

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE**

IN THE MATTER OF THE APPLICATION OF )  
DELMARVA POWER & LIGHT COMPANY FOR )  
AN INCREASE IN NATURAL GAS BASE RATES ) PSC DOCKET NO. 12-546  
AND MISCELLANEOUS TARIFF CHANGES )  
(FILED DECEMBER 7, 2012) )

**PRE-FILED DIRECT TESTIMONY OF DAVID C. PARCELL  
ON BEHALF OF COMMISSION STAFF**

**JUNE 3, 2013**

1 **Q. Which methods have you employed in your analyses of the cost of common equity in**  
2 **this proceeding?**

3 A. I have utilized three methodologies to determine DP&L's cost of common equity: the  
4 DCF, CAPM and CEM methods. Each of these methodologies will be described in more  
5 detail in the testimony that follows.  
6

7 **B. General Economic Conditions**  
8

9 **Q. Are economic and financial conditions important in determining the cost of capital**  
10 **for a Public Utility?**

11 A. Yes. The cost of capital, for both fixed-cost (debt and preferred stock) components and  
12 common equity, are determined in part by current and prospective economic and  
13 financial conditions. At any given time, each of the following factors has an influence on  
14 the cost of capital:

- 15 • The level of economic activity (i.e., growth rate of the economy);
  - 16 • The stage of the business cycle (i.e., recession, expansion, or transition);
  - 17 • The level of inflation;
  - 18 • The level and trend of interest rates; and,
  - 19 • Expected economic conditions.
- 20

21 My understanding is that this position is consistent with the *Bluefield* decision that  
22 noted “[a] rate of return may be reasonable at one time and become too high or too low  
23 by changes affecting opportunities for investment, the money market, and business  
24 conditions generally.” *Bluefield*, 262 U.S. at 693.  
25

26 **Q. What indicators of economic and financial activity did you evaluate in your**  
27 **analyses?**

28 A. I examined several sets of economic statistics from 1975 to the present. I chose this time  
29 period because it permits the evaluation of economic conditions over four full business  
30 cycles, allowing for an assessment of changes in long-term trends. This period also

1 approximates the beginning and continuation of active rate case activities by public  
2 utilities.

3 A business cycle is commonly defined as a complete period of expansion  
4 (recovery and growth) and contraction (recession). A full business cycle is a useful and  
5 convenient period over which to measure levels and trends in long-term capital costs  
6 because it incorporates the cyclical (i.e., stage of business cycle) influences, and thus,  
7 permits a comparison of structural (or long-term) trends.

8  
9 **Q. Please describe the timeframe of the four prior business cycles and the current**  
10 **cycle.**

11 A. The four prior complete cycles and current cycle cover the following periods:

<u>Business Cycle</u>	<u>Expansion Cycle</u>	<u>Contraction Period</u>
1975-1982	Mar. 1975-July 1981	Aug. 1981-Oct. 1982
1982-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Apr. 1991-Mar. 2001	Apr. 2001-Nov. 2001
2001-2009	Dec. 2001-Nov. 2007	Dec. 2007-June 2009
Current	July 2009-	

17 Source: National Bureau of Economic Research, "Business Cycle  
18 Expansions and Contractions."

19 **Q. Do you have any general observations concerning the recent trends in economic**  
20 **conditions and their impact on capital costs over this broad period?**

21 A. Yes, I do. Until the end of 2007, the United States economy had enjoyed general  
22 prosperity and stability since the early 1980s.<sup>1</sup> This period had been characterized by  
23 longer economic expansions, relatively tame contractions, low and declining inflation,  
24 and declining interest rates and other capital costs.

25 However, in 2008 and 2009, the economy declined significantly, initially as a  
26 result of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity  
27 crisis in the financial sector of the economy. Subsequently, this financial crisis  
28 intensified with a more broad-based decline, initially based on a substantial increase in  
29 petroleum prices and a dramatic decline in the U.S. financial sector, culminating with the

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<sup>1</sup> There was a "Tech Bubble" in 1999-2000, in which prices of many technology stocks encountered a dramatic run-up that was followed by an equally dramatic decline in 2001-2002.

1 collapse and/or bailouts of a significant number of well-known institutions such as Bear  
2 Stearns, Lehman Brothers, Merrill Lynch, Freddie Mac, Fannie Mae, AIG and Wachovia.  
3 The recession also witnessed the demise of national companies such as Circuit City and  
4 the bankruptcies of automotive manufacturers such as Chrysler and General Motors.

5 This decline has been described as the worst financial crisis since the Great  
6 Depression and has been referred to as the “Great Recession.” Since 2008, the U.S. and  
7 other governments have implemented and continue to implement unprecedented actions  
8 to attempt to correct or minimize the scope and effects of this recession.

9 The recession reached its low point in mid-2009 and the economy has since begun  
10 to expand again, although at a slow and uneven rate. However, the length and severity of  
11 the recession, as well as a relatively slow and uneven recovery, indicates that the impacts  
12 of the recession have been and will be felt for an extended period of time. As an example  
13 of this, even in the fourth year of the recovery/expansion, the U.S. unemployment rate  
14 still stands at nearly 8 percent—close to the highest unemployment rate experienced over  
15 the last several decades.

16  
17 **Q. Please describe recent and current economic and financial conditions and their**  
18 **impact on the cost of capital.**

19 **A.** Schedule 6 shows several sets of relevant economic data for the cited time periods. Pages  
20 1 and 2 contain general macroeconomic statistics; pages 3 and 4 show interest rates; and  
21 pages 5 and 6 contain equity market statistics.

22 Pages 1 and 2 show that 2007 was the sixth year of an economic expansion but, as  
23 I previously noted, the economy subsequently entered a significant decline, as indicated  
24 by the growth in real (i.e., adjusted for inflation) Gross Domestic Product (“GDP”),  
25 industrial production, and an increase in the unemployment rate. This recession lasted  
26 until mid-2009, making it a longer-than-normal recession, as well as a deeper recession.  
27 Since then, economic growth has been erratic and lower than the initial periods of prior  
28 expansions.

29 Pages 1 and 2 also show the rate of inflation. As reflected in the Consumer Price  
30 Index (“CPI”), for example, inflation rose significantly during the 1975-1982 business  
31 cycle and reached double-digit levels in 1979-1980. The rate of inflation declined

1 substantially beginning in 1981, and remained at or below 6.1 percent during the 1983-  
2 1991 business cycle. Since 2008, the CPI has been 3 percent or lower, with 2012 being  
3 only 1.7 percent. It is thus apparent that the rate of inflation has generally been declining  
4 over the past several business cycles. Current levels of inflation are at the lowest levels  
5 of the past 35 years and are indicative of low inflation, which is reflective of lower  
6 capital costs.

7  
8 **Q. What have been the trends in interest rates over the four prior business cycles and**  
9 **at the current time?**

10 A. Pages 3 and 4 of Schedule 6 show several series of interest rates. Rates rose sharply to  
11 record levels in 1975-1981 when the inflation rate was high and generally rising. Interest  
12 rates declined substantially in conjunction with inflation rates during the remainder of the  
13 1980s and throughout the 1990s. Interest rates declined even further from 2000-2005 and  
14 generally recorded their then-lowest levels since the 1960s.

15 Since 2008, the Federal Reserve has lowered the Federal Funds rate (i.e., short-  
16 term rate) to 0.25 percent, an all-time low. In 2008 and early 2009, there was a  
17 pronounced decline in short-term rates, as well as long-term U.S. Treasury Securities  
18 yields, and an increase in corporate bond yields, reflecting the "flight to safety," wherein  
19 there was a reluctance of investors to purchase common stocks and corporate bonds while  
20 concomitantly moving their money into very safe government bonds. Since then, as seen  
21 on page 4 of Schedule 6, both U.S. and corporate bond yields have declined to their  
22 lowest levels in the past four business cycles and in more than 35 years, with even  
23 corporate lending rates remaining at historically low levels, again reflective of lower  
24 capital costs.

25  
26 **Q. What trends does Schedule 6 show for trends of common share prices?**

27 A. Pages 5 and 6 show several series of common stock prices and ratios. These indicate that  
28 stock prices were essentially stagnant during the high inflation/high interest rate  
29 environment of the late 1970s and early 1980s. The 1983-1991 business cycle and the  
30 more recent cycles witnessed a significant upward trend in stock prices. The beginning  
31 of the recent financial crisis saw stock prices decline precipitously, as stock prices in

1 2008 and early 2009 were down significantly from 2007 levels, reflecting the  
2 financial/economic crisis. Beginning in the second quarter of 2009, prices have  
3 recovered substantially and have reached and exceeded the levels achieved prior to the  
4 "crash."

5  
6 **Q. What conclusions do you draw from your discussion of economic and financial  
7 conditions?**

8 A. It is apparent that recent economic and financial circumstances have been different from  
9 any that have prevailed since at least the 1930s. The late 2008-early 2009 deterioration in  
10 stock prices, the decline in U.S. Treasury bond yields, and an increase in corporate bond  
11 yields were evidenced in the then-evident "flight to safety." On the other side of this  
12 "flight to safety" is the negative perception of the recent declines in capital costs and  
13 returns, which significantly reduced the value of most retirement accounts, investment  
14 portfolios and other assets. One significant aspect of this has been a decline in investor  
15 expectations of returns, including stock returns. Finally, as noted above, utility interest  
16 rates are currently at levels below those prevailing prior to the financial crisis of late 2008  
17 to early 2009 and are near the lowest level in the past 35 years.

18  
19 **C. Discounted Cash Flow Analysis**

20  
21 **Q. What is the theory and methodological basis of the discounted cash flow model?**

22 A. The DCF model is one of the oldest, as well as the most commonly-used, models for  
23 estimating the cost of common equity for public utilities. It is my understanding that the  
24 DCF methodology is most preferred by the Delaware Commission in determining cost of  
25 equity for regulated utilities. The DCF model is based on the "dividend discount model"  
26 of financial theory, which maintains that the value (price) of any security or commodity  
27 is the discounted present value of all future cash flows.

28 The most common variant of the DCF model assumes that dividends are expected  
29 to grow at a constant rate. This variant of the dividend discount model is known as the  
30 constant growth or Gordon DCF model. In this framework, cost of capital is derived by  
31 the following formula:

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

where: P = current price

D = current dividend rate

K = discount rate (cost of capital)

g = constant rate of expected growth

This formula essentially recognizes that the return expected or required by investors is comprised of two factors: the dividend yield (current income) and expected growth in dividends (future income).

**Q. Please explain how you have employed the DCF model.**

A. I have utilized the constant growth DCF model. In doing so, I have combined the current dividend yield for the groups of proxy company stocks described in a previous section with several indicators of expected dividend growth.

**Q. How did you derive the dividend yield component of the DCF equation?**

A. There are several methods that can be used for calculating the dividend yield component. These methods generally differ in the manner in which the dividend rate is employed (i.e. current versus future dividends or annual versus quarterly compounding of dividends). I believe the most appropriate dividend yield component is a quarterly compounding variant, which is expressed as follows:

$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

This dividend yield component recognizes the timing of dividend payments and dividend increases.

The  $P_0$  in my yield calculation is the average (of high and low) stock price for each proxy company for the most recent three-month period (February-April 2013). The  $D_0$  is the current annualized dividend rate for each proxy company.

1 **Q. How is the CAPM derived?**

2 A. The general form of the CAPM is:

$$K = R_f + \beta(R_m - R_f)$$

3  
4

5 where: K = cost of equity

6  $R_f$  = risk free rate

7  $R_m$  = return on market

8  $\beta$  = beta

9  $R_m - R_f$  = market risk premium

10

11 As noted previously, the CAPM is a variant of the risk premium method. I believe the  
12 CAPM is generally superior to the simple risk premium method because the CAPM  
13 specifically recognizes the risk of a particular company or industry (i.e., beta), whereas  
14 the simple risk premium method does not, but rather assumes the same cost of equity for  
15 all companies exhibiting similar bond ratings.

16

17 **Q. What companies have you utilized to perform your CAPM analyses?**

18 A. I have performed CAPM analyses for the same groups of proxy firms evaluated in my  
19 DCF analyses.

20

21 **Q. What rate did you use for the risk-free rate?**

22 A. The first term of the CAPM is the risk-free rate ( $R_f$ ). The risk-free rate reflects the level  
23 of return that can be achieved without accepting any risk.

24 In CAPM applications, the risk-free rate is generally recognized by use of U.S.  
25 Treasury securities. Two general types of U.S. Treasury securities are often utilized as  
26 the  $R_f$  component, short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

27 I have performed CAPM calculations using the three-month average yield  
28 (February-April 2013) for long-term (20-year) U.S. Treasury bonds. Over this three-  
29 month period, these bonds had an average yield of 2.70 percent.

30

31



1 book value of the utility's capital structure. As stated earlier, maintenance of a  
2 financially stable utility's market-to-book ratio at 100 percent, or a bit higher, is fully  
3 adequate to maintain the utility's financial stability. On the other hand, a market price of  
4 a utility's common stock that is 150 percent or more above the stock's book value is  
5 indicative of earnings that exceed the utility's reasonable cost of capital. Thus, actual or  
6 projected earnings do not directly translate into a utility's reasonable cost of equity.  
7 Rather, they must be viewed in relation to the market-to-book ratios of the utility's  
8 common stock.

9 My 9.75 percent CEM recommendation is not designed to result in market-to-  
10 book ratios as low as 1.0 for DP&L. Rather, it is based on current market conditions and  
11 the proposition that ratepayers should not be required to pay rates based on earnings  
12 levels that result in excessive market-to-book ratios.

13  
14 **F. Return On Equity Recommendation**

15  
16 **Q. Please summarize the results of your three cost of equity analyses.**

17 **A.** My three methodologies produce the following:

18

	<u>Range</u>	<u>Mid-Point</u>
19 Discounted Cash Flow	9.0-9.4%	9.20%
20 Capital Asset Pricing Model	6.3%	6.3%
21 Comparable Earnings	9.5-10.0%	9.75%

22

23 These produce a broad range of 6.3 percent to 10.0 percent. The mid-points range from  
24 6.3 percent to 9.75%. Excluding the CAPM results, the ranges are 9.0 percent to 10.0  
25 percent and the mid-points are 9.20 percent to 9.75 percent.

26  
27 **Q. What return on equity do you recommend for DP&L?**

28 **A.** I recommend a range of 9.20 percent to 9.75 percent, which reflects my DCF and CE  
29 mid-point results.

1 **Q. It appears that your CAPM results are less than your DCF and CEM results. Does**  
2 **this imply that the CAPM results should not be considered in determining the cost**  
3 **of equity for DP&L?**

4 A. No. It is apparent that the CAPM results are less than the DCF and CEM results. There  
5 are two reasons for the lower CAPM results. First, risk premiums are lower currently  
6 than was the case in prior years. This is also reflective of a decline in investor  
7 expectations of equity returns and risk premiums. Second, the level of interest rates on  
8 U.S. Treasury bonds (i.e., the risk free rate) has been lower in recent years. This is  
9 partially the result of the actions of the Federal Reserve System to stimulate the economy.  
10 This also impacts investor expectations of return in a negative fashion. I note that,  
11 initially, investors may have believed that the decline in Treasury yields was a temporary  
12 factor that would soon be replaced by a rise in interest rates. However, this has not been  
13 the case as interest rates have remained low and continued to decline for the past four-  
14 plus years. The Federal Reserve has further announced its intention to continue stimulus  
15 (and maintain low interest rates) through at least 2014. As a result, it cannot be  
16 maintained that low interest rates (and low CAPM results) are temporary and do not  
17 reflect investor expectations. Consequently, the CAPM results should be considered as  
18 one factor in determining the cost of equity for DP&L. At the very least, the CAPM  
19 results indicate the capital costs continue at historically low levels and that DP&L's cost  
20 of equity is less than in prior years.

21

22 **VII. TOTAL COST OF CAPITAL**

23

24 **Q. What is the total cost of capital that results from your capital structure, cost of debt**  
25 **and cost of equity recommendations?**

26 A. This is shown on Schedule 1. This reflects the actual capital structure ratios of 49.22  
27 percent equity and 50.78 percent debt, cost of long-term debt of 4.91 percent, and cost of  
28 equity of 9.20 percent to 9.75 percent. This results in a total cost of capital range of 7.02  
29 percent to 7.29 percent.

30