2 1. Flotation Costs

3 **Q. PLEASE DISCUSS MR. HEVERT'S ADJUSTMENT FOR FLOTATION**
4 **COSTS.**

5
6 A. Mr. Hevert claims that he has considered the impact of flotation costs in setting the
7 range of his equity cost rate recommendation. This adjustment factor is erroneous for several
8 reasons. First, the Company has not identified any specific flotation costs that were paid.
9 Therefore, the Company is requesting annual revenues in the form of a higher return on
10 equity for flotation costs that have not been identified. Second, it is commonly argued that a
11 flotation cost adjustment (such as that used by the Company) is necessary to prevent the
12 dilution in value of the existing shareholders' stock. In this case, a flotation cost adjustment
13 is justified by reference to bonds and the manner in which issuance costs are recovered by
14 including the amortization of bond flotation costs in annual financing costs. However, this is
15 incorrect for several reasons:

16 (1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment,
17 the fact that the market-to-book ratios for gas distribution companies are over 1.0X actually
18 suggests that there should be a flotation cost reduction (and not increase) to the equity cost
19 rate. This is because when (a) a bond is issued at a price in excess of face or book value, and
20 (b) the difference between market price and the book value is greater than the flotation or
21 issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by
22 which market values of gas distribution companies are in excess of book values is much
23 greater than flotation costs. Hence, if common stock flotation costs were exactly like bond

1 flotation costs, and one was making an explicit flotation cost adjustment to the cost of
2 common equity, the adjustment would be downward;

3 (2) If a flotation cost adjustment is needed to prevent dilution of existing
4 stockholders' investment, then the reduction of the book value of stockholder investment
5 associated with flotation costs can occur only when a company's stock is selling at a market
6 price at/or below its book value. As noted above, gas distribution companies are selling at
7 market prices well in excess of book value. Hence, when new shares are sold, existing
8 shareholders realize an increase in the book value per share of their investment, not a
9 decrease;

10 (3) Flotation costs consist primarily of the underwriting spread or fee and not out-of-
11 pocket expenses. On a per share basis, the underwriting spread is the difference between the
12 price the investment banker receives from investors and the price the investment banker pays
13 to the company. Hence, these are not expenses that must be recovered through the regulatory
14 process. Furthermore, the underwriting spread is known to the investors who are buying the
15 new issue of stock, who are well aware of the difference between the price they are paying to
16 buy the stock and the price that the Company is receiving. The offering price which they pay
17 is what matters when investors decide to buy a stock based on its expected return and risk
18 prospects. Therefore, the Company is not entitled to an adjustment to the allowed return to
19 account for those costs; and

20 (4) Flotation costs, in the form of the underwriting spread, are a form of a transaction
21 cost in the market. They represent the difference between the price paid by investors and the
22 amount received by the issuing company. Whereas the Company believes that it should be
23 compensated for these transactions costs, they have not accounted for other market

1 transaction costs in determining a cost of equity for the Company. Most notably, brokerage
2 fees that investors pay when they buy shares in the open market are another market
3 transaction cost. Brokerage fees increase the effective stock price paid by investors to buy
4 shares. If the Company had included these brokerage fees or transaction costs in their DCF
5 analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields
6 and equity cost rates. This would result in a downward adjustment to their DCF equity cost
7 rate.

8 2. Small Size

9 **Q. PLEASE EVALUATE MR. HEVERT'S OBSERVATION THAT THE**
10 **COMPANY DESERVES ADDITIONAL RETURN DUE TO ITS SMALL SIZE.**

11
12 A. Mr. Hevert claims that he has also considered the size of Delmarva in establishing his
13 equity cost rate recommendation for the Company. His adjustment is based on the historical
14 stock market returns studies as performed and published by Ibbotson Associates. This
15 argument is erroneous for several reasons.

16 First, there are numerous errors in using historical market returns to compute risk
17 premiums. These errors provide inflated estimates of expected risk premiums. Among the
18 errors are the well-known survivorship bias (only successful companies survive – poor
19 companies do not survive) and unattainable return bias (the Ibbotson procedure presumes
20 monthly portfolio rebalancing). The net result is that Ibbotson's size premiums are poor
21 measures for any risk adjustment to account for the size of the Company.

22 Second, Professor Annie Wong has tested for a size premium in utilities and
23 concluded that, unlike industrial stocks, utility stocks do not exhibit a significant size

1 premium.²⁴ As explained by Professor Wong, there are several reasons why such a size
2 premium would not be attributable to utilities. Utilities are regulated closely by state and federal
3 agencies and commissions and hence, their financial performance is monitored on an ongoing
4 basis by both the state and federal governments. In addition, public utilities must gain approval
5 from government entities for common financial transactions such as the sale of securities.
6 Furthermore, unlike their industrial counterparts, accounting standards and reporting are fairly
7 standardized for public utilities. Finally, a utility's earnings are predetermined to a certain
8 degree through the ratemaking process in which performance is reviewed by state commissions
9 and other interested parties. Overall, in terms of regulation, government oversight, performance
10 review, accounting standards, and information disclosure, utilities are much different than
11 industrials, which could account for the lack of a size premium.

12 **Q. PLEASE DISCUSS RECENT RESEARCH ON THE SIZE PREMIUM IN**
13 **ESTIMATING THE EQUITY COST RATE.**

14
15 A. There are a number of errors in using historical market returns to compute risk
16 premiums. With respect to the small firm premium, Richard Roll (1983) found that one-half
17 of the historic return premium for small companies disappears once biases are eliminated and
18 historic returns are properly computed. The error arises from the assumption of monthly
19 portfolio rebalancing and the serial correlation in historic small firm returns.²⁵

20 In a more recent paper, Ching-Chih Lu (2009) estimated the size premium over the
21 long-run. Lu acknowledges that many studies have demonstrated that smaller companies

²⁴ Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, pp. 95-101, (1993).

²⁵ See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).

1 have historically earned higher stock market returns. However, Lu highlights that these
2 studies rebalance the size portfolios on an annual basis. This means that at the end of each
3 year the stocks are sorted based on size, split into deciles, and the returns are computed over
4 the next year for each stock decile. This annual rebalancing creates the problem. Using a
5 size premium in estimating a CAPM equity cost rate requires that a firm carry the extra size
6 premium in its discount factor for an extended period of time, not just for one year, which is
7 the presumption with annual rebalancing. Through an analysis of small firm stock returns for
8 longer time periods (and without annual rebalancing), Lu finds that the size premium
9 disappears within two years. Lu's conclusion with respect to the size premium is:²⁶

10 However, an analysis of the evolution of the size premium will
11 show that it is inappropriate to attach a fixed amount of premium to
12 the cost of equity of a firm simply because of its current market
13 capitalization. For a small stock portfolio which does not rebalance
14 since the day it was constructed, its annual return and the size
15 premium are all declining over years instead of staying at a
16 relatively stable level. This confirms that a small firm should not be
17 expected to have a higher size premium going forward sheerly
18 because it is small now.

19
20 3. Lack of Revenue Stabilization Mechanism

21 **Q. PLEASE REVIEW MR. HEVERT'S DISCUSSION OF THE COMPANY'S**
22 **LACK OF A REVENUE STABILIZATION MECHANISM.**

23
24 A. Mr. Hevert claims that he has considered the Company's lack of a revenue
25 stabilization mechanism ("RSM") in setting the range of his equity cost rate
26 recommendation. To support his argument, he provides a list of various RSMs used by
27 companies in his gas group. His argument is that the since the companies in his gas group
28 have these mechanisms, their stock prices reflect the risk reduction associated with these
29 devices.

²⁶ Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

1 **Q. DOES MR. HEVERT'S REVIEW OF RSMS OF THE PROXY GAS**
2 **COMPANIES SUGGEST THAT A LOWER LEVEL OF RISK IS REFLECTED**
3 **IN THE STOCK PRICES OF THESE COMPANIES?**
4

5 A. No, not necessarily. Mr. Hevert has not identified the percent of the revenues of these
6 companies that are covered by the RSMS. Hence, the degree of risk reduction that is
7 reflected in the stock prices is unknown. This is because an unknown but significant
8 percentage of the revenues of these companies are not covered by the RSMS. First, as shown
9 in Exhibit JRW-16, the companies in the proxy group only receive, on average, 68% of
10 revenues from regulated gas operations. Second, as shown in Schedule (RBH)-10, some of
11 the subsidiaries of the gas proxy companies do not have RSMS to cover infrastructure
12 investments, full decoupling, and/or operating expenses. Third, not all of the regulated gas
13 revenues are covered by RSMS. For example, gas volumes for commercial and industrial
14 customers are not typically covered by RSMS. Consequently, since the actual percentage of
15 gas revenues covered by RSMS is not presented, it is impossible to determine the ultimate
16 impact of RSMS on the riskiness of the gas proxy companies.

17 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

18 A. Yes.

19

20

21