BEFORE THE
PUBLIC SERVICE COMMISSION OF
MARYLAND

THE APPLICATION OF DELMARVA POWER & LIGHT COMPANY FOR AN INCREASE IN ITS RETAIL RATES FOR THE DISTRIBUTION OF ELECTRIC ENERGY	))))))))	**CASE NO. 9630**

Direct Testimony of Dr. J. Randall Woolridge

On Behalf of

the Maryland Office of People's Counsel

FEBRUARY 21, 2020

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

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

I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS

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

A: I have been asked by the Maryland Office of People's Counsel ("OPC") to provide an overall fair rate of return or cost of capital recommendation for Delmarva Power & Light Company ("DPL" or "Company").[1]

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First, I summarize my cost of capital recommendation for the Company, and review my primary areas of contention with the Company's position. Second, I discuss the proxy groups that I have used to estimate an equity cost rate for DPL. Third, I review the Company's proposed capital structure and debt cost rate. Fourth, I explain my calculation of my estimate of the appropriate equity cost rate for the Company. Finally,

[1] In my testimony, I use the terms "rate of return" and "cost of capital" interchangeably. This is because the required rate of return of investors on a company's capital is the cost of capital.

I critique DPL witness Hevert's rate of return analysis and testimony. Appendix A is a summary of my education and business experience.

A. Overview

Q. WHAT IS A UTILITY'S ROE INTENDED TO REFLECT?

A. A return on equity ("ROE") is most simply described as the allowed rate of profit for a regulated company. In a competitive market, a company's profit level is determined by a variety of factors, including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products and services, the company's cost structure, the impact of technological changes, and the supply and demand for its services and products. For a regulated monopoly, the regulator determines the level of profit available to the public utility. The United States Supreme Court established the guiding principles for determining an appropriate level of profitability for regulated public utilities in two cases: (1) *Hope*[2] and (2) *Bluefield*.[3] In those cases, the Court recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

[2] *Federal Power Commission v. Hope Natural Gas Co*., 320 U.S. 591 (1944) ("*Hope*").

[3] *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) ("*Bluefield*").

Thus, calculating the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of all of the economic models and formulas in cost of capital testimony (including those presented later in my testimony) is to estimate, using market data of similar-risk firms, the rate of return on equity investors require for that risk-class of firms in order to set an appropriate ROE for a regulated firm.

B. Summary of Positions

Q. PLEASE REVIEW THE COMPANY'S PROPOSED RATE OF RETURN.

A. The Company has proposed use of a capital structure of proposed capital structure of 50.53% common equity and 49.47% long-term debt and a long-term debt cost rate of 4.03. Company witness Hevert has recommended a common equity cost rate of 10.30%. Thus, the Company's overall proposed rate of return is 7.20%.

Q. HOW HAVE YOU CONDUCTED YOUR RATE OF RETURN STUDIES FOR THE COMPANY?

A. I reviewed the Company's proposed capital structure and overall rate of return or cost of capital. The Company's proposed capital structure has a common equity ratio that is generally in line with the capital structure parent, Exelon Corporation ("Exelon Corporation"), as well as the averages of my proxy group of electric utilities ("Electric Proxy Group") and Mr. Hevert's proxy group ("Hevert Proxy Group"). I show that

the Company's proposed capital structure of 50.53% common equity and 49.47% long-term debt is generally in line with the capital structures of comparable electric utility companies. To estimate an equity cost rate for the Company, I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to the Electric and Hevert Proxy Groups.

Q. WHAT IS YOUR PRIMARY RATE OF RETURN RECOMMENDATION FOR THE COMPANY?

A. My equity cost rate studies indicate that an appropriate ROE for the Company is in the range of 6.90% and 8.40%. I believe that this range accurately reflects current capital market data and the market cost of equity capital. Capital costs in the U.S. remain at historically low levels, with low inflation and interest rates and very modest economic growth. However, I recognize that this range is below the authorized ROEs for electric utility companies nationally. Therefore, as a primary ROE for DPL, I am recommending 9.0%. This recommendation: (1) gives weight to the higher authorized ROEs for electric utility companies; and (2) recognizes the concept of 'gradualism' in which authorized ROEs are adjusted on a gradual basis to reflect capital market data. Given my recommended capitalization ratios and debt cost rate, my rate of return or cost of capital recommendation for the Company is 6.54% and is summarized in Table 1 and Panel A of Exhibit JRW-1.

Table 1
OPC's Primary Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	**49.47%**	**4.03%**	**1.99%**
Common Equity	**50.53%**	**9.00%**	**4.55%**
Total Capitalization	**100.00%**		**6.54%**

Q. ARE YOU ALSO PROVIDING AN ALTERNATIVE RATE OF RETURN RECOMMENDATION FOR THE COMPANY?

A. Yes. My alternative rate of return recommendation also uses DPL's recommended capital structure. With respect to the ROE, as indicated above, I believe that my equity cost rate range, 6.90% to 8.40%, accurately reflects current capital market data. To reflect these low capital costs, my alternative ROE recommendation is 8.40%, which is at the high end of my equity cost rate range. Given my recommended capitalization ratios and debt capital cost rate, my alternative rate of return or cost of capital recommendation for the Company is 6.24% and is summarized in Table 2 and Panel B of Exhibit JRW-1.

Table 2
OPC's Alternative Rate of Return Recommendation

Capital Source	Capitalization Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	**49.47%**	**4.03%**	**1.99%**
Common Equity	**50.53%**	**8.40%**	**4.24%**
Total Capitalization	**100.00%**		**6.24%**

C. Primary Rate of Return on Equity Issues

Q. PLEASE PROVIDE AN OVERVIEW OF THE PRIMARY ISSUES REGARDING RATE OF RETURN IN THIS PROCEEDING.

A. The primary issues related to the Company's rate of return include the following:

Capital Market Conditions – Mr. Hevert's analyses, ROE results, and recommendations reflect an assumption of higher interest rates and capital costs that is inconsistent with current trends. Despite the Federal Reserve's moves to increase the federal funds rate over the 2015-18 time period, interest rates and capital costs remained at low levels. In 2019, interest rates fell dramatically with moderate economic growth and low inflation. The Federal Reserve cut the federal fund rate three times (July, September, and October) and the 30-year yield traded at all-time low levels. Interest rates have continued to decline in 2020.

DPL's Investment Risk is Below the Averages of the Two Proxy Groups – Mr. Hevert cites the Company's capital expenditures to imply that DPL is riskier than his proxy group. However, his assessment of DPL's risk is erroneous. The assessment of capital expenditures is part of the credit rating process, and DPL's Standard & Poor's ("S&P's") credit rating of A- suggests that the Company's investment risk is below the averages of the proxy groups.

Disconnect Between Mr. Hevert's Equity Cost Rate Studies and his 10.30% ROE Recommendation – There is a disconnect between Mr. Hevert's equity cost rate results and his 10.30% ROE recommendation. Simply stated, the vast majority of his equity cost rate results point to a lower ROE. In fact, the only results that point to an ROE

as high as 10.30% are some of his CAPM/Empirical CAPM ("ECAPM") results, which, as I explain later in my testimony, are derived from seriously flawed analyses. As a result, Mr. Hevert's ROE recommendation is based on: (1) the results of only one model (the CAPM); and, even more narrowly, (2) primarily *Value Line* data. Otherwise, Mr. Hevert provides no other equity cost rate studies that support his 10.30% ROE recommendation.

DCF Equity Cost Rate - The DCF Equity Cost Rate is estimated by summing the stock's dividend yield and investors' expected long-run growth rate in dividends paid per share. I have three central issues regarding Mr. Hevert's DCF analysis: (1) Mr. Hevert has given very little weight to his constant-growth DCF results in determining his recommended ROE; (2) He has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields; and (3) he relies exclusively on the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*. By comparison, my DCF growth rate is supported by thirteen growth rate measures including historical and projected growth rate measures and my evaluation of growth in dividends, book value, and earnings per share of proxy group companies.

CAPM Approach - The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. There are two primary issues with Mr. Hevert's CAPM analyses: (1) The long-term projected 30-year Treasury yield of 3.70%; (2) Mr. Hevert has employed an ad hoc version of the CAPM, the ECAPM; and (3) most significantly, Mr. Hevert's market risk premiums of 10.63% and 12.32% include highly unrealistic assumptions regarding future economic and

earnings growth and stock returns. Mr. Hevert has employed analysts' three-to-five-year growth-rate projections for EPS to compute an expected market return and market risk premium. These EPS growth-rate projections and the resulting expected market returns and market risk premiums include highly unrealistic assumptions regarding future economic and earnings growth and stock returns.

Alternative Risk Premium Model - Mr. Hevert estimates an equity cost rate using an alternative risk premium model which he calls the Bond Yield Risk Premium ("BYRP") approach. The risk premium in his BYRP method is based on the historical relationship between the yields on long-term Treasury yields and authorized ROEs for electric utility companies. There are several issues with this approach including: (1) it is a gauge of commission behavior and not investor behavior; (2) Mr. Hevert's methodology produces an inflated measure of the risk premium because he uses historical authorized ROEs and Treasury yields, and applies the resulting risk premium to projected Treasury yields; and (3) the risk premium is inflated as a measure of investor's required risk premium because electric utility companies have been selling at market-to-book ratios in excess of 1.0. This indicates that the authorized rates of return have been greater than the return that investors require.

Expected Earnings Approach - Mr. Hevert also uses the Expected Earnings approach to corroborate his recommended equity cost range for the Company. Mr. Hevert computes the expected ROE as forecasted by *Value Line* for his proxy group as well as for *Value Line*'s universe of electric utilities. Mr. Hevert's Expected Earnings approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, and has several other empirical issues. Therefore, the

Commission should ignore Mr. Hevert's Expected Earnings approach in determining the appropriate ROE for DPL.

Other Issues - Mr. Hevert also considers two other factors in arriving at his 10.30% ROE recommendation. Mr. Hevert has cited Company's high level of capital expenditures increases its risk relative to other electric utilities. However, as I noted above, DPL's investment risk as measured by S&P is below the average of the proxy groups. Second, Mr. Hevert also considers flotation costs in making his ROE recommendation of 10.30%. However, he has not identified any flotation costs for DPL and in recent Orders the Maryland Commission has only has granted flotation costs where the utility has demonstrated that it incurred verifiable costs of issuing new stock during the test year or will incur such flotation costs during the rate effective period.[4]

II. CAPITAL MARKET CONDITIONS AND AUTHORIZED ROES

Q. PLEASE REVIEW THE FEDERAL RESERVE'S DECISIONS TO RAISE THE FEDERAL FUNDS RATE IN RECENT YEARS.

A. On December 16, 2015, the Federal Reserve increased its target rate for federal funds from 0.25 to 0.50 percent.[5] This increase came after the rate was kept in the 0.00 to 0.25 percent range for over five years in order to spur economic growth in the wake of the financial crisis associated with the Great Recession. As the economy improved,

[4] Order No. 89072, *In re Potomac Edison Co.*, Maryland Public Service Commission. p. 76 (Case No. 9490, March 22, 2019)

[5] The federal funds rate is set by the Federal Reserve and is the borrowing rate applicable to the most creditworthy financial institutions when they borrow and lend funds *overnight* to each other.

with lower unemployment, steady but slow Gross Domestic Product ("GDP") growth, the Federal Reserve has increased the target federal funds rate on eight additional occasions: December 2016; March, June, and December of 2017; and March, June, September, and December of 2018.

Q. HOW HAVE LONG-TERM RATES RESPONDED TO THE ACTIONS OF THE FEDERAL RESERVE?

A. Figure 1, below, shows the yield on 30-year Treasury bonds over the period of 2015-2019. I have highlighted the dates when the Federal Reserve increased the federal funds rate. The 30-year Treasury yield hit its lowest point in the 2015-2016 timeframe in the summer of 2016 and subsequently increased with improvements in the economy. Financial markets moved significantly in the wake of the results of the presidential election on November 8, 2016. The stock market gained more than 10% and the 30-year Treasury yield increased about 50 basis points to 3.2% by year-end 2016. However, over the past three years, even as the Federal Reserve has increased the federal funds rate, the yield on 30-year bonds remained in the 2.8% to 3.4% range through 2018. These yields peaked at 3.48% in November of 2018, shortly before the December 2018 rate increase by the Federal Reserve.

Q. PLEASE REVIEW LONG-TERM TREASURY YIELDS IN 2019.

A. Despite the Federal Reserve's efforts to stimulate the economy, economic growth and inflation remained low, even with record low unemployment levels. The rate increase in December of 2018 was seen by many as maybe too aggressive.[6] Also, with the imposition of trade tariffs aimed at China, economic growth and inflation in the U.S.

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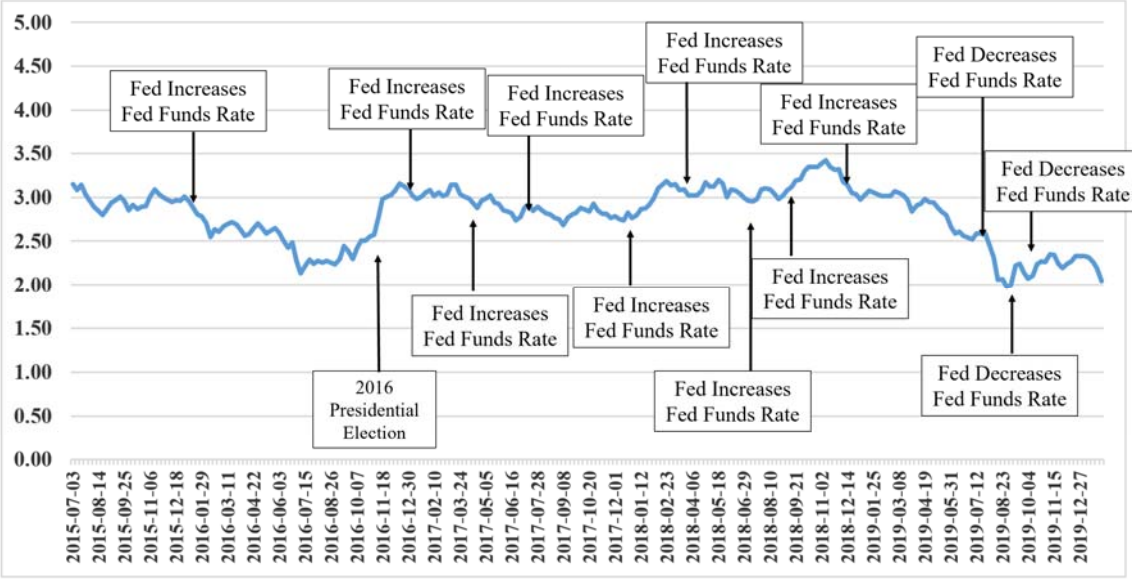
[6] Patti Domm, "Here's What Spooked the Market About the Fed Today," *CNBC Market Insider* (December 19, 2018). https://www.cnbc.com/2018/12/19/fed-delivers-.html.

remained at low levels. This led the Federal Reserve to cut the federal fund rate to the 2.0%-2.25% range in July of 2019. Thirty-year Treasury yields, which began the year in the 3.0% range, declined significantly in the second quarter and, in August, declined to record lows and even traded below 2.0%. As a result, the Federal Reserve cut the discount rate two more times since the July rate cut – in September and October. As of year-end, the 30-Treasury yield settled at 2.30% and has declined since that time. The irony is, despite the record low levels in 2019, the 30-year Treasury yield in the U.S. is still somewhat higher than the government bond rates in Japan, the U.K., Germany, and much of the rest of Europe.

Figure 1
Thirty-Year Treasury Yield and Federal Reserve Fed Funds Rate Increases
2015-2020



Q. WHY HAVE LONG-TERM TREASURY YIELDS REMAINED IN THE 2.0%-3.0% RANGE DESPITE THE FEDERAL RESERVE INCREASING THE FEDERAL FUNDS RATE?

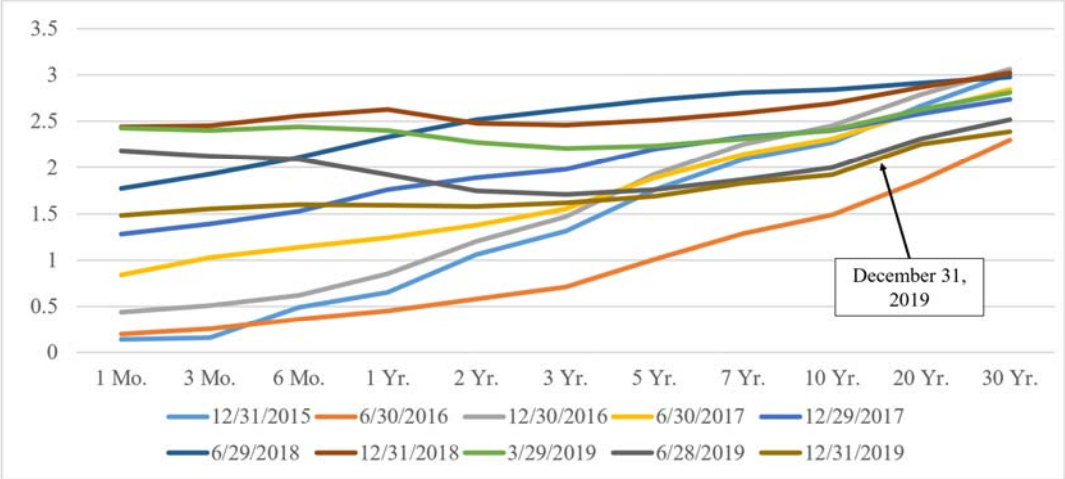
A. While the Federal Reserve can directly affect short-term rates by adjustments to the federal funds rate, long-term rates are primarily driven by expected economic growth and inflation.[7] The relationship between short- and long-term rates is normally evaluated using the yield curve. The yield curve depicts the relationship between the yield-to-maturity and the time-to-maturity for U.S. Treasury bills, notes, and bonds. Figure 2, below, shows the yield curve on a semi-annual basis since the Federal Reserve started increasing the federal funds rate at the end of 2015. It shows that, from the time the Federal Reserve began increasing the federal fund rate in 2015 and until 2018, with the exception of mid-year 2016, the 30-year Treasury yield has remained in the 2.8%-3.4% range over this time frame despite the fact that short-term rates have increased from near 0.0% to about 2.50%. As such, long-term interest rates and capital costs did not increase in any meaningful way even with the Federal Reserve's actions and the increase in short-term rates.

In 2019, with the large decline in long-term Treasury rates, the concern was an "inverted yield curve." An inverted yield curve occurs when short-term Treasury yields are above long-term Treasury yields and is commonly associated with a pending recession. The yield curve did invert a few times in the third quarter of 2019. In Figure 2, the yield curve for December 31, 2019, is shown in dark orange and is not

[7] While economic growth picked up in 2018, partly in response to the personal and corporate tax cuts, projected real GDP growth for 2019 and beyond remains in the 2.0% - 2.5% range. In addition, inflation remains low and is also in the 2.0% - 2.5% range.

inverted, due in large part to the three rate cuts.

Figure 2
Semi-Annual Yield Curves
2015-2020



Date Source: https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2019

Q. WHAT DO YOU RECOMMEND THE COMMISSION DO REGARDING MR. HEVERT'S FORECASTS OF HIGHER INTEREST RATES AND CAPITAL COSTS?

A. I suggest that the Commission disregard Mr. Hevert's forecasts and set an equity cost rate based on current indicators of market-cost rates rather than speculating on the future direction of interest rates.

Economists have been predicting that interest rates would be going up for a decade, and they consistently have been wrong. Several studies in recent years have highlighted the bias in economists' forecasts toward higher interest rates: (1) after the announcement of the end of the Quantitative Easing III ("QEIII") program in 2014, all of the economists in Bloomberg's interest rate survey forecasted interest rates

would increase in 2014, and 100% of the economists were wrong[8]; (2) *Bloomberg* reported that the Federal Reserve Bank of New York has gone as far as stopping use of interest rate estimates of professional forecasters in its interest rate model[9]; (3) a study entitled "How Interest Rates Keep Making People on Wall Street Look Like Fools," which evaluated economists' forecasts at the beginning of each year of the yield on ten-year Treasury bonds over the last ten years,[10] demonstrated that economists consistently predict that interest rates will go higher, and interest rates have not fulfilled the predictions; and (4) a study that tracked economists' forecasts for the yield on ten-year Treasury bonds on an ongoing basis from 2010 until 2015.[11] The results of this study, which was entitled "Interest Rate Forecasters Are Shockingly Wrong Almost All of the Time," demonstrate how economists continually forecast that interest rates would rise, and they did not.

More recently, in an end-of-decade financial markets review series in the *Wall Street Journal*, Gregory Ip highlighted how economists' forecasts of higher interest rates over the 2010s continued to be erroneous. He provided evidence that economists forecast that short-term and long-term interest rates would go up, and these forecasts were consistently wrong. The article provides insights as to why the longest economic expansion on record that has resulted in a record-breaking stock market run and a 50-

[8] Ben Eisen, "Yes, 100% of economists were dead wrong about yields" *Market Watch*, October 22, 2014, https://www.marketwatch.com/story/yes-100-of-economists-were-dead-wrong-about-yields-2014-10-21 .

[9] Susanne Walker and Liz Capo McCormick, "Unstoppable $100 Trillion Bond Market Renders Models Useless," *Bloomberg.com* (June 2, 2014). http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-useless.html.

[10] Joe Weisenthal, "How Interest Rates Keep Making People on Wall Street Look Like Fools," Bloomberg.com, March 16, 2015. http://www.bloomberg.com/news/articles/2015-03-16/how-interest-rates-keep-making-people-on-wall-street-look-like-fools.

[11] Akin Oyedele, "Interest Rate Forecasters Are Shockingly Wrong Almost All of the Time," *Business Insider*, July 18, 2015. http://www.businessinsider.com/interest-rate-forecasts-are-wrong-most-of-the-time-2015-7.

year low unemployment rate, was coupled with inflation that consistently ran below the Fed's 2% target and record low interest rates.[12] The bottom line – over the past decade – is that economists have consistently forecasted higher interest rates, and they have consistently been wrong!

Obviously, investors are aware of the consistently wrong forecasts of higher interest rates, and therefore place little weight on such forecasts. Investors would not be buying long-term Treasury bonds or utility stocks at their current yields if they expected interest rates to suddenly increase, thereby producing higher yields and negative returns. For example, consider a utility that pays a dividend of $2.00 with a stock price of $50.00. The current dividend yield in that example is 4.0%. If, as Mr. Hevert suggests, interest rates and required utility yields increase, the price of the utility stock would decline. In the example above, if higher return requirements led the dividend yield to increase from 4.0% to 5.0% in the next year, the stock price would have to decline to $40, which would be a -20% return on the stock. Obviously, investors would not buy the utility stock with an expected return of -20% due to higher dividend yield requirements.

In sum, it is practically impossible to accurately forecast interest rates and prices of investments that are determined in financial markets, such as interest rates and prices for stocks and commodities. For interest rates, I am not aware of any study that suggests one forecasting service is consistently better than others or that interest rate forecasts are consistently better than just assuming the current interest rate will be the rate in the future. As discussed above, investors would not be buying long-term Treasury bonds or utility stocks at their current yields if they expected interest rates to suddenly increase, thereby

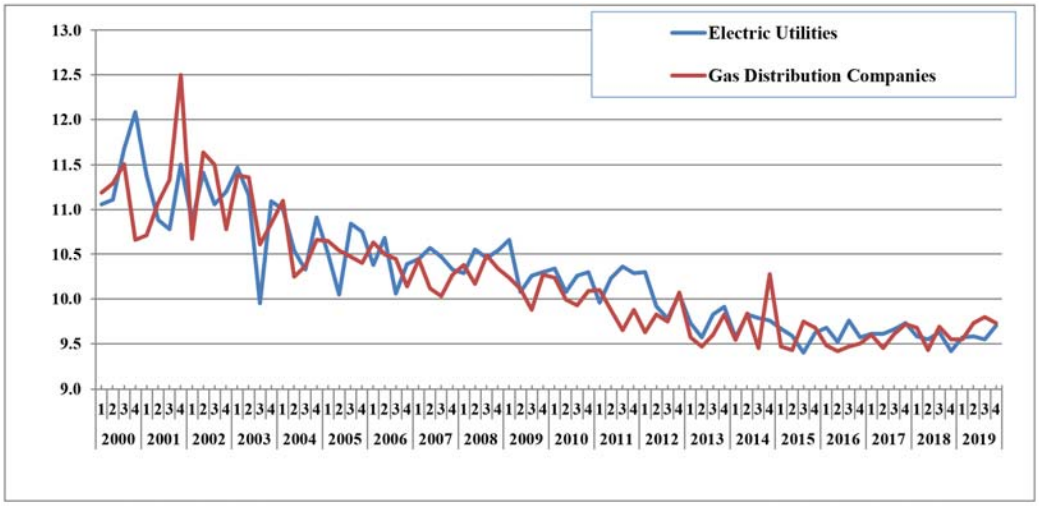
[12] Gregory Ip, "Economists Got it Wrong for a Decade. They're Trying to Figure Out Why," *Wall Street Journal*, (December 14, 2019). P. C1.

producing higher yields and negative returns. Thus, I recommend that the Commission not rely on interest rate forecasts but use current interest rates in estimating the appropriate ROE for the Company.

Q. PLEASE DISCUSS THE TREND IN AUTHORIZED RETURN ON EQUITY FOR ELECTRIC AND GAS COMPANIES.

A. Over the past five years, with historically low interest rates and capital costs, authorized ROEs for electric utility and gas distribution companies have slowly declined to reflect the low capital cost environment. In Figure 3, below, I have graphed the quarterly authorized ROEs for electric and gas companies from 2000 to 2019. There is a clear downward trend in the data. On an annual basis, these authorized ROEs for electric utilities have declined from an average of 10.01% in 2012, 9.8% in 2013, 9.76% in 2014, 9.58% in 2015, 9.60% in 2016, 9.68% in 2017, 9.56% in 2018, and 9.64% in of 2019, according to Regulatory Research Associates.[13]

Figure 3
Authorized ROEs for Electric Utility and Gas Distribution Companies
2000-2019

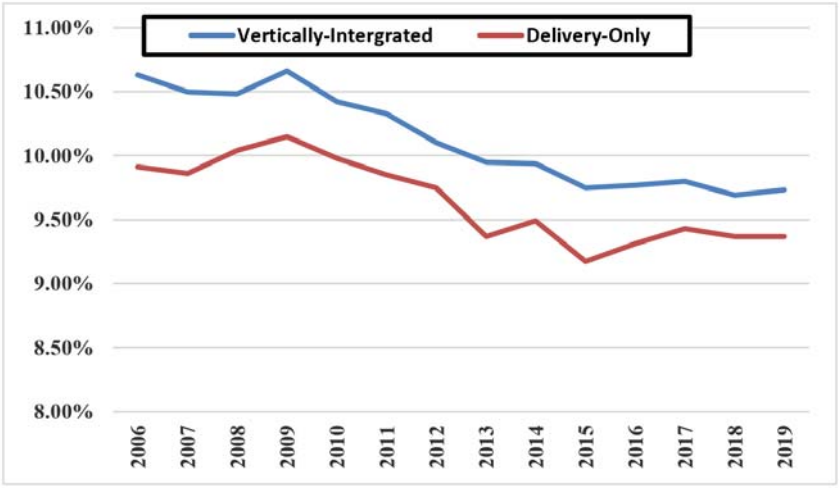


[13] S&P Global Market Intelligence, RRA *Regulatory Focus*, 2019-20.

Q. DO AUTHORIZED ROES FOR ELECTRIC DELIVERY COMPANIES LIKE BGE DIFFER FROM THE AUTHORIZED ROES FOR INTEGRATED ELECTRIC UTILITIES?

A. Yes. One consistent factor in electric utility authorized ROEs is that the ROEs for delivery or distribution companies have consistently been below those of vertically integrated utilities. This is shown in Figure 4. The lower authorized ROEs is usually attributed to the fact that delivery or distribution companies do not own and operate electric generation which is presumed to be the riskier part of electric utility operations. I believe that Commissions in states who have deregulated recognize the lesser risk and award lower ROEs. The authorized ROEs for electric delivery companies have been 30-50 basis points below those of vertically-integrated electric utilities in recent years. In 2018, the average authorized ROE for electric delivery companies was 9.37%.[14]

Figure 4
Authorized ROEs for Vertically Integrated versus Delivery Only Electric Utilities
2006-2019



[14] S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

III. PROXY GROUP SELECTION

Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR THE COMPANY.

A. To develop a fair rate of return recommendation for DPL, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held electric utility companies ("Electric Proxy Group"). I have also evaluated the group developed by Mr. Hevert ("Hevert Proxy Group").

Q. PLEASE DESCRIBE YOUR PROXY GROUP OF COMPANIES.

A. The selection criteria for the companies in Electric Proxy Group include the following:

(1) Received at least 50% of revenues from regulated electric operations as reported in SEC Form 10-K Report;

(2) Is listed as a U.S.-based Electric Utility by *Value Line Investment Survey*;

(3) Has an investment-grade corporate credit and bond rating;

(4) Has paid a cash dividend for the past six months, with no cuts or omissions;

(5) Is not involved in an acquisition of another utility, and not the target of an acquisition; and

(6) Has analysts' long-term EPS growth rate forecasts available from Yahoo or Zack's.

The Electric Proxy Group includes 30 companies. Summary financial statistics for the proxy group are listed in Exhibit JRW-2. The median operating revenues and net plant among members of the Electric Proxy Group are $6,582.0 million and $22,405.5 million, respectively. The group on average receives 81% of its revenues from

regulated electric operations, and has a BBB+ bond rating from S&P's and a Baa1 rating from Moody's, a current average common equity ratio of 46.0%, and an earned return on common equity of 9.6%.

Q. PLEASE DESCRIBE THE HEVERT PROXY GROUP.

A. Mr. Hevert's group is smaller (24 companies). Summary financial statistics for Mr. Hevert's proxy group are provided in Panel B of page 1 of Exhibit JRW-2. The median operating revenues and net plant for the Hevert Proxy Group are $6,291.0 million and $18,454.3 million, respectively. The group on average receives 75% of its revenues from regulated electric operations, and has a BBB+ bond rating from S&P's and a Baa1 rating from Moody's, an average common equity ratio of 47.4%, and earned return on common equity of 9.2%.

Q. HOW DOES THE INVESTMENT RISK OF THE COMPANY COMPARE TO THAT OF YOUR ELECTRIC PROXY GROUP AND THE HEVERT PROXY GROUP?

A. I believe that bond ratings provide a good assessment of the investment risk of a company. The S&P and Moody's issuer credit ratings for DPL are A- and Baa1, respectively. The average S&P and Moody's ratings for the Electric and Hevert Proxy Group are BBB+ and Baa1. Therefore, DPL's S&P rating is one notch above the average of the two groups (A- vs. BBB+), and DPL's Moody's rating is the same as the average of the two groups (Baa1 vs. Baa1). This indicates that the investment risk of DPL is a little below the average of the electric utilities in the two proxy groups.

On page 2 of Exhibit JRW-2, I have assessed the riskiness of the two proxy groups using five different risk measures from *Value Line*. These measures are beta,

Financial Strength, Safety, Earnings Predictability, and Stock Price Stability.[15] These risk measures indicate that the two proxy groups are similar in risk. The comparisons of the risk measures of the Electric Proxy Group and the Hevert Proxy Group show beta (0.57 vs. 0.57), Financial Strength (A vs. A) Safety (1.8 vs. 1.8), Earnings Predictability (77 vs. 82), and Stock Price Stability (96 vs. 97), respectively. On balance, these measures suggest that the two proxy groups are similar in risk.

Q. WHAT DO YOU CONCLUDE FROM YOUR RISK ANALYSIS?

A. First, based on the credit ratings from S&P and Moody's, I conclude that the Company is a little less risky than the average of the two proxy groups. Second, the S&P and Moody's credit ratings and the five *Value Line* risk ratings are very similar for the two groups, and therefore I conclude that the two groups are similar in risk. And third, the five *Value Line* risk ratings for the two groups suggest that electric utilities are very low risk. This is indicated by the low betas as well as the high ratings for safety, financial strength, earnings predictability, and stock price stability.

IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. PLEASE DESCRIBE DPL'S PROPOSED CAPITAL STRUCTURE AND SENIOR CAPITAL COST RATE.

A. The Company has proposed a hypothetical capital structure of 49.47% long-term debt and 50.53% common equity and a long-term debt cost rate of 4.03%.

[15] These risk metrics are described in detail on Page 3 of Exhibit JRW-2.

Q. HOW DO DPL'S PROPOSED CAPITAL STRUCTURE RATIOS COMPARE TO THE AVERAGE CAPITALIZATION RATIOS FOR COMPANIES IN THE PROXY GROUPS?

A. DPL's proposed capital structure ratios include a common equity ratio of 50.53%. As shown on Page 1 of Exhibit JRW-2, the average quarterly common equity ratio for the Electric and Hevert Proxy Groups as of December 31, 2018, was 46.0% and 47.4%, respectively. As such, DPL has proposed a capital structure that includes much more common equity in financing its utility operations than the average of the proxy group.

Q. IS IT APPROPRIATE TO USE THE COMMON EQUITY RATIOS OF THE PARENT HOLDING COMPANIES OR SUBSIDIARY OPERATING UTILITIES FOR COMPARISON PURPOSES WITH DPL'S PROPOSED CAPITALIZATION?

A. It is appropriate to use the common equity ratios of the utility holding companies because the holding companies are publicly-traded and their stocks are used in the cost of equity capital studies. The equities of the operating utilities are not publicly-traded and hence their stocks cannot be used to compute the cost of equity capital for DPL.

Q. IS IT APPROPRIATE TO INCLUDE SHORT-TERM DEBT IN THE CAPITALIZATION IN COMPARING THE COMMON EQUITY RATIOS OF THE HOLDING COMPANIES WITH DPL'S PROPOSED CAPITALIZATION?

A. Yes. In comparing the common equity ratios of the holding companies with DPL's recommendation, it is appropriate to include short-term debt when computing the holding company common equity ratios. That is because short-term debt, like long-term debt,

has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal. In addition, the financial risk of a company is based on total debt, which includes both short-term and long-term debt. This is why credit rating agencies use total debt in assessing the leverage and financial risk of companies.

Q. WHAT IS THE AVERAGE COMMON EQUITY RATIO AUTHORIZED FOR ELECTRIC UTILITIES BY STATE REGULATORY COMMISSIONS?

A. According to S&P Global Market Intelligence, the average authorized common equity ratio for electric utilities in calendar years 2018 and 2019 was 50.98%. This percentage excludes the common equity ratios of utilities in states which include cost-free capital items in authorized capital structures.[16]

Q. HOW DO DPL'S PROPOSED CAPITAL STRUCTURE RATIOS COMPARE TO THE CAPITALIZATION RATIOS OF DPL AND ITS PARENT, EXELON CORPORATION?

A. DPL's and Exelon Corporation's quarterly capital structure ratios for the eight quarters ending September 30, 2019 are provided in Panels B and C on Page 1 of Exhibit JRW-3. These ratios are summarized in Table 3. DPL's average common equity ratios are 49.3% and 51.9% including and excluding short-term debt. Exelon's average common equity ratios are 47.9% and 50.2% including and excluding short-term debt.

[16] S&P Global Market Intelligence, RRA *Regulatory Focus*, 2018 and 2019.

Table 3
DPL's and Exelon's Average Capital Structure Ratios

Including Short-Term Debt	DPL	Exelon
Short-Term Debt	5.2%	4.6%
Long-Term Debt	45.6%	47.5%
Common Equity	49.3%	47.9%
Total Capital	100.0%	100.0%
Excluding Short-Term Debt		
Long-Term Debt	48.1%	49.8%
Common Equity	51.9%	50.2%
Total Capital	100.0%	100.0%

Q. WHAT DO YOU CONCLUDE FROM THIS ANALYSIS?

A. I believe these figures indicate that DPL's proposed capital structure is generally in line with the historical capitalizations of DPL and Exelon.

Q. GIVEN THIS DISCUSSION, WHAT IS YOUR CONCLUSION ABOUT THE COMPANY'S PROPOSED CAPITAL STRUCTURE?

A. The Company's proposed capital structure and debt cost rate are provided in Table 4. Since the Company's proposed capital structure is generally in line with the Company's historical capital structure as well as the capital structures approved for electric utilities in the U.S., I am adopting the Company's proposed capital structure and debt cost rate.

Table 4
OPC's Capital Structure Recommendation

	Percent of Total	Cost
Long-Term Debt	49.47%	4.03%
Common Equity	50.53%	
Total Capital	100.00%	

V. THE COST OF COMMON EQUITY CAPITAL

A. Overview

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

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and the economic benefit to society from avoiding duplication of these services and the construction of utility infrastructure facilities, many public utilities are monopolies. Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices. Thus, regulation seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility, *i.e.*, provide an adequate return on capital to attract investors.

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

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

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

In a competitive market, firms can achieve competitive advantage due to product market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When these profits are in excess of those required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:[17]

[17] James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1986), p.3.

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns a ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value.

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP BETWEEN ROE AND MARKET-TO-BOOK RATIOS.

A. This relationship is discussed in a classic Harvard Business School case study entitled "Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:[18]

[18] Benjamin Esty, "Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

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

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

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book ratios using *Value Line*'s electric utilities and gas distribution companies. I used all electric utility and gas distribution companies that are covered by *Value Line* and have estimated ROE and market-to-book ratio data. The results are presented in Exhibit JRW-4. The R-square for the regression of estimated ROEs and market-to-book ratios is 0.50.[19] This demonstrates a statistically significant positive relationship between ROEs and market-to-book ratios for electric utilities and gas companies. Given that the market-to-book ratios have been above 1.0 for a number of years, this also demonstrates that utilities have been earnings ROEs above the cost of equity capital for many years.

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

A. Exhibit JRW-5 provides indicators of public utility equity cost rates.

Page 1 shows the yields on long-term A-rated public utility bonds. These yields decreased from 2000 until 2003, and then hovered in the 5.50%-6.50% range from mid-2003 until mid-2008. The yields peaked in November 2008 at 7.75% during

[19] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

the Great Recession. These yields have generally declined since then, dropping below 4.0% on five occasions - in mid-2013, in the first quarter of 2015, in the summer of 2016, in late 2018, and in 2019. The yields were about 3.5% as of the end of 2019.

Page 2 of Exhibit JRW-5 provides the average dividend yields for electric utility companies over the past 16 years. The dividend yields for the electric group declined from 5.3% to 3.4% between 2001 to 2007, increased to over 5.0% in 2009, and have declined since that time. The average dividend yield was 3.2% in 2018.

Average earned returns on common equity and market-to-book ratios for electric utilities are on page 3 of Exhibit JRW-5. For the electric group, earned returns on common equity have declined gradually over the years. In the past three years, the average earned ROE for the group has been in the 9.0% to 10.0% range. The average market-to-book ratios for this group declined to about 1.1X in 2009 during the financial crisis and have increased since that time. As of 2018, the average market-to-book for the group was 1.80X. This means that, for at least the last decade, returns on common equity for electric utilities have been greater than the cost of capital, or more than necessary to meet investors' required returns. This also means that customers have been paying more than necessary to support an appropriate profit level for regulated utilities.

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

A. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money as indicated by the level of interest rates in the economy. Common

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

Q. HOW DOES THE INVESTMENT RISK OF PUBLIC UTILITIES COMPARE WITH THAT OF OTHER INDUSTRIES?

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

Page 4 of Exhibit JRW-5 provides an assessment of investment risk for 97 industries as measured by beta, which according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey.* The study shows that the investment risk of utilities is very low. The average betas for electric, gas, and water utility companies are 0.58, 0.67, and 0.68, respectively.[20] As such, the cost of equity for utilities is among the lowest of all industries in the U.S. based on modern capital market theory.

[20] The beta for the *Value Line* Electric Utilities is the simple average of *Value Line*'s Electric East (0.56), Central (0.61), and West (0.59) group betas.

Q. WHAT IS THE COST OF COMMON EQUITY CAPITAL?

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

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

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

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

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

A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, the DCF model provides the best measure of equity cost rates for public utilities. I have also performed a CAPM study; however, I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

B. Discounted Cash Flow Analysis

Q. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.

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

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

where P is the current stock price, D_1, D_2, and D_n are the dividends in year 1, 2, and the future years n, and k is the cost of common equity.

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

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

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

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

3. Maturity (steady-state) stage: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly more attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the

remainder of its life. As I will explain below, the constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using the 3-stage model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

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

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

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

where P is the current stock price, D_1 represents the expected dividend over the coming year, k is investor's required return on equity, and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in the above expression to obtain the following:

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

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

A. Yes. The economics of the public utility business indicate that the industry is in the steady-state or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the DCF model to estimate equity cost rates surrounds estimating investors' expected dividend growth rate.

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

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

Q. WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?

A. I have calculated the dividend yields for the companies in the proxy groups using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided in Panels A and B of page 2 of Exhibit JRW-7. I have shown the mean and median dividend yields using 30-day, 90-day, and 180-day average stock prices. Using both the means and medians, the dividend yields range from 3.1% to 3.2% for the Electric Proxy Group and 2.9% to 3.1% for the Hevert Proxy Group. Therefore, I will use a dividend yields of 3.15% and 3.00% for the Electric Proxy Group and the Hevert Proxy Group, respectively.

Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A. According to the traditional DCF model, the dividend yield term relates the dividend paid over the coming period to the current stock price. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[21]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times

[21] *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).

during the year. As such, the dividend yield computed based on presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR DO YOU USE FOR YOUR DIVIDEND YIELD?

A. I adjust the dividend yield by one-half (1/2) of the expected growth to reflect growth over the coming year. The DCF equity cost rate ("K") is computed as:

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

Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

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

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

A. I have analyzed a number of measures of growth for companies in the proxy groups. I reviewed *Value Line's* historical and projected growth rate estimates for EPS, dividends per share ("DPS"), and book value per share ("BVPS"). In addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as provided by

Yahoo, Reuters and Zacks. These services solicit five-year earnings growth rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I also assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

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

A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years) is unlikely to accurately measure investors' expectations, due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (*i.e.*, business cycles). However, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-run

earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

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

A. Analysts' EPS forecasts for companies are collected and published by several different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, S&L Global Market Intelligence FactSet, Zacks, First Call, and Reuters, among others. Thompson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. S&P, Bloomberg, FactSet, and Zacks each publish their own set of analysts' EPS forecasts for companies. These services do not reveal (1) the analysts who are solicited for forecasts or (2) the identity of the analysts who actually provide the EPS forecasts that are used in the compilations published by the services. S&P, I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. In contrast, Thompson Reuters and Zacks do provide limited EPS forecast data free-of-charge on the Internet. Yahoo finance (http://finance.yahoo.com) lists Thompson Reuters as the source of its summary EPS forecasts. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zacks estimates are also available on other websites, such as MSN.money (http://money.msn.com).

Q. WHICH OF THE EPS FORECASTS IS USED IN DEVELOPING A DCF GROWTH RATE?

A. I am using the three-to-five- year EPS growth rate forecasts of analysts, which are often referred to as the long-term EPS growth rate forecasts.

Q. WHY DO YOU NOT RELY EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR THE PROXY GROUP?

A. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividend and earnings will grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, a study by Lacina, Lee, and Xu has shown that analysts' three-to-five year EPS growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[22] Employing data over a 20-year period, these authors demonstrate that using the most recent year's actual EPS figure to forecast EPS in the next three-to-five years proved to be just as accurate as using the EPS estimates from analysts' three-to-five year EPS growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth-rate forecasts should be used with caution as inputs for valuation and cost of capital purposes. Finally, and most significantly, it is well known that the long-term EPS growth-rate

[22] 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 (2011), pp.77-101.

forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years.[23] Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[24]

Q. ARE THE PROJECTED EPS GROWTH RATES OF *VALUE LINE* ALSO OVERLY OPTIMISTIC AND UPWARDLY BIASED?

A. Yes. A study by Szakmary, Conover, and Lancaster evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a 30-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[25]

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[23] The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000)*;* K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance,* pp. 643−684, (2003); 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; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010).

[24] 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).

[25] Szakmary, A., Conover, C., & Lancaster, C. (2008). "An Examination of *Value Line*'s Long-Term Projections," *Journal of Banking & Finance*, May 2008, pp. 820-833.

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

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

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

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because I believe that investors are aware of the upward bias in analysts' long-term EPS growth rate forecasts, stock prices reflect the bias. Thus, the DCF growth rate must be adjusted downward from the projected EPS growth rate to reflect this upward bias.

Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE PROXY GROUPS, AS PROVIDED BY *VALUE LINE*.

A. Page 3 of Exhibit JRW-7 provides the five- and ten- year historical growth rates for EPS, DPS, and BVPS for the companies in the two proxy groups, as published in the *Value Line Investment Survey*. The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 4.0% to 5.0%, with an average of the medians of 4.3%. For the Hevert Proxy Group, as shown in Panel B of page 3 of Exhibit JRW-7, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 4.0% to 6.0%, with an average of the medians of 4.8%.

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

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown on page 4 of Exhibit JRW-7. As stated above, due to the presence of outliers, the medians are used in the analysis. For the Electric Proxy Group, as shown in Panel A of page 4 of Exhibit JRW-7, the medians range from 4.5% to 5.8%, with an average of the medians of 5.1%. The range of the medians for the Hevert Proxy Group, shown in Panel B of page 4 of Exhibit JRW-7, is from 4.0% to 5.5%, with an average of the medians of 5.0%.

Also provided on page 4 of Exhibit JRW-7 are the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As noted above, sustainable growth is a significant and a primary driver of long-run earnings growth. For the Electric and Hevert Proxy Groups, the median prospective sustainable growth rates are 3.6% and 3.3%, respectively.

Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED FIVE-YEAR EPS GROWTH.

A. Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts' five-year EPS growth-rate forecasts for the companies in the proxy groups. These forecasts are provided for the companies in the proxy groups on page 5 of Exhibit JRW-7. I have reported both the mean and median growth rates for the groups. 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 for each company. The mean/median of analysts' projected EPS growth rates for the Electric and Hevert Proxy Groups are 4.9%/4.7% and 5.3%/5.4%, respectively.[26]

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE PROXY GROUPS.

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

The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 4.3%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.1%, and *Value Line*'s projected sustainable growth rate is 3.6%. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 4.9% and 4.7% as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators (ignoring historical growth) is 3.6% to 5.1%. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate projected growth rate is 5.0%. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

For the Hevert Proxy Group, the historical growth rate indicators suggest a growth rate of 4.8%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 5.1%, and *Value Line*'s projected sustainable growth rate is 3.3%. The projected EPS growth rates of Wall Street analysts are 5.3% and 5.4% as

[26] Given variation in the measures of central tendency of analysts' projected EPS growth rates proxy groups, I have considered both the means and medians figures in the growth rate analysis.

measured by both the mean and median growth rates. The overall range for the projected growth rate indicators is 3.3% to 5.4%. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate projected growth rate is 5.3%. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Hevert Proxy Group.

Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE PROXY GROUPS?

A. My DCF-derived equity cost rates for the groups are summarized on page 1 of Exhibit JRW-7 and in Table 5 below.

Table 5
DCF-Derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**3.15%**	**1.02500**	**5.00%**	**8.25%**
Hevert Proxy Group	**3.00%**	**1.02650**	**5.30%**	**8.40%**

The result for the Electric Proxy Group is the 3.15% dividend yield, times the one and one-half growth adjustment factor of 1.02500, plus the DCF growth rate of 5.00%, which results in an equity cost rate of 8.25%. The result for the Hevert Proxy Group is 8.40%, which includes a dividend yield of 3.00%, a growth adjustment factor of 1.02650, and a DCF growth rate of 5.30%.

C. Capital Asset Pricing Model

Q. PLEASE DISCUSS THE CAPM.

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

$$k = R_f + RP$$

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

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

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

Where:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected rate of return on the overall stock market. Frequently, the S&P 500 is used as a proxy for the "market";
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess rate of return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—(ß) is a measure of the systematic risk of an asset.

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

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

Q. PLEASE DISCUSS EXHIBIT JRW-8.

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

Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

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

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

A. As shown on page 2 of Exhibit JRW-8, the yield on 30-year U.S. Treasury bonds has been in the 2.0% to 4.0% range over the 2013–2020 time period. The current 30-year Treasury yield is near the bottom of this range. Given the recent range of yields, I have chosen to use the top end of the range as my risk-free interest rate. Therefore, I am using 3.75% as the risk-free rate, or R_f, in my CAPM. This is equal to the normalized risk-free interest rate used by the investment advisory firm Duff & Phelps.[27]

[27] https://www.duffandphelps.com/insights/publications/valuation-insights/valuation-insights-first-quarter-2019/us-equity-risk-premium-recommendation.

Q. DOES YOUR 3.75% RISK-FREE INTEREST RATE TAKE INTO CONSIDERATION FORECASTS OF HIGHER INTEREST RATES?

A. No, it does not. As I stated before, forecasts of higher interest rates have been notoriously wrong for a decade. My 3.75% risk-free interest rate takes into account the range of interest rates in the past and effectively synchronizes the risk-free rate with the market risk premium. The risk-free rate and the market risk premium are interrelated in that the market risk premium is developed in relation to the risk-free rate. As discussed below, my market risk premium is based on the results of many studies and surveys that have been published over time. Therefore, my risk-free interest rate of 3.75% is effectively a normalized risk-free rate of interest.

Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock with price movement greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.

As shown on page 3 of Exhibit JRW-8, the slope of the regression line is the stock's ß. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater-than-average market risk. A less steep line indicates a lower ß and less market risk.

Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period over which ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time. In estimating an equity cost rate for the proxy groups, I am using the betas for the companies as provided in the *Value Line Investment Survey*. As shown on page 3 of Exhibit JRW-8, the median betas for the companies in both the Electric and Hevert Proxy Groups are 0.55.

Q. PLEASE DISCUSS THE MARKET RISK PREMIUM.

A. The market risk premium is equal to the expected return on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest (R_f)). The market risk premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the market risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market - $E(R_m)$. As is discussed below, there are different ways to measure $E(R_m)$, and studies have come up with significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics indicated, $E(R_m)$ is very difficult to measure and is one of the great mysteries in finance.[28]

[28] Merton Miller, "The History of Finance: An Eyewitness Account," *Journal of Applied Corporate Finance*, 2000, p. 3.

Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE MARKET RISK PREMIUM.

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

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

in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[29]

In addition, there are a number of surveys of financial professionals regarding the market risk premium, as well as several published surveys of academics on the equity risk premium. *CFO Magazine* conducts a quarterly survey of CFOs, which includes questions regarding their views on the current expected returns on stocks and bonds. Usually, over 200 CFOs participate in the survey.[30] Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters, which is published as the *Survey of Professional Forecasters*.[31] This survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[32]

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[29] Rajnish Mehra & Edward C. Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics,* 145 (1985).

[30] DUKE/CFO Magazine Global Business Outlook Survey (https://www.cfosurvey.org).

[31] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters* (Mar. 22, 2019), https://www.philadelphiafed.org/-/media/research-and-data/real-time-center/survey-of-professional-forecasters/2019/spfq119.pdf?la=en. 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.

[32] Pablo Fernandez, Vitaly Pershin, and Isabel Fernandez Acín, "Market Risk Premium and Risk-Free Rate used for 59 countries in 2019: a survey," *IESE Business School,* (Apr. 2019), available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3358901.

Q. PLEASE PROVIDE A SUMMARY OF THE MARKET RISK PREMIUM STUDIES.

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[33] Derrig and Orr's study evaluated the various approaches to estimating market risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium. Fernandez examined four alternative measures of the market risk premium – historical, expected, required, and implied. He also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page 5 of Exhibit JRW-8 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more recent studies of the market risk premium. In developing page 5 of Exhibit JRW-8, I have categorized the types of studies as discussed on page 4 of Exhibit JRW-8. I have also included the results of studies of the "Building Blocks" approach to estimating the equity risk premium. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-8.

A. Page 5 of Exhibit JRW-8 provides a summary of the results of the market risk premium studies that I have reviewed. These include the results of: (1) the various studies of

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

the historical risk premium, (2) *ex ante* market risk premium studies, (3) market risk premium surveys of CFOs, financial forecasters, analysts, companies and academics, and (4) the Building Blocks approach to the market risk premium. There are results reported for over 30 studies, and the median market risk premium of these studies is 4.83%.

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

A. The studies cited on page 5 of Exhibit JRW-8 include every market risk premium study and survey I could identify that was published over the past 15 years and that provided a market risk premium estimate. Many of these studies were published prior to the financial crisis that began in 2008. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as 50 years of data) and so were not estimating a market risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the market risk premium, I have reconstructed page 5 of Exhibit JRW-8 on page 6 of Exhibit JRW-8; however, I have eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.13%.

Q. PLEASE SUMMARIZE THE MARKET RISK PREMIUM STUDIES AND SURVEYS.

A. As noted above, there are three approaches to estimating the market risk premium – historic stock and bond returns, ex ante or expected returns models, and surveys. The studies on page 6 of Exhibit JRW-8 can be summarized in the following manners:

Historic Stock and Bond Returns - Historic stock and bond returns suggest a market risk premium in the 4.40% to 6.43% range, depending on whether one uses arithmetic or geometric mean returns.

Ex Ante Models - Market risk premium studies that use expected or ex ante return models indicate a market risk premium in the range of 4.29% to 6.00%.

Surveys - Market risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 1.85% to 5.70%.

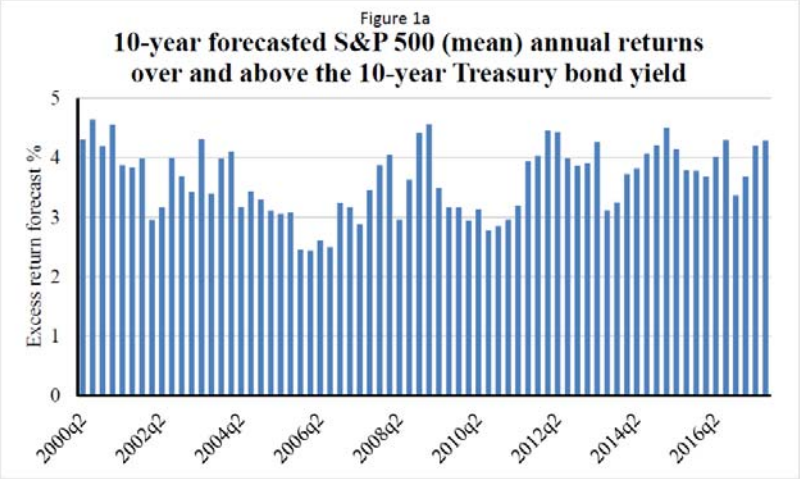
Q. PLEASE HIGHLIGHT THE EX ANTE MARKET RISK PREMIUM STUDIES AND SURVEYS THAT YOU BELIEVE ARE MOST TIMELY AND RELEVANT.

A. I will highlight several studies/surveys.

CFO Magazine conducts a quarterly survey of CFOs, which includes questions regarding their views on the current expected returns on stocks and bonds. In the December 2019 CFO survey conducted by *CFO Magazine* and Duke University, which included approximately 400 responses, the expected 10-year market risk premium was 4.99% (with an expected S&P 500 stock return of 6.81% and a current 10-year Treasury yield of 1.82%).[34] Figure 4, below, shows the market risk premium associated with the CFO Survey, which has been in the 4.0% range in recent years.

[34] DUKE/CFO Magazine Global Business Outlook Survey, at 38, (December), https://www.cfosurvey.org/wp-content/uploads/2019/12/2019-Q4-US-Toplines.pdf.

Figure 4
Market Risk Premium
CFO Survey



Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151162

Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[35] His survey results are included on pages 5 and 6 of Exhibit JRW-8. The results of his 2019 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and companies of 5.6%.[36] His estimated market risk premium for the U.S. has been in the 5.00%-5.60% range in recent years.

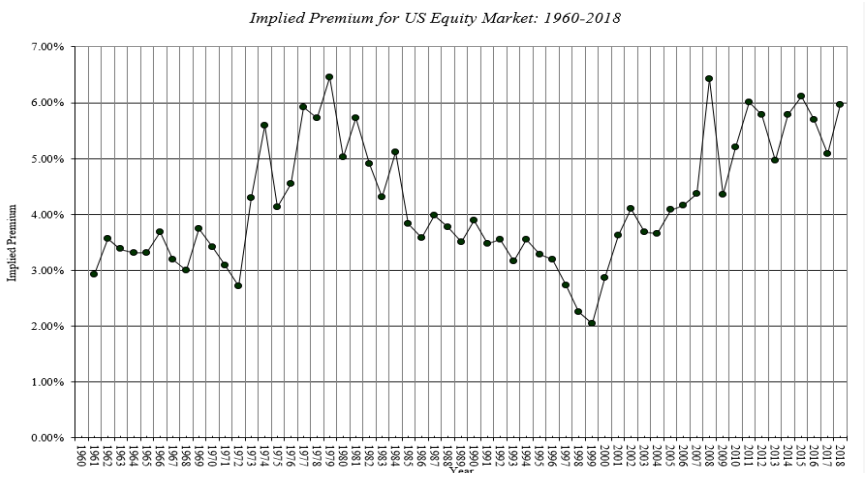
Professor Aswath Damodaran of New York University, a leading expert on valuation and the market risk premium, provides a monthly updated market risk premium based on projected S&P 500 EPS and stock price level and long-term interest

[35] Pablo Fernandez, Vitaly Pershin, and Isabel Fernandez Acín, "Market Risk Premium and Risk-Free Rate used for 59 countries in 2019: a survey," *IESE Business School,* (Apr. 2019), available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3358901.

[36] *Ibid.* p. 3.

rates. His estimated market risk premium, shown graphically in Figure 5, below, for the past 20 years, has primarily been in the range of 5.0% to 6.0% since 2010.

Figure 5
Damodaran Market Risk Premium



Source: http://pages.stern.nyu.edu/~adamodar/

Duff & Phelps, an investment advisory firm, provides recommendations for the risk-free interest rate and market risk premiums to be used in calculating the cost of capital data. Its recommendations over the 2008-2019 time periods are shown on page 7 of Exhibit JRW-8. Duff & Phelps' recommended market risk premium has been in the 5.0% to 6.0% range over the past decade. Most recently, in the third quarter of 2019, Duff & Phelps increased its recommended market risk premium from 5.0% to 5.50%.[37]

KPMG is one of the largest public accounting firms in the world. Its recommended market risk premium over the 2013-2019 time period is shown in Panel A of page 8 of Exhibit JRW-8. KPMG's recommended market risk premium has been

[37] Duff & Phelps, "U.S. Equity Risk Premium Recommendation," (Feb. 19, 2019), https://www.duffandphelps.com/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

in the 5.50% to 6.50% range over this time period. In the third quarter of 2019, KPMG increased its estimated market risk premium from 5.50% to 5.75%.[38]

Finally, the website *market-risk-premia.com* provides risk-free interest rates, implied market risk premiums, and overall cost of capital for 36 countries around the world. These parameters for the U.S. over the 2012-2019 time period are shown in Panel B of page 8 of Exhibit JRW-8. As of November 30, 2019, *market-risk-premia.com* estimated an implied cost of capital for the U.S. of 5.78%, consisting of a risk-free rate of 1.78% and an implied market risk premium of 4.00.[39]

Q. GIVEN THESE RESULTS, WHAT MARKET RISK PREMIUM ARE YOU USING IN YOUR CAPM?

A. The studies on page 6 of Exhibit JRW-8, and more importantly the more recent and relevant studies just cited, suggest that the appropriate market risk premium in the U.S. is in the 4.0% to 6.0% range. I will use an expected market risk premium of 5.75%, which is in the upper end of the range, as the market risk premium. I gave most weight to the market risk premium estimates of the KPMG, CFO Survey, Duff & Phelps, the Fernandez survey, and Damodaran. This is a conservatively high estimate of the market risk premium considering the many studies and surveys of the market risk premium.

[38] KPMG, "Equity Market Risk Premium Research Summary," (September, 2019), https://assets.kpmg/content/dam/kpmg/nl/pdf/2019/advisory/equity-market-risk-premium-research-summary-300919.pdf

[39] Market-Risk-Premia.com, "Implied Market-risk-premia (market risk premium): USA," http://www.market-risk-premia.com/us.html.

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

A. The results of my CAPM study for the proxy groups are summarized on page 1 of Exhibit JRW-8 and in Table 6 below.

Table 6
CAPM-Derived Equity Cost Rate/ROE
$K = (R_f) + ß * [E(R_m) - (R_f)]$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Electric Proxy Group	**3.75%**	**0.55**	**5.75%**	**7.3%**
Hevert Proxy Group	**3.75%**	**0.55**	**5.75%**	**7.2%**

For the both the Electric and Hevert Proxy Groups, the risk-free rate of 3.75% plus the product of the beta of 0.55 times the equity risk premium of 5.75% results in a 6.9% equity cost rate.

Q. THESE CAPM EQUITY COST RATES SEEM LOW. WHY IS THAT?

A. One major factor is that the riskiness of utilities has declined in recent years, and this lower risk is reflected in their betas. Utility betas have been in the .70 to .75 range in recent years. But they have declined in the past year and are now are primarily in the 0.55 to 0.60 range.

D. Equity Cost Rate Summary

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY COST RATE STUDIES.

A. My DCF analyses for the Electric and Hevert Proxy Groups indicate equity cost rates of 8.25% and 8.40%, respectively. The CAPM equity cost rates for both groups are 6.90%. Table 7, below, shows these results.

Table 7
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**8.25%**	**6.90%**
Hevert Proxy Group	**8.40%**	**6.90%**

Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE GROUPS?

A. Given these results, I conclude that the appropriate equity cost rate for companies in the Electric and Hevert Proxy Groups is in the 6.90% to 8.40% range.

Q. WHAT EQUITY COST RATE ARE YOU RECOMMENDING FOR DPL?

A. Given these results, I am recommending an equity cost rate or ROE for DPL of 8.40%. I believe that this equity cost rate accurately reflects the market cost of equity capital currently. As I previously noted, capital costs in the U.S. remain low, with low inflation and interest rates, very modest economic growth, and the stock market at an all-time high. I believe that this range accurately reflects current capital market data. However, I recognize that this range is below the authorized ROEs for electric utility companies nationally. Therefore, as a primary ROE for DPL, I am recommending 9.0%. This recommendation: (1) gives weight to the higher authorized ROEs for electric utility companies; and (2) recognizes the concept of 'gradualism' in which authorized ROEs are adjusted on a gradual basis to reflect capital market data.

Q. ARE YOU ALSO PROVIDING AN ALTERNATIVE RATE OF RETURN RECOMMENDATION FOR THE COMPANY?

A. Yes. As indicated above, I believe that my equity cost rate range, 6.90% to 8.40%, accurately reflects current capital market data. To reflect these low capital costs, my

alternative ROE recommendation is 8.40%, which is at the high end of my equity cost rate range.

Q. PLEASE INDICATE WHY YOUR EQUITY COST RATE RECOMMENDATIONS OF 9.0%/8.40% ARE APPROPRIATE FOR DPL.

A. There are a number of reasons why an equity cost rate of 9.0%/8.40% is appropriate and fair for the Company in this case:

1. DPL' s investment risk, as indicated by its S&P credit rating of A-, is a little below the averages of the Electric and Hevert Proxy Groups;

2. As shown in Exhibits JRW-5, capital costs for utilities, as indicated by long-term utility bond yields, are still at historically low levels. In addition, given low inflationary expectations and slow global economic growth, interest rates are likely to remain at low levels for some time;

3. As shown in Exhibit JRW-5, the electric utility industry is among the lowest risk industries in the U.S. as measured by beta. Most notably, the betas for electric utilities have been declining in recent years, which indicates the risk of the industry has declined. Overall, the cost of equity capital for this industry is the lowest in the U.S., according to the CAPM;

4. I have recommended an equity cost rate at the high end of the range of my ROE outcomes;

5. As shown in Figure 3, the authorized ROEs for electric utility and gas distribution companies have declined in recent years. On an annual basis, these authorized ROEs for electric utilities have declined from an average of 10.01% in 2012, 9.8% in 2013, 9.76% in 2014, 9.58% in 2015, 9.60% in 2016, 9.68% in 2017,

9.56% in 2018, and 9.64% in of 2019, according to Regulatory Research Associates.[40] In my opinion, these authorized ROEs have lagged behind capital market cost rates, or in other words, authorized ROEs have been slow to reflect low capital market cost rates. However, the *trend* has been towards lower ROEs, and the *norm* now is below ten percent. Hence, I believe that my recommended ROE reflects the low capital cost rates in today's markets, and these low capital cost rates are finally being recognized by state utility commissions.

Q. DO YOU BELIEVE THAT YOUR ROE RECOMMENDATION MEETS *HOPE* AND *BLUEFIELD* STANDARDS?

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

Q. PLEASE ALSO DISCUSS YOUR RECOMMENDATION IN LIGHT OF A MOODY'S PUBLICATION ON ROES AND CREDIT QUALITY.

A. In an article published by Moody's on utility ROEs and credit quality, Moody's recognizes that authorized ROEs for electric and gas companies are declining due to lower interest rates. The article explains:[41]

> The credit profiles of US regulated utilities will remain intact over the next few years despite our expectation that regulators will continue to trim the sector's profitability by lowering its authorized returns on equity (ROE). Persistently low interest rates and a

[40] S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.

[41] Moody's Investors Service, "Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015.

> comprehensive suite of cost recovery mechanisms ensure a low business risk profile for utilities, prompting regulators to scrutinize their profitability, which is defined as the ratio of net income to book equity. We view cash flow measures as a more important rating driver than authorized ROEs, and we note that regulators can lower authorized ROEs without hurting cash flow, for instance by targeting depreciation, or through special rate structures.

Moody's indicates that with the lower authorized ROEs, electric and gas companies are earning ROEs of 9.0% to 10.0%, yet this is not impairing their credit profiles and is not deterring them from raising record amounts of capital.

With respect to authorized ROEs, Moody's recognizes that utilities and regulatory commissions are having trouble justifying higher ROEs in the face of lower interest rates and cost recovery mechanisms:[42]

> Robust cost recovery mechanisms will help ensure that US regulated utilities' credit quality remains intact over the next few years. *As a result, falling authorized ROEs are not a material credit driver at this time, but rather reflect regulators' struggle to justify the cost of capital gap between the industry's authorized ROEs and persistently low interest rates.* We also see utilities struggling to defend this gap, while at the same time recovering the vast majority of their costs and investments through a variety of rate mechanisms.

Overall, this article further supports the prevailing/emerging belief that lower authorized ROEs are unlikely to hurt the financial integrity of utilities or their ability to attract capital.

Q. ARE UTILITIES ABLE TO ATTRACT CAPITAL WITH THE LOWER ROES?

A. Moody's also highlights in the article that utilities are raising about $50 billion a year in debt capital, despite the lower ROEs.

[42] *Id.*

VI. CRITIQUE OF DPL' S RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE THE COMPANY'S COST OF EQUITY CAPITAL RECOMMENDATION.

A. The Company has proposed a capital structure of 49.47% long-term debt and 50.53% common equity and a long-term debt cost rate of 4.03%. Mr. Hevert has recommended a common equity cost rate of 10.30%. The Company's overall proposed rate of return is 7.20%.

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

A. I have a number of issues with the Company's ROE position:

Capital Market Conditions – Mr. Hevert's analyses, ROE results, and recommendations reflect an assumption of higher interest rates and capital costs that is inconsistent with current trends. Despite the Federal Reserve's moves to increase the federal funds rate over the 2015-18 time period, interest rates and capital costs remained at low levels. In 2019, interest rates fell dramatically with moderate economic growth and low inflation. The Federal Reserve cut the federal fund rate three times (July, September, and October) and the 30-year yield traded at all-time low levels. Interest rates have continued to decline in 2020.

DPL's Investment Risk is Below the Averages of the Two Proxy Groups – Mr. Hevert cites the Company's capital expenditures to imply that DPL is riskier than his proxy group. However, his assessment of DPL's risk is erroneous. The assessment of capital expenditures is part of the credit rating process, and DPL's Standard & Poor's

("S&P's") credit rating of A- suggests that the Company's investment risk is below the averages of the proxy groups.

Disconnect Between Mr. Hevert's Equity Cost Rate Studies and his 10.30% ROE Recommendation – There is a disconnect between Mr. Hevert's equity cost rate results and his 10.30% ROE recommendation. Simply stated, the vast majority of his equity cost rate results point to a lower ROE. In fact, the only results that point to an ROE as high as 10.30% are some of his CAPM/Empirical CAPM ("ECAPM") results, which, as I explain later in my testimony, are derived from seriously flawed analyses. As a result, Mr. Hevert's ROE recommendation is based on: (1) the results of only one model (the CAPM); and, even more narrowly, (2) primarily *Value Line* data. Otherwise, Mr. Hevert provides no other equity cost rate studies that support his 10.30% ROE recommendation.

DCF Equity Cost Rate - The DCF Equity Cost Rate is estimated by summing the stock's dividend yield and investors' expected long-run growth rate in dividends paid per share. I have three central issues regarding Mr. Hevert's DCF analysis: (1) Mr. Hevert has given very little weight to his constant-growth DCF results in determining his recommended ROE; (2) He has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields; and (3) he relies exclusively on the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*.

CAPM Approach - The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. There are three primary issues with Mr. Hevert's CAPM analyses: (1) The long-term projected 30-year Treasury

yield of 3.70%; (2) Mr. Hevert has employed an ad hoc version of the CAPM, the ECAPM; and (3) most significantly, Mr. Hevert's market risk premiums of 10.63% and 12.32% include highly unrealistic assumptions regarding future economic and earnings growth and stock returns. Mr. Hevert has employed analysts' three-to-five-year growth-rate projections for EPS to compute an expected market return and market risk premium. These EPS growth-rate projections and the resulting expected market returns and market risk premiums include highly unrealistic assumptions regarding future economic and earnings growth and stock returns.

Alternative Risk Premium Model - Mr. Hevert estimates an equity cost rate using an alternative risk premium model which he calls the Bond Yield Risk Premium ("BYRP") approach. The risk premium in his BYRP method is based on the historical relationship between the yields on long-term Treasury yields and authorized ROEs for electric utility companies. There are several issues with this approach including: (1) it is a gauge of commission behavior and not investor behavior; (2) Mr. Hevert's methodology produces an inflated measure of the risk premium he uses historical authorized ROEs and Treasury yields, and applies the resulting risk premium to projected Treasury yields; and (3) the risk premium is inflated as a measure of investor's required risk premium because electric utility companies have been selling at market-to-book ratios in excess of 1.0. This indicates that the authorized rates of return have been greater than the return that investors require.

Expected Earnings Approach - Mr. Hevert also uses the Expected Earnings approach to corroborate his recommended equity cost range for the Company. Mr. Hevert computes the expected ROE as forecasted by *Value Line* for his proxy group as well

as for *Value Line*'s universe of electric utilities. Mr. Hevert's Expected Earnings approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, and has several other empirical issues. Therefore, the Commission should ignore Mr. Hevert's Expected Earnings approach in determining the appropriate ROE for DPL.

Other Issues - Mr. Hevert also considers two other factors in arriving at his 10.30% ROE recommendation. Mr. Hevert argues that the Company's high level of capital expenditures increases its risk relative to other electric utilities. However, as I noted above, DPL's investment risk as measured by S&P is below the average of the proxy groups. Second, Mr. Hevert also considers flotation costs in making his ROE recommendation of 10.30. However, he has not identified any flotation costs for DPL and in recent Orders the Maryland Commission has only has granted flotation costs where the utility has demonstrated that it incurred verifiable costs of issuing new stock during the test year or will incur such flotation costs during the rate effective period.[43]

Capital market conditions and the investment risk of DPL were previously discussed. The other issues are addressed below.

[43] Order No. 89072, *In re Potomac Edison Co.*, Maryland Public Service Commission. p. 76 (Case No. 9490, March 22, 2019)

A. The Disconnect Between Mr. Hevert's Equity Cost Rate Results and His 10.30% ROE Recommendation

Q. PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE RESULTS AND HIS 10.30% ROE RECOMMENDATION.

A. Page 1 of Exhibit JRW-9 shows Mr. Hevert's equity cost rate results using the DCF, CAPM, and BYRP approaches. There appears to be a disconnect between these results and his 10.30% ROE recommendation. First, it is very difficult to see exactly how he gets to his 10.30% ROE recommendation. He provides no details on how he weighted his equity cost rate results to get to 10.30%.

Second, the vast majority of his equity cost rate results point to a lower ROE. The average of his DCF results is 8.61%, to which he clearly gave no weight. His BYRP results, which are inflated because he has used projected interest rates, average 9.98%. The average of his CAPM results, calculated using data from Bloomberg and *Value Line*, is 8.87%. These results clearly do not support a ROE of 10.30%.

Finally, the only results that point to a ROE as high as 10.30% are his ECAPM results using *Value Line* betas. As a result, Mr. Hevert's ROE recommendation is based on: (1) the results of only one ad hoc CAPM model (the ECAPM); and, even more narrowly, (2) only one source of financial information for betas (*Value Line*). In addition, as discussed below, there are a number of empirical issues with the *Value Line* projected EPS growth rates which result in an overstated expected market return and market risk premium. Otherwise, Mr. Hevert provides no other credible equity cost rate studies that support his 10.30% ROE recommendation. Therefore, his ROE recommendation is based on not only one model (ECAPM), but also on only one

information source (*Value Line*). There are obvious risks to relying on only one approach and information source to estimate the cost of equity capital.

Q. HAS THE MARYLAND COMMISSION ADDRESSED THE ISSUE OF THE RELIANCE OF THE RESULTS OF ONLY ONE MODEL TO ESTIMATE THE COST OF EQUITY CAPITAL FOR A UTILITY?

A. Yes, In an Order issued in 2019 for a rate case involving the Potomac Edison Co., the Commission noted the drawbacks of reliance on the results of only one model. Specifically, the Commission noted the following: "The ROE witnesses in this proceeding used various analyses to estimate the appropriate return on equity for Potomac Edison's electric distribution operations, including the DCF model, the CAPM (including the traditional and empirical versions), risk premium methodologies, and comparable earnings models. Although the witnesses argued strongly over the correctness of their competing analyses, the Commission is not willing to rule that there can be only one correct method for calculating a ROE."[44]

B. DCF Approach

Q. PLEASE SUMMARIZE MR. HEVERT'S DCF ESTIMATES.

A. On pages 16-22 of his testimony and in Exhibit No. RBH-1, Mr. Hevert develops an equity cost rate by applying the DCF model to the Hevert Proxy Group. Mr. Hevert's DCF results are summarized on page 2 of my Exhibit JRW-9. He uses constant-growth and multistage growth DCF models. Mr. Hevert uses three dividend-yield

[44] Order No. 89072, *In re Potomac Edison Co.*, Maryland Public Service Commission. p. 72 (Case No. 9490, March 22, 2019)

measures (30, 90, and 180 days) in his DCF models. In his constant-growth and quarterly DCF models, Mr. Hevert has relied on the forecasted EPS growth rates of Zacks, IBES, and *Value Line*. For each model, he reports Mean Low, Mean and Mean High results.

Q. WHAT ARE THE ERRORS IN MR. HEVERT'S DCF ANALYSES?

A. The primary errors in Mr. Hevert's DCF analyses are: (1) the low weight he gives to his constant-growth DCF results, (2) He has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields; and (3) he relies exclusively on the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*.

1. The Low Weight Given to the DCF Results

Q. HOW MUCH WEIGHT HAS MR. HEVERT GIVEN HIS DCF RESULTS IN ARRIVING AT AN EQUITY COST RATE FOR THE COMPANY?

A. Apparently, very little, if any. The average of his mean constant-growth DCF equity cost rates is only 8.87%. Had he given these results any weight, he would have arrived at a much lower recommendation for his estimated cost of equity.

2. The DCF Model Understates the Cost of Equity Capital

Q. PLEASE EXPLAIN MR. HEVERT'S CLAIM THAT THE DCF MODEL UNDERSTATES THE COST OF EQUITY CAPITAL.

A. In his Direct testimony at pp. 5 – 11, Mr. Hevert expresses concern with the constant-growth DCF model results in light of current capital market conditions, which include high utility stock valuations and low dividend yields. However, Mr. Hevert's

arguments on this issue are without merit for the following reasons. First, he is saying that utility stocks are overvalued, and their stock prices will decline in the future (and therefore their dividend yield will increase). Hence, Mr. Hevert presumes that investors in the stock market are wrong in valuing utility stocks. If he believes that utility stock prices will decline in the future, he should be recommending a negative expected return because a decline in utility stock prices would produce negative stock returns in the future. Second, the DCF approach directly measures the cost of equity because it uses dividends, stock prices, and expected growth rates; Third, the CAPM is an indirect method of measuring the cost of equity with the only company-specific input being beta. In addition, it is highly dependent on the market risk premium which, as discussed above, is one of the great mysteries in finance. Fourth, as discussed below, Mr. Hevert's CAPM result is grossly inflated due to its unrealistic assumptions on future earnings, economic growth, and future stock returns.

Q. ARE THERE OTHER REASONS WHY UTILITY STOCK STOCKS HAVE PERFORMED SO WELL AND HAVE RELATIVELY HIGH VALUATIONS?

A. Yes. As discussed in a Moody's article, utilities have achieved higher market valuations due to cost recovery mechanisms that have reduced the risk of the utility industry, which have led to higher valuation levels.

> As utilities increasingly secure more up-front assurance for cost recovery in their rate proceedings, we think regulators will increasingly view the sector as less risky. The combination of low capital costs, high equity market valuation multiples (which are better than or on par with the broader market despite the regulated utilities' low risk profile), and a transparent assurance of cost

recovery tend to support the case for lower authorized returns, although because utilities will argue they should rise, or at least stay unchanged.[45]

Therefore, Mr. Hevert's suggestion that the constant-growth DCF results provide low equity cost rate results due to current market conditions is incorrect. As indicated by Moody's, the lower risk of utilities has led to higher valuation levels.

3. Wall Street Analysts' EPS Growth Rate Forecasts

Q. PLEASE DISCUSS MR. HEVERT'S EXCLUSIVE RELIANCE ON THE PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE* FOR HIS DCF ANALYSIS.

A. It seems highly unlikely that investors today would rely exclusively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measure in arriving at their expected growth rates for equity investments. As I previously stated, the appropriate growth rate in the DCF model is the dividend growth rate, *not* the earnings growth rate. Hence, consideration must be given to other indicators of growth, including historical prospective dividend growth, internal growth, as well as projected earnings growth.

Finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. In addition, as discussed above, the projected EPS growth rate forecasts have been shown to be overly-optimistic and upwardly biased.

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[45] Moody's Investors Service, "Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015, p. 3.

Hence, using these growth rates as a DCF growth rate produces an overstated equity cost rate. A 2007 study by Easton and Sommers found that optimism in analysts' earnings growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[46]

C. CAPM Approach

Q. PLEASE DISCUSS MR. HEVERT'S CAPM.

A. On pages 21-6 of his testimony and in Exhibit Nos. RBH-2-RBH-4, Mr. Hevert develops an equity cost rate by applying the CAPM model to the companies in his proxy group. The CAPM approach requires an estimate of the risk-free interest rate, beta, and the market risk premium. Mr. Hevert uses three different measures of the 30-Year Treasury bond yield: (a) current yield of 2.18%, a near-term projected yield of 2.28%, and a long-term projected yield of 3.70%; (b) two different betas (an average Bloomberg beta of 0.502 and an average *Value Line* beta of 0.57); and (c) two market risk premium measures – a Bloomberg, DCF-derived market risk premium of 10.63% and a *Value Line* DCF-derived market risk premium of 12.32%. Based on these figures, he finds a CAPM equity cost rate range from 7.51% to 10.73%. Mr. Hevert also employs an ad hoc version of the CAPM, the ECAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium and is an untested model in academic and profession research. His ECAPM results range from 8.84% to 12.05%. Mr. Hevert's CAPM/ECAPM results are summarized on page 2 of Exhibit JRW-9.

[46] 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.

Q. WHAT ARE THE ERRORS IN MR. HEVERT'S CAPM ANALYSES?

A. As explained further below, there are three issues with Mr. Hevert's CAPM analyses: (1) The long-term projected 30-year Treasury yield of 3.70%; (2) the employment of an ad hoc version of the CAPM, i.e. the ECAPM; and (3) most significantly, the inclusion of highly unrealistic assumptions regarding future economic and earnings growth and stock returns in his market risk premiums of 10.63% and 12.32%.

1. The Long-Term Projected Risk-Free Interest Rate

Q. PLEASE DISCUSS THE RISK-FREE RATE OF INTEREST IN MR. HEVERT'S CAPM/ECAPM.

A. Mr. Hevert has used a long-term projected risk-free rate of 3.70% in his CAPM/ECAPM analyses. The actual yield on 30-year Treasury bonds has been in the 2.10% range in recent months. As such, Mr. Hevert's projected risk-free rate is 160 basis points above the current yield. This projected yield is excessive for two reasons. First, as discussed previously, economists are always predicting that interest rates are going up, and yet they are almost always wrong. Obviously, investors are well aware of the consistently wrong forecasts of higher interest rates, and therefore place little weight on such forecasts. Second, investors would not be buying long-term Treasury bonds at their current yields if they expected interest rates to suddenly increase. If interest rates do increase, the prices of the bonds investors bought at today's yields, go down, thereby producing a negative return.

2. The ECAPM Approach

Q. WHAT ISSUES DO YOU HAVE WITH MR. HEVERT'S ECAPM?

A. Mr. Hevert has employed a variation of the CAPM which he calls the "ECAPM". The ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known finding of tests of the CAPM that have indicated the Security Market Line ("SML") is not as steep as predicted by the CAPM.[47] As such, the ECAPM is nothing more than an ad hoc version of the CAPM and has not been theoretically or empirically validated in refereed journals. The ECAPM uses weighting to adjust the risk-free rate and market risk premium in applying the ECAPM. Mr. Hevert uses 0.25 and 0.75 factors in his ECAPM.

Besides the fact that the ECAPM is not a recognized equity cost rate model, Mr. Hevert has already accounted for any empirical issues with the CAPM by using adjusted betas from *Value Line*. Adjusted betas address the empirical issues with the CAPM by increasing the expected returns for low beta stocks and decreasing the returns for high beta stocks.

[47] In Modern Capital Market theory, the Security Market Line is the relationship between the expected return on common stocks and beta.

3. Market Risk Premiums

Q. PLEASE ASSESS MR. HEVERT'S MARKET RISK PREMIUMS DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500 AND *VALUE LINE INVESTMENT SURVEY*.

A. Table 8 provides the details as to how Mr. Hevert computes his Bloomberg and *Value Line* market risk premiums. Mr. Hevert computes market risk premiums of 10.63% and 12.32%, respectively, by (a) calculating an expected market return by applying the DCF model to the S&P 500; and then (b) subtracting the current 30-year Treasury bond yield of 2.18% from his estimate of the expected market return. Mr. Hevert also uses (1) a dividend yield of 1.90% and an expected DCF growth rate of 10.91% for Bloomberg and (2) a dividend yield of 2.06% and an expected DCF growth rate of 12.44% for *Value Line*. The resulting expected annual S&P 500 stock market returns using this approach are 12.81% (using Bloomberg three-to-five-year EPS growth rate estimates) and 14.50% (using *Value Line's* five-year EPS growth rate estimates). As discussed below, these expected EPS growth rates and expected stock market returns and market risk premiums are totally unrealistic.

Table 8
Market Risk Premiums Derived from Expected Market Returns
Using *Value Line* and Bloomberg Projected EPS Growth Rate

	VL DCF Exp. Ret.	BL DCF Exp. Ret.
Dividend Yield	1.90%	2.06%
+ Expected EPS Growth	10.91%	12.44%
= Expected Market Return	12.81%	14.50%
- Risk-Free Rate	2.18%	2.18%
= Market Risk Premium	10.63%	12.32%

Q. ARE MR. HEVERT'S MARKET RISK PREMIUMS OF 10.63% AND 12.32% REFLECTIVE OF THE MARKET RISK PREMIUMS FOUND IN STUDIES AND SURVEYS OF THE MARKET RISK PREMIUM?

A. No. These are well in excess of market risk premiums, whether found in studies of the market risk premium by leading academic scholars, produced by analyses of historic stock and bond returns or found in surveys of financial professionals. Page 5 of Exhibit JRW-8 provides the results of over 30 market risk premium studies from the past 15 years. Historic stock and bond returns suggest a market risk premium in the 4.5% to 7.0% range, depending on whether one uses arithmetic or geometric mean returns. There have been many studies using expected return (i.e. *ex ante*) models, and their market risk premium results vary from as low as 2.0% to as high as 7.31%. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics suggest lower market risk premiums, in a range of 1.91% to 5.70%. The bottom line is that there is no support in historic return data, surveys, academic studies, or reports for investment firms for market risk premiums as high as those used by Mr. Hevert.

Q. PLEASE AGAIN ADDRESS THE ISSUES WITH ANALYSTS' EPS GROWTH RATE FORECASTS.

A. The key point is that Mr. Hevert's CAPM market risk premium methodology is based entirely on the concept that analyst projections of companies' three-to-five EPS growth rates reflect investors' expected *long-term* EPS growth for those companies. However, this seems highly unrealistic given the research on these projections. As previously noted, numerous studies have shown that the long-term EPS growth rate

forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[48] Moreover, a 2011 study showed that analysts' forecasts of EPS growth over the next three-to-five years earnings are no more accurate than their forecasts of the next single year's EPS growth.[49] The overly-optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates that has been estimated at about 300 basis points.[50]

Q. **HAVE CHANGES IN REGULATIONS IMPACTED THE UPWARD BIAS IN WALL STREET ANALYSTS' THREE-TO-FIVE YEAR EPS GROWTH RATE FORECASTS?**

A. No. A number of the studies I have cited here demonstrate that the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is highlighted by a 2010 McKinsey study entitled "Equity Analysts: Still Too Bullish," which involved a study of the accuracy of analysts' long-term EPS growth rate forecasts. The authors conclude that after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation:[51]

> Alas, a recently completed update of our work only reinforces

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[48] Such studies include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000); K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance,* pp. 643−684, (2003); 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.

[49] 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.

[50] Peter D. Easton & Gregory A. Sommers, "Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts," 45, *Journal of Accounting Research*, pp. 983–1015 (2007).

[51] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010) (emphasis added).

> this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. *Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.*

This is the same observation made in a *Bloomberg Businessweek* article.[52] The author concluded:

> ***The bottom line:*** *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

Q. IS THERE OTHER EVIDENCE THAT INDICATES THAT MR. HEVERT'S MARKET RISK PREMIUMS COMPUTED USING S&P 500 EPS GROWTH RATE ARE EXCESSIVE?

A. Beyond my previous discussion of the upwardly biased nature of analysts' projected EPS growth rates, the fact is that long-term EPS growth rates of 10.91% and 12.44%

[52] Roben Farzad, "For Analysts, Things Are Always Looking Up," *Bloomberg Businessweek* (June 10, 2010), https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up.

are inconsistent with both historic and projected economic and earnings growth in the U.S for several reasons. Long-term EPS and economic growth is about one-half of Mr. Hevert's projected EPS growth rates of 10.91% and 12.44%. Long-term EPS and Gross Domestic Product ("GDP") growth are directly linked. More recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the future.

Long-Term Historic EPS and GDP Growth have been in the 6%-7% Range - I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are provided on page 1 of Exhibit JRW-10, and a summary is shown in Table 9, below.

Table 9
GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GDP	**6.46**
S&P 500 Stock Price	**6.71**
S&P 500 EPS	**6.89**
S&P 500 DPS	**5.85**
Average	**6.48**

The results show that the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 6% to 7% range. By comparison, Mr. Hevert's long-run growth rate projections of 10.91% and 12.44% are at best overstated. For Mr. Hevert's estimates to come to fruition, companies in the U.S. would be expected to increase their growth rate of EPS by 100% in the future and, as well, maintain that growth indefinitely in an economy that is expected to grow at about one-third of his projected growth rates.

There is a Direct Link Between Long-Term EPS and GDP Growth - The results in Exhibit JRW-10 and Table 8 show that historically there has been a close link between long-term EPS and GDP growth rates. Brad Cornell of the California Institute of Technology published a study on GDP growth, earnings growth, and equity returns. He found that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he found that long-term stock returns are determined by long-term earnings growth. He concluded with the following observations:[53]

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

The Trend and Projections Indicate Slower GDP Growth in the Future - The components of nominal GDP growth are real GDP growth and inflation. Page 3 of Exhibit JRW-10 shows annual real GDP growth rate over the 1961 to 2018 time period. Real GDP growth has gradually declined from the 5.0% to 6.0% range in the 1960s to the 2.0% to 3.0% range during the most recent five-year period. The second component of nominal GDP growth is inflation. Page 4 of Exhibit JRW-10 shows inflation as measured by the annual growth rate in the Consumer Price Index (CPI)

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

over the 1961 to 2018 time period. The large increase in prices from the late 1960s to the early 1980s is readily evident. Equally evident is the rapid decline in inflation during the 1980s as inflation declined from above 10% to about 4%. Since that time, inflation has gradually declined and has been in the 2.0% range or below over the past five years.

The graphs on pages 2, 3, and 4 of Exhibit JRW-10 provide clear evidence of the decline in recent decades in nominal GDP as well as its components, real GDP and inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 5, below, provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50-years.[54] Whereas the 50-year compounded GDP growth rate is 6.63%, there has been a monotonic and significant decline in nominal GDP growth over subsequent 10-year intervals. These figures strongly suggest that nominal GDP growth in recent decades has slowed and that a figure in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy.

Table 10
Historical Nominal GDP Growth Rates

10-Year Average		**3.37%**
20-Year Average		**4.17%**
30-Year Average		**4.65%**
40-Year Average		**5.56%**
50-Year Average		**6.36%**

Long-Term GDP Projections also Indicate Slower GDP Growth in the Future - A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government

[54] Table 5 is also included as Page 5 of Exhibit JRW-10.

agencies and are listed in Panel B of on page 5 of Exhibit JRW-10. The mean 10-year nominal GDP growth forecast (as of March 2019) by economists in the recent *Survey of Financial Forecasters* is 4.25%.[55] The Energy Information Administration ("EIA"), in its projections used in preparing *Annual Energy Outlook,* forecasts long-term GDP growth of 4.20% for the period 2018-2050.[56] The Congressional Budget Office ("CBO"), in its forecasts for the period 2019 to 2049, projects a nominal GDP growth rate of 4.40%.[57] Finally, the Social Security Administration ("SSA"), in its Annual OASDI Report, provides a projection of nominal GDP from 2018-2095.[58] SSA's projected growth GDP growth rate over this period is 4.35%. Overall, these forecasts suggest long-term GDP growth rate in the 4.0% - 4.4% range. The trends and projections indicating slower GDP growth make Mr. Hevert's market risk premiums computed using analysts' projected EPS growth rates look even more unrealistic. Simply stated, Mr. Hevert's projected EPS growth rates of 10.91% and 12.44% are almost three times projected GDP growth.

Q. WHAT ARE THE FUNDAMENTAL FACTORS THAT HAVE LED TO THE DECLINE IN PROSPECTIVE GDP GROWTH?

A. As addressed in a study by the consulting firm McKinsey & Co., two factors drive real GDP growth over time: (a) the number of workers in the economy (employment); and

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55 https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/

56 U.S. Energy Information Administration, *Annual Energy Outlook 2019*, Table: Macroeconomic Indicators, https://www.eia.gov/outlooks/aeo/pdf/appa.pdf.

57 Congressional Budget Office, The *2019 Long-Term Budget Outlook*, June 15, 2019 https://www.eia.gov/outlooks/aeo/pdf/appa.pdf.

58 Social Security Administration, *2019 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4, p. 211 (June 15, 2019), https://www.ssa.gov/oact/TR/2019/VI_G2_OASDHI_GDP.html#200732. The 4.35% represents the compounded growth rate in projected GDP from $21,485 trillion in 2019 to $546,311 trillion in 2095.

(b) the productivity of those workers (usually defined as output per hour).[59] According to McKinsey, real GDP growth over the past 50 years was driven by population and productivity growth, which grew at compound annual rates of 1.7% and 1.8%, respectively.

However, global economic growth is projected to slow significantly in the years to come. The primary factor leading to the decline is slow growth in employment (working-age population), which results from slower population growth and longer life expectancy. McKinsey estimates that employment growth will slow to 0.3% over the next 50 years. The study concludes that even if productivity remains at the rapid rate of the past 50 years of 1.8%, real GDP growth will fall by 40% to 2.1%.

Q. PLEASE PROVIDE MORE INSIGHTS INTO THE RELATIONSHIP BETWEEN S&P 500 EPS AND GDP GROWTH.

A. Figure 6 shows the average annual growth rates for GDP and the S&P 500 EPS since 1960. The one very apparent difference between the two is that the S&P 500 EPS growth rates are much more volatile than the GDP growth rates, when compared using the relatively short, and somewhat arbitrary, annual conventions used in these data.[60] Volatility aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not outpace GDP growth.

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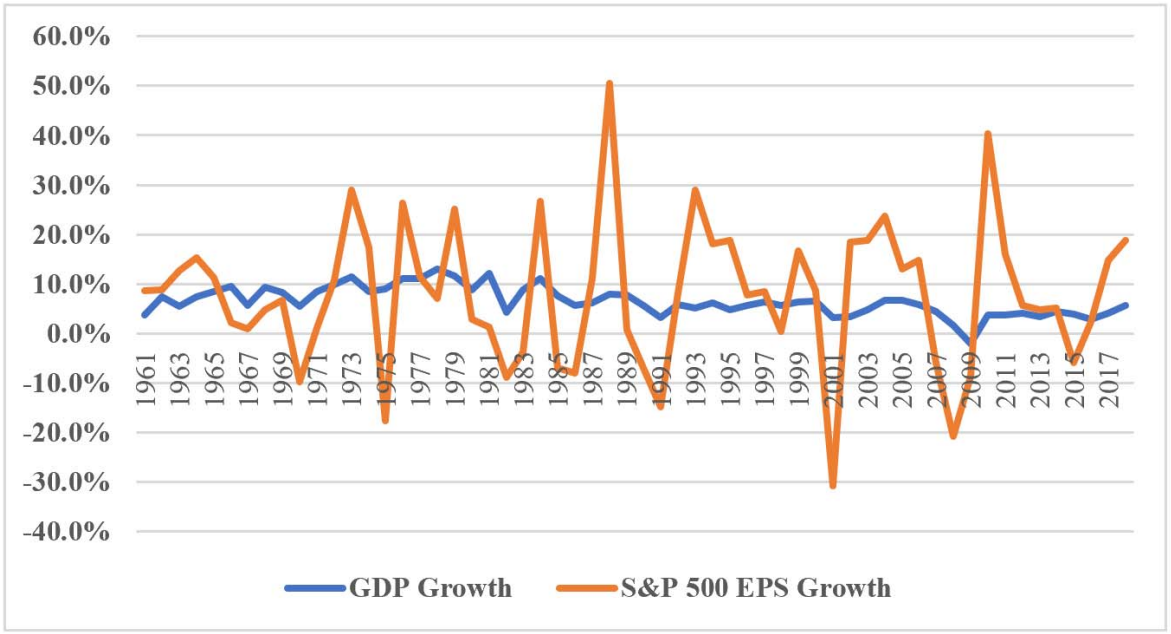
[59] McKinsey & Co., "Can Long-Term Growth be Saved?," McKinsey Global Institute, (Jan. 2015).

[60] Timing conventions such as years and quarters are needed for measurement and benchmarking but are somewhat arbitrary. In reality, economic growth and profit accrual occur on continuous bases. A 2014 study evaluated the timing relationship between corporate profits and nominal GDP growth. The authors found that aggregate accounting earnings growth is a leading indicator of the GDP growth with a quarter-ahead forecast horizon. *See* Yaniv Konchitchki and Panos N. Patatoukas, "Accounting Earnings and Gross Domestic Product," *Journal of Accounting and Economics* 57 (2014), pp. 76–88.

Figure 6
Average Annual Growth Rates
GDP and S&P 500 EPS
1960-2018



Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.
S&P EPS - http://pages.stern.nyu.edu/~adamodar/

A fuller understanding of the relationship between GDP and S&P 500 EPS growth requires consideration of several other factors.

Corporate Profits are Constrained by GDP – Milton Friedman, the noted economist, warned investors and others not to expect corporate profit growth to sustainably exceed GDP growth, stating, "Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don't just keep booming."[61] Friedman also noted in the *Fortune* interview that profits must move back down to their traditional share of GDP. In Table 11, below, I show that

[61] Shaun Tully, "Corporate Profits Are Soaring. Here's Why It Can't Last," Fortune, (Dec. 7, 2017), http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

currently the aggregate net income levels for the S&P 500 companies, using 2018 figures, represent 6.73% of nominal GDP.

Table 11
S&P 500 Aggregate Net Income as a Percent of GDP

Aggregate Net Income for S&P 500 Companies ($B)	**$1,406,400.00**
2018 Nominal U.S. GDP ($B)	**$20,891,000.00**
Net Income/GDP (%)	**6.73%**

Data Sources: 2018 Net Income for S&P 500 companies – *Value Line* (March 12, 2019).
2018 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.

Short-Term Factors Impact S&P 500 EPS – The growth rates in the S&P 500 EPS and GDP can diverge on a year-to-year basis due to short-term factors that impact S&P 500 EPS in a much greater way than GDP. As shown above, S&P EPS growth rates are much more volatile than GDP growth rates. The EPS growth for the S&P 500 companies has been influenced by low labor costs and interest rates, commodity prices, the recovery of different sectors such as the energy and financial sectors, the cut in corporate tax rates, etc. These short-term factors can make it appear that there is a disconnect between the economy and corporate profits.

The Differences Between the S&P 500 EPS and GDP – In the last two years, as the EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have pointed to the differences between the S&P 500 and GDP.[62] These differences include corporate profits are about 2/3 manufacturing driven, while GDP is 2/3 services driven; consumer discretionary spending accounts for a smaller share of S&P 500

[62] *See* the following studies: Burt White and Jeff Buchbinder, "The S&P and GDP are not the Same Thing," LPL Financial, (Nov. 4, 2014), https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, "How Do We Have 18.4% Earnings Growth In A 2.58% GDP Economy?," Seeking Alpha, (Apr. 2018), https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy; Shaun Tully, "How on Earth Can Profits Grow at 10% in a 2% Economy?," Fortune, (July 27, 2017), http://fortune.com/2017/07/27/profits-economic-growth/.

profits (15%) than of GDP (23%); corporate profits are more international-trade driven, while exports minus imports tend to be a drag on GDP; and S&P 500 EPS is impacted, not just by corporate profits, but also by share buybacks on the positive side (fewer shares boost EPS) and by share dilution on the negative side (new shares dilute EPS). While these differences may seem significant, it must be remembered that the Income Approach to measure GDP includes corporate profits (in addition to employee compensation and taxes on production and imports) and therefore effectively accounts for the first three factors.[63]

The bottom line is that despite the intertemporal short-term differences between S&P 500 EPS and nominal GDP growth, the long-term link between corporate profits and GDP is inevitable.

Q. PLEASE PROVIDE ADDITIONAL EVIDENCE ON HOW UNREALISTIC THE S&P 500 EPS GROWTH RATES ARE THAT MR. HEVERT USES TO COMPUTE HIS MARKET RISK PREMIUMS.

A. Beyond my previous discussion, I have performed the following analysis of S&P 500 EPS and GDP growth in Table 12 below. Specifically, I started with the 2018 aggregate net income for the S&P 500 companies and 2018 nominal GDP for the U.S. As shown in Table 11, the aggregate profit for the S&P 500 companies represented 6.73% of nominal GDP in 2018. In Table 12, I then projected the aggregate net income level for the S&P 500 companies and GDP as of the year 2050. For the growth rate for the S&P 500 companies, I used the average of Mr. Hevert's Bloomberg and

[63] The Income Approach to measuring GDP includes wages, salaries, and supplementary labor income, corporate profits, interest and miscellaneous investment income, farmers' incomes, and income from non-farm unincorporated businesses.

Value Line growth rates, 10.91% and 12.44%, which is 11.68%. As a growth rate for nominal GDP, I used the average of the long-term projected GDP growth rates from CBO, SSA, and EIA (4.0%, 4.4%, and 4.3%), which is 4.23%. The projected 2050 level for the aggregate net income level for the S&P 500 companies is $48.2 trillion. However, over the same period GDP grows to $78.7 trillion. As such, if the aggregate net income for the S&P 500 grows in accordance with the growth rates used by Mr. Hevert, and if nominal GDP grows at rates projected by major government agencies, the net income of the S&P 500 companies will represent growth from 6.73% of GDP in 2018 to 61.17% of GDP in 2050. Obviously, it is implausible for the net income of the S&P 500 to become such a large part of GDP.

Table 12
Projected S&P 500 Earnings and Nominal GDP
2018-2050
S&P 500 Aggregate Net Income as a Percent of GDP

Aggregate Net Income for S&P 500	1,406,400.0	11.68%	32	48,161,456.7
2018 Nominal U.S. GDP	20,891,000.0	4.23%	32	78,735,624.7
Net Income/GDP (%)	6.73%			61.17%

Data Sources: 2018 Aggregate Net Income for S&P 500 companies – *Value Line* (March 12, 2019).
2018 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.
S&P 500 EPS Growth Rate - Average of Hevert's Bloomberg and *Value Line* growth rates - 10.91% and 12.44%;
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from CBO, SSA, and EIA (4.0%, 4.4%, and 4.3%).

Q. PLEASE STATE YOUR CONCLUSION ON GDP AND S&P 500 EPS GROWTH RATES.

A. In sum, Mr. Hevert's long-term S&P 500 EPS growth rates of 10.91% and 12.44% are grossly overstated and have no basis in economic reality. In the end, the big question remains as to whether corporate profits can grow faster than GDP. Jeremy Siegel, the renowned finance professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than

nominal GDP, or about 5.0%, due to the big gains in the technology sector. But he also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[64]

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE CAPM RESULTS.

A. There are several additional issues with the *Value Line* results. The compounded annual return in the U.S. stock market is about 10% (9.49% between 1928-2018 according to Damodaran).[65] Mr. Hevert's *Value Line* CAPM results assume that return on the U.S. stock market will be almost 50% higher in the future than it has been in the past! The extremely high expected stock market returns, and their resulting market risk premiums and equity cost rate results, are directly related to the 12.69% and 12.28% expected EPS growth rates. Simply put, these projected growth rates do not reflect economic reality. Rather, it unrealistically assumes that S&P 500 companies can grow their earnings in the future at a rate that is triple the expected GDP growth rate.

D. Bond Yield Risk Premium Approach

Q. PLEASE DISCUSS MR. HEVERT'S BYRP APPROACH.

A. On pages 26-30 of his testimony and in Exhibit No. RBH-5, Mr. Hevert develops an equity cost rate using his BYRP approach. Mr. Hevert develops an equity cost rate by regressing the average quarterly authorized returns on equity for electric utility

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[64] Shaun Tully, "Corporate Profits Are Soaring. Here's Why It Can't Last," *Fortune*, (Dec. 7, 2017), http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

[65] http://pages.stern.nyu.edu/~adamodar/

companies from the January 1, 1992, to October 31, 2019 time period on the 30-year Treasury Yield, adding the appropriate risk premium established in step (1) to three different 30-year Treasury yields: (a) the current yield of 2.18%; (b) a near-term projected yield of 2.28%; and (c) a long-term projected yield of 3.70%. Mr. Hevert's risk premium results are provided on Exhibit JRW-9. He reports BYRP equity cost rates ranging from 9.95% to 10.05%.

Q. WHAT ARE THE ERRORS IN MR. HEVERT'S BYRP ANALYSIS?

A. The errors include the base yield as well as the measurement and magnitude of the risk premium.

1. Base Yield

Q. PLEASE DISCUSS THE BASE YIELD OF MR. HEVERT'S BYRP ANALYSIS.

.A. Mr. Hevert has used a long-term projected risk-free rate of 3.70% in his BYRP analysis, while the actual yield on 30-year Treasury bonds has been in the 2.10% range. As such, Mr. Hevert's projected risk-free rate is 160 basis points above the current yield..

2. Risk Premium

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

A. There are several problems with his approach. First, his BYRP methodology produces an inflated measure of the risk premium because the approach uses historic authorized

ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields. Since Treasury yields are always forecasted to increase, the resulting risk premium would be smaller if calculated correctly, which would be to use projected Treasury yields in the analysis rather than historic Treasury yields.

Second, Mr. Hevert's BYRP approach is a gauge of *commission* behavior and not *investor* behavior. Capital costs are determined in the marketplace through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also consider other utility- and rate case-specific information in setting ROEs. As such, Mr. Hevert's approach and results reflect factors such as capital structure, credit ratings and other risk measures, service territory, capital expenditures, energy supply issues, rate design, investment and expense trackers, and other factors used by utility commissions in determining an appropriate ROE in addition to capital costs. This may especially be true when the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

Finally, Mr. Hevert's methodology produces an inflated required rate of return because utilities have been selling at market-to-book ratios well in excess of 1.0 for many years. This indicates that the authorized and earned rates of return on equity have been greater than the return that investors require. Therefore, the risk premium produced from the study is overstated as a measure of investor return requirements and produces an inflated equity cost rate.

E. Expected Earnings Approach

Q. PLEASE REVIEW MR. HEVERT'S EXPECTED EARNINGS APPROACH.

A. On pages 30-31 of his testimony and in Exhibit RBH-6, Mr. Hevert develops an equity cost rate using his Expected Earnings approach, which he uses for comparison purposes. Mr. Hevert's approach involves using *Value Line*'s projected ROE for the years 2022-24 for his proxy group and then adjusting this ROE to account for the fact the *Value Line* uses year-end equity in computing ROE. Mr. Hevert reports a mean Expected Earnings result of 10.13%.

Q. PLEASE ADDRESS THE ISSUES WITH MR. HEVERT'S EXPECTED EARNINGS APPROACH.

A. There are a number of issues with this so-called Expected Earnings approach. As such, I strongly suggest that the Commission ignore this approach in setting a ROE for DPL. These issues include:

The Expected Earnings Approach Does Not Measure the Market Cost of Equity Capital – First and foremost, this accounting-based methodology does not measure investor return requirements. As indicated by Professor Roger Morin, a long-time utility rate of return consultant, "More simply, the Comparable (Expected) Earnings standard ignores capital markets. If interest rates go up 2% for example, investor requirements and the cost of equity should increase commensurably, but if regulation is based on accounting returns, no immediate change in equity cost

results."[66] As such, this method does not measure the market cost of equity because there is no way to assess whether the earnings are greater than or less than the earnings investors require, and therefore this approach does not measure the market cost of equity capital.

The Expected ROEs are Not Related to Investors' Market-Priced Opportunities – The ROE ratios are an accounting measure that do not measure investor return requirements. Investors had no opportunity to invest in the proxy companies at the accounting book value of equity. In other words, the equity's book value *to investors* is tied to market prices, which means that investors' required return on market-priced equity aligns with expected return on book equity only when the equity's market price and book value are aligned. Therefore, a market-based evaluation of the cost of equity to investors in the proxies requires an associated analysis of the proxies' market-to-book ("M/B") ratios.

Changes in ROE Ratios do not Track Capital Market Conditions - As also indicated by Professor Morin, "The denominator of accounting return, book equity, is a historical cost-based concept, which is insensitive to changes in investor return requirements. Only stock market price is sensitive to a change in investor requirements. Investors can only purchase new shares of common stock at current market prices and not at book value."[67]

[66] Roger Morin, *New Regulatory Finance* (2006), p. 293.

[67] *Id.*

The Expected Earnings Approach is Circular - The proxies' ROEs ratios are not determined by competitive market forces, but instead are largely the result of federal and state rate regulation, including the present proceeding.

The Proxies' ROEs Reflect Earnings on Business Activities that are not Representative of DPL' s Rate-Regulated Utility Activities - The numerators of the proxy companies' ROEs include earnings from business activities that are riskier and produce more projected earnings per dollar of book investment than does regulated electric utility service. These include earnings from: (1) unregulated businesses, including merchant generation; (2) electric generation; and (3) international operations.

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF MR. HEVERT'S EXPECTED EARNINGS APPROACH.

A. In short, Mr. Hevert's Expected Earnings approach does not measure the market cost of equity capital, is independent of most cost of capital indicators and has a number of other empirical issues. Therefore, the Commission should ignore this approach in determining the appropriate ROE for DPL.

F. Other Issues

1. DPL's Capital Expenditures

Q. PLEASE ADDRESS MR. HEVERT'S CONSIDERATION OF OTHER UNIQUE RISK FACTORS FACED BY DPL.

A. Mr. Hevert has cited the Company's high level of capital expenditures as a unique risk factor for DPL. However, capital expenditures are a risk factor already considered in the credit-rating process used by major rating agencies.

2. Flotation Costs

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

A. Mr. Hevert argues that a flotation cost adjustment is appropriate for DPL and he has considered flotation costs in arriving at his 10.30% ROE recommendation.

First and foremost, Mr. Hevert has not identified any flotation cost for DPL. Therefore, he is asking for higher revenues in the form of a higher ROE for expenses that he has not identified.

Q. HAS THE MARYLAND COMMISSION ADDRESSED THIS ISSUE?

A. Yes. In the 2019 Potomac Edison Order, the Commission made the following observations:[68]

> The Commission also denies Potomac Edison's request for flotation costs. The Commission has granted flotation costs only where the utility has demonstrated that it incurred verifiable costs of issuing new stock during the test year or will incur such flotation costs during the rate effective period. In Case No. 9336, BGE made a similar argument to that proposed by Potomac Edison now—namely, that flotation costs should be recovered on a perpetual basis because the benefits of that capital extend indefinitely. The Commission held: "BGE has merely presented argument that investors are entitled to an

[68] Order No. 89072, *In re Potomac Edison Co.*, Maryland Public Service Commission. p. 76 (Case No. 9490, March 22, 2019)

adjustment for flotation on an ongoing basis whether or not the Company actually incurs such costs. We reject that argument

Therefore, given the absence of DPL incurring flotation costs in this case, the Commission should once again reject Mr. Hevert's consideration of flotation cost and his flotation cost adjustment.

Q. ARE THERE OTHER ISSUES WITH A FLOTATION COST ADJUSTMENT?

A. Yes. It is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the dilution of the investment of the existing shareholders. This is incorrect for several reasons:

(1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for electric utility companies are over 1.95X actually suggests that there should be a flotation cost reduction (and not an increase) to the equity cost rate. This is because when a bond is issued at a price in excess of face or book value, and the difference between market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market values of electric utility companies are in excess of book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward;

(2) If a flotation cost adjustment is needed to prevent dilution of existing stockholders' investment, then the reduction of the book value of stockholder

investment associated with flotation costs can occur only when a company's stock is selling at a market price at/or below its book value. As noted above, electric utility companies are selling at market prices well in excess of book value. Hence, when new shares are sold, existing shareholders realize an increase in the book value per share of their investment, not a decrease;

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

(4) Flotation costs, in the form of the underwriting spread, are a form of a transaction cost in the market. They represent the difference between the price paid by investors and the amount received by the issuing company. Whereas the Company believes that it should be compensated for these transaction costs, it has not accounted for other market transaction costs in determining its cost of equity. Most notably, brokerage fees that investors pay when they buy

shares in the open market are another market transaction cost. Brokerage fees increase the effective stock price paid by investors to buy shares. If the Company had included these brokerage fees or transaction costs in its DCF analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields and equity cost rates. This would result in a downward adjustment to its DCF equity cost rate.

VII. CONCLUSION

Q. DR. WOOLRIDGE, PLEASE SUMMARIZE YOUR TESTIMONY ON THE APPROPRIATE COST OF CAPITAL FOR DPL.

A. I reviewed the Company's proposed capital structure and overall rate of return or cost of capital. The Company's proposed capital structure has a common equity ratio that is generally in line with the capital structure of its parent, Exelon, as well as the averages of the Electric and Hevert Proxy Groups. To estimate an equity cost rate for the Company, I applied the DCF and CAPM approaches to the Electric and Hevert Proxy Groups. My equity cost rate studies indicate that an appropriate ROE for the Company is in the range of 6.90% and 8.40%. I believe that this range accurately reflects current capital market data and the market cost of equity capital. Capital costs in the U.S. remain low, with low inflation and interest rates and very modest economic growth. However, I recognize that this range is below the authorized ROEs for electric

utility companies nationally. Therefore, as a primary ROE for DPL, I am recommending 9.0%. This recommendation gives weight to the higher authorized ROEs for electric utility companies, and recognizes the concept of 'gradualism' in which authorized ROEs are adjusted on a gradual basis to reflect capital costs. As an alternative rate of return recommendation, I recommend a ROE of 8.40%, which is at the high end of my equity cost rate range.

Q DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Appendix A
Educational Background, Research, and Related Business Experience
J. Randall Woolridge

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. He has taught Finance courses including corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on empirical issues in corporation finance and financial markets. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes, Fortune, The Economist*, *Barron's*, *Wall Street Journal*, *Business Week*, *Investors' Business Daily*, *USA Today*, and other publications. In addition, Dr. Woolridge has appeared as a guest to discuss the implications of his research on CNN's *Money Line*, CNBC's *Morning Call* and *Business Today*, and Bloomberg's *Morning Call*.

Professor Woolridge's stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a textbook entitled *Basic Principles of Finance* (Kendall Hunt, 2011).

Professor Woolridge has also consulted with corporations, financial institutions, and government agencies. In addition, he has directed and participated in university- and company-sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Over the past thirty-five years Dr. Woolridge has prepared testimony and/or provided consultation services in regulatory rate cases in the rate of return area in following states: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Washington, D.C. He has also testified before the Federal Energy Regulatory Commission.

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Academic Experience

Professor of Finance, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).

President, Nittany Lion Fund LLC, (January 1, 2005 to the present)
Director, the Smeal College Trading Room (January 1, 2001 to the present)
Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration (July 1, 1987 to the present).

Associate Professor of Finance, College of Business Administration, the Pennsylvania State University (July 1, 1984 to June 30, 1990).
Assistant Professor of Finance, College of Business Administration, the Pennsylvania State University (September, 1979 to June 30, 1984).

Education

Doctor of Philosophy in Business Administration, the University of Iowa. Major field: Finance.
Master of Business Administration, the Pennsylvania State University.
Bachelor of Arts, the University of North Carolina. Major field: Economics.

Books

James A. Miles and J. Randall Woolridge, *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation), 1999
Patrick Cusatis, Gary Gray, and J. Randall Woolridge, *The StreetSmart Guide to Valuing a Stock* (2nd Edition, McGraw-Hill), 2003.
J. Randall Woolridge and Gary Gray, *The New Corporate Finance, Capital Markets, and Valuation: An Introductory Text* (Kendall Hunt, 2003).

Research

Dr. Woolridge has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.*

Exhibit JRW-1

Delmarva Power and Light Company
Recommended Cost of Capital

Panel A - Primary Cost of Capital Recommendation

Capital Source	Capitalization Ratios*	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.47%	4.03%	1.99%
Common Equity	50.53%	9.00%	4.55%
Total Capitalization	100.00%		6.54%

* Capital Structure Ratios are developed in Exhibit JRW-3.

Panel B - Alternative Cost of Capital Recommendation

Capital Source	Capitalization Ratios*	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.47%	4.03%	1.99%
Common Equity	50.53%	8.40%	4.24%
Total Capitalization	100.00%		6.24%

* Capital Structure Ratios are developed in Exhibit JRW-3.

Exhibit JRW-2

Delmarva Power and Light Company

Panel A
Electric Proxy Group

Company	Operating Revenue ($mil)	Percent Reg Elec Revenue	Percent Reg Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Issuer Credit Rating	Moody's Long Term Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	$1,498.6	71%	0%	$3,904.4	$3,993.8	BBB+	Baa1	3.34	MN, WI	59.2%	8.2%	1.85
Alliant Energy Corporation (NYSE-LNT)	$3,534.5	85%	13%	$12,462.4	$10,172.3	A-	Baa1	3.31	WI,IA,IL,MN	44.6%	11.4%	2.13
Ameren Corporation (NYSE-AEE)	$6,291.0	85%	15%	$22,810.0	$16,366.8	BBB+	Baa1	3.64	IL,MO	46.2%	10.9%	2.11
American Electric Power Co. (NYSE-AEP)	$16,195.7	88%	0%	$55,099.1	$37,379.9	A-	Baa1	2.99	10 States	42.7%	10.3%	1.96
Avangrid (NYSE-AVG)	$6,291.0	56%	23%	$22,810.0	$16,366.8	BBB+	Baa1	3.53	NY,CT,ME	70.8%	3.9%	1.06
Avista Corp (NYSE-AVA)	$1,396.9	64%	22%	$4,648.9	$2,881.1	BBB	Baa2	2.61	WA,OR,AK,ID	45.7%	7.80%	1.62
CMS Energy Corporation (NYSE-CMS)	$6,873.0	66%	28%	$18,126.0	$13,966.2	BBB+	Baa1	2.67	MI	28.9%	14.2%	2.91
Consolidated Edison, Inc. (NYSE-ED)	$12,337.0	70%	19%	$41,749.0	$25,673.3	BBB+	A3	3.03	NY,PA	44.8%	8.6%	1.52
Dominion Energy, Inc. (NYSE-D)	$13,366.0	70%	15%	$54,560.0	$51,000.1	BBB+	NA	3.10	VA,NC,SC,OH,WV,UT	38.5%	12.31%	2.31
Duke Energy Corporation (NYSE-DUK)	$24,521.0	90%	7%	$91,694.0	$63,736.1	A-	Baa1	2.47	NC,OH,FL,SC,KY	43.1%	6.2%	1.45
Edison International (NYSE-EIX)	$12,657.0	100%	0%	$41,348.0	$18,107.4	BBB	Baa3	(0.48)	CA	45.1%	-2.4%	1.43
Entergy Corporation (NYSE-ETR)	$11,009.5	85%	1%	$31,974.4	$16,448.0	BBB+	Baa2	0.69	LA,AR,MS,TX	32.8%	10.2%	1.86
Evergy (NYSE:EVRG)	$4,275.9	100%	0%	$18,782.5	$14,840.0	A-	Baa1	3.11	KS,MO	54.2%	7.9%	1.49
Eversource Energy (NYSE-ES)	$8,448.2	79%	10%	$25,610.4	$21,470.9	A-	Baa1	3.67	CT,NH,MA	46.7%	9.2%	1.87
Exelon Corporation (NYSE-EXC)	$11,009.5	56%	5%	$31,974.4	$46,448.0	BBB+	Baa2	2.44	PA,NJ,IL,MD,DCDE	47.8%	6.4%	1.40
FirstEnergy Corporation (NYSE-FE)	$11,261.0	91%	0%	$29,911.0	$18,851.1	BBB	Baa3	2.17	OH,PA,NY,NJ,WV,MD	25.8%	25.1%	2.77
Hawaiian Electric Industries (NYSE-HE)	$2,860.8	89%	0%	$4,830.1	$4,060.1	BBB-	NA	3.87	HI	51.2%	9.6%	1.88
IDACORP, Inc. (NYSE-IDA)	$1,370.8	100%	0%	$4,395.7	$8,562.5	BBB	Baa1	3.85	ID	56.4%	9.8%	3.60
MGE Energy, Inc. (NYSE-MGEE)	$559.8	72%	28%	$1,509.4	$2,303.7	AA-	Aa2	7.69	WI	61.5%	10.6%	2.82
NextEra Energy, Inc. (NYSE-NEE)	$16,727.0	71%	0%	$70,334.0	$83,224.6	A-	Baa1	5.87	FL	49.8%	17.3%	2.22
NorthWestern Corporation (NYSE-NWE)	$1,192.0	77%	23%	$4,521.3	$2,991.2	BBB	NA	2.94	MT,SD,NE	47.8%	10.5%	1.54
OGE Energy Corp. (NYSE-OGE)	$2,270.3	100%	0%	$8,643.8	$7,899.1	BBB+	Baa1	4.19	OK,AR	56.0%	10.8%	1.97
Pinnacle West Capital Corp. (NYSE-PNW)	$3,691.2	95%	0%	$14,029.6	$16,260.8	A-	A3	4.04	AZ	50.6%	10.1%	3.04
Portland General Electric Company (NYSE-POR)	$1,991.0	100%	0%	$6,887.0	$4,287.2	BBB+	A3	2.85	OR	50.3%	8.6%	1.71
PNM Resources, Inc. (NYSE-PNM)	$1,436.6	100%	0%	$5,234.6	$3,360.4	BBB+	Baa3	1.73	NM,TX	37.6%	5.8%	1.92
PPL Corporation (NYSE-PPL)	$7,785.0	94%	4%	$34,458.0	$20,457.2	A-	Baa2	3.37	PA,KY	34.6%	16.3%	1.75
Sempra Energy (NYSE-SRE)	$1,991.0	56%	44%	$6,887.0	$31,467.5	BBB+	Baa1	2.02	CA,TX	43.1%	6.5%	1.63
Southern Company (NYSE-SO)	$23,495.0	65%	14%	$80,797.0	$48,493.6	A-	Baa2	2.49	GA,FL,NJ,IL,VA,TN,MS	38.3%	8.4%	1.67
WEC Energy Group (NYSE-WEC)	$7,679.5	58%	42%	$22,000.9	$22,541.0	A-	Baa1	3.76	WI,IL,MN,MI	45.3%	3.3%	2.30
Xcel Energy Inc. (NYSE-XEL)	$11,537.0	84%	15%	$36,944.0	$25,972.7	A-	Baa1	3.21	MN,WI,ND,SD,MI	41.5%	10.7%	2.13
Mean	$7,851.8	81%	11%	$26,964.6	$21,986.1	BBB+	Baa1	3.14		46.0%	9.6%	2.00
Median	$6,582.0	85%	6%	$22,405.5	$16,407.4	BBB+	Baa1	3.10		45.5%	9.7%	1.87

Data Source: Company 2018 SEC 10-K filings; *Value Line Investment Survey* , 2019.

Panel B
Hevert Proxy Group

Company	Operating Revenue ($mil)	Percent Reg Elec Revenue	Percent Reg Gas Revenue	Net Plant ($mil)	Market Cap ($mil)	S&P Issuer Credit Rating	Moody's Long Term Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio	Return on Equity	Market to Book Ratio
ALLETE, Inc. (NYSE-ALE)	$1,498.6	71%	0%	$3,904.4	$3,993.8	BBB+	Baa1	3.34	MN, WI	59.2%	8.2%	1.85
Alliant Energy Corporation (NYSE-LNT)	$3,534.5	85%	13%	$12,462.4	$10,172.3	A-	Baa1	3.31	WI,IA,IL,MN	44.6%	11.4%	2.13
Ameren Corporation (NYSE-AEE)	$6,291.0	85%	15%	$22,810.0	$16,366.8	BBB+	Baa1	3.64	IL,MO	46.2%	10.9%	2.11
American Electric Power Co. (NYSE-AEP)	$16,195.7	88%	0%	$55,099.1	$37,379.9	A-	NA	2.99	10 States	42.7%	10.3%	1.96
Avangrid (NYSE-AVG)	$6,291.0	56%	23%	$22,810.0	$16,366.8	BBB+	Baa1	3.53	NY,CT,ME	70.8%	3.9%	1.06
Avista Corp (NYSE-AVA)	$1,396.9	64%	22%	$4,648.9	$2,881.1	BBB	Baa2	2.61	WA,OR,AK,ID	45.7%	7.80%	1.62
Centerpoint Energy (NYSE-CNP)	$10,589.0	31%	28%	$14,044.0	$14,219.0	BBB+	Baa2	2.42	TX,MN,AR,LA,OK,IN,OH	44.7%	5.8%	1.76
Consolidated Edison, Inc. (NYSE-ED)	$12,337.0	70%	19%	$41,749.0	$25,673.3	BBB+	A3	3.03	NY,PA	44.8%	8.6%	1.52
CMS Energy Corporation (NYSE-CMS)	$6,873.0	66%	28%	$18,126.0	$13,966.2	BBB+	Baa1	2.67	MI	28.9%	14.2%	2.91
Duke Energy Corporation (NYSE-DUK)	$24,521.0	90%	7%	$91,694.0	$63,736.1	A-	Baa1	2.47	NC,OH,FL,SC,KY	43.1%	6.2%	1.45
DTE Energy Company (NYSE-DTE)	$14,212.0	37%	39%	$21,650.0	$20,066.4	BBB+	Baa1	3.15	MI	42.9%	10.8%	1.87
Evergy (NYSE:EVRG)	$4,275.9	100%	0%	$18,782.5	$14,840.0	A-	Baa1	3.11	KS,MO	54.2%	7.9%	1.49
Eversource Energy (NYSE-ES)	$8,448.2	79%	10%	$25,610.4	$21,470.9	A-	Baa1	3.67	CT,NH,MA	46.7%	9.2%	1.87
Hawaiian Electric Industries (NYSE-HE)	$2,860.8	89%	0%	$4,830.1	$4,060.1	BBB-	NA	3.87	HI	51.2%	9.6%	1.88
NextEra Energy, Inc. (NYSE-NEE)	$16,727.0	71%	0%	$70,334.0	$83,224.6	A-	Baa1	5.87	FL	49.8%	17.3%	2.22
NorthWestern Corporation (NYSE-NWE)	$1,192.0	77%	23%	$4,521.3	$2,991.2	BBB	NA	2.94	MT,SD,NE	47.8%	10.5%	1.54
OGE Energy Corp. (NYSE-OGE)	$2,270.3	100%	0%	$8,643.8	$7,899.1	BBB+	NA	4.19	OK,AR	56.0%	10.8%	1.97
Otter Tail Corporation (NDQ-OTTR)	$916.4	49%	0%	$1,581.1	$1,975.3	BBB	Baa2	4.19	OK,AR	54.5%	11.6%	2.71
Pinnacle West Capital Corp. (NYSE-PNW)	$3,691.2	95%	0%	$14,029.6	$16,260.8	A-	A3	4.04	AZ	50.6%	10.1%	3.04
Portland General Electric Company (NYSE-POR)	$1,991.0	100%	0%	$6,887.0	$4,287.2	BBB+	A3	2.85	OR	50.3%	8.6%	1.71
PNM Resources, Inc. (NYSE-PNM)	$1,436.6	100%	0%	$5,234.6	$3,360.4	BBB+	Baa3	1.73	NM,TX	37.6%	5.8%	1.92
Southern Company (NYSE-SO)	$23,495.0	65%	14%	$80,797.0	$48,493.6	A-	Baa2	2.49	GA,FL,NJ,IL,VA,TN,MS	38.3%	8.4%	1.67
WEC Energy Group (NYSE-WEC)	$7,679.5	58%	42%	$22,000.9	$22,541.0	A-	Baa1	3.76	WI,IL,MN,MI	45.3%	3.3%	2.30
Xcel Energy Inc. (NYSE-XEL)	$11,537.0	84%	15%	$36,944.0	$25,972.7	A-	Baa1	3.21	MN,WI,ND,SD,MI	41.5%	10.7%	2.13
Mean	$7,927.5	75%	12%	$25,383.1	$20,091.6	BBB+	Baa1	3.30		47.4%	9.2%	1.95
Median	$6,291.0	78%	11%	$18,454.3	$15,550.4	BBB+	Baa1	3.18		46.0%	9.4%	1.88

Data Source: Company 2018 SEC 10-K filings; *Value Line Investment Survey* , 2019.

Exhibit JRW-2

Delmarva Power and Light Company

***Value Line* Risk Metrics**

Panel A
Electric Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.65	A	2	85	95
Alliant Energy Corporation (NYSE-LNT)	0.60	A	2	90	95
Ameren Corporation (NYSE-AEE)	0.55	A	2	85	95
American Electric Power Co. (NYSE-AEP)	0.55	A+	1	85	100
Avangrid (NYSE-AVG)	0.40	B++	2	NMF	95
Avista Corp (NYSE-AVA)	0.60	A	2	65	90
CMS Energy Corporation (NYSE-CMS)	0.50	B++	2	85	100
Consolidated Edison, Inc. (NYSE-ED)	0.45	A+	1	100	100
Dominion Energy Inc. (NYSE-D)	0.55	B++	2	60	100
Duke Energy Corporation (NYSE-DUK)	0.50	A	2	90	100
Edison International (NYSE-EIX)	0.55	B+	3	10	85
Entergy Corporation (NYSE-ETR)	0.60	B++	2	60	95
Evergy (NYSE:EVRG)	NMF	B++	2	NMF	NMF
Eversource Energy (NYSE-ES)	0.55	A	1	95	100
Exelon Corporation (NYSE-EXC)	0.65	B++	2	60	95
FirstEnergy Corporation (NYSE-FE)	0.65	B++	2	40	90
Hawaiian Electric Industries (NYSE-HE)	0.55	A	2	60	100
IDACORP, Inc. (NYSE-IDA)	0.55	A	2	95	100
MGE Energy, Inc. (NYSE-MGEE)	0.55	A	1	95	85
NextEra Energy, Inc. (NYSE-NEE)	0.55	A+	1	70	100
NorthWestern Corporation (NYSE-NWE)	0.60	B++	2	85	100
OGE Energy Corp. (NYSE-OGE)	0.75	A	2	80	95
Pinnacle West Capital Corp. (NYSE-PNW)	0.50	A+	1	95	100
PNM Resources, Inc. (NYSE-PNM)	0.60	B+	3	75	85
Portland General Electric Company (NYSE-POR)	0.55	B++	2	85	95
PPL Corporation (NYSE-PPL)	0.70	B++	2	70	95
Sempra Energy (NYSE-SRE)	0.70	A	2	70	95
Southern Company (NYSE-SO)	0.50	A	2	85	100
WEC Energy Group (NYSE-WEC)	0.50	A+	1	90	95
Xcel Energy Inc. (NYSE-XEL)	0.50	A+	1	100	100
Mean	0.57	A	1.8	77	96

Data Source: *Value Line Investment Survey* , 2019.

Panel B
Hevert Proxy Group

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
ALLETE, Inc. (NYSE-ALE)	0.65	A	2	85	95
Alliant Energy Corporation (NYSE-LNT)	0.60	A	2	90	95
Ameren Corporation (NYSE-AEE)	0.55	A	2	85	95
American Electric Power Co. (NYSE-AEP)	0.55	A+	1	85	100
Avangrid (NYSE-AVG)	0.40	B++	2	NMF	95
Avista Corp (NYSE-AVA)	0.60	A	2	65	90
Centerpoint Energy (NYSE-CNP)	0.80	B+	3	50	95
Consolidated Edison, Inc. (NYSE-ED)	0.45	A+	1	100	100
CMS Energy Corporation (NYSE-CMS)	0.50	B++	2	85	100
Duke Energy Corporation (NYSE-DUK)	0.50	A	2	90	100
DTE Energy Company (NYSE-DTE)	0.55	B++	2	85	100
Evergy (NYSE:EVRG)	NMF	B++	2	NMF	NMF
Eversource Energy (NYSE-ES)	0.55	A	1	95	100
Hawaiian Electric Industries (NYSE-HE)	0.55	A	2	60	100
NextEra Energy, Inc. (NYSE-NEE)	0.55	A+	1	70	100
NorthWestern Corporation (NYSE-NWE)	0.60	B++	2	85	100
OGE Energy Corp. (NYSE-OGE)	0.80	A	2	80	95
Otter Tail Corporation (NDQ-OTTR)	0.70	A	2	65	90
Pinnacle West Capital Corp. (NYSE-PNW)	0.50	A+	1	95	100
Portland General Electric Company (NYSE-POR)	0.55	B++	2	85	95
PNM Resources, Inc. (NYSE-PNM)	0.60	B+	3	75	85
Southern Company (NYSE-SO)	0.50	A	2	85	100
WEC Energy Group (NYSE-WEC)	0.50	A+	1	90	95
Xcel Energy Inc. (NYSE-XEL)	0.50	A+	1	100	100
Mean	0.57	A	1.8	82	97

Data Source: *Value Line Investment Survey* , 2019.

Value Line Risk Metrics

Beta

A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''coefficient'' is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. Betas are adjusted for their long-term tendency to converge toward 1.00.

Financial Strength

A relative measure of the companies reviewed by *Value Line* . The relative ratings range from A++ (strongest) down to C (weakest).

Safety Rank

A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other *Value Line* indexes the Price Stability Index and the Financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit their purchases to equities ranked 1 (Highest) and 2 (Above Average) for Safety. .

Earnings Predictability

A measure of the reliability of an earnings forecast. Earnings Predictability is based upon the stability of year-to-year comparisons, with recent years being weighted more heavily than earlier ones. The most reliable forecasts tend to be those with the highest rating (100); the least reliable, the lowest (5). The earnings stability is derived from the standard deviation of percentage changes in quarterly earnings over an eight-year period. Special adjustments are made for comparisons around zero and from plus to minus.

Stock Price Stability

A measure of the stability of a stock's price. It includes sensitivity to the market (see Beta as well as the stock's inherent volatility. *Value Line's* Stability ratings range from 1 (highest) to 5 (lowest).

Source: *Value Line Investment Analyzer* .

Exhibit JRW-3

Delmarva Power and Light Company
Capital Structure Ratios and Debt Cost Rate

Panel A - DPL's Proposed Capital Structure and Debt Cost Rates

	Percent of Total	Cost
Long-Term Debt	49.47%	4.03%
Common Equity	50.53%	
Total Capital	100.00%	

Panel B - Delmarva Power & Light Company Capital Structure Ratios

Delmarva Power & Light Co.	Average
Short-Term Debt	5.2%
Long-Term Debt	45.6%
Common Equity	49.3%
Total Capital	100.0%

Delmarva Power & Light Co.	Average
Long-Term Debt	48.1%
Common Equity	51.9%
Total Capital	100.0%

Panel C- Exelon Capital Structure Ratios

Exelon Corporation	Average
Short-Term Debt	4.6%
Long-Term Debt	47.5%
Common Equity	47.9%
Total Capital	100.0%

Exelon Corporation	Average
Long-Term Debt	49.8%
Common Equity	50.2%
Total Capital	100.00%

Delmarva Power and Light Company and Exelon Corporation Capital Structure Ratios
Quarterly - 2017-2019

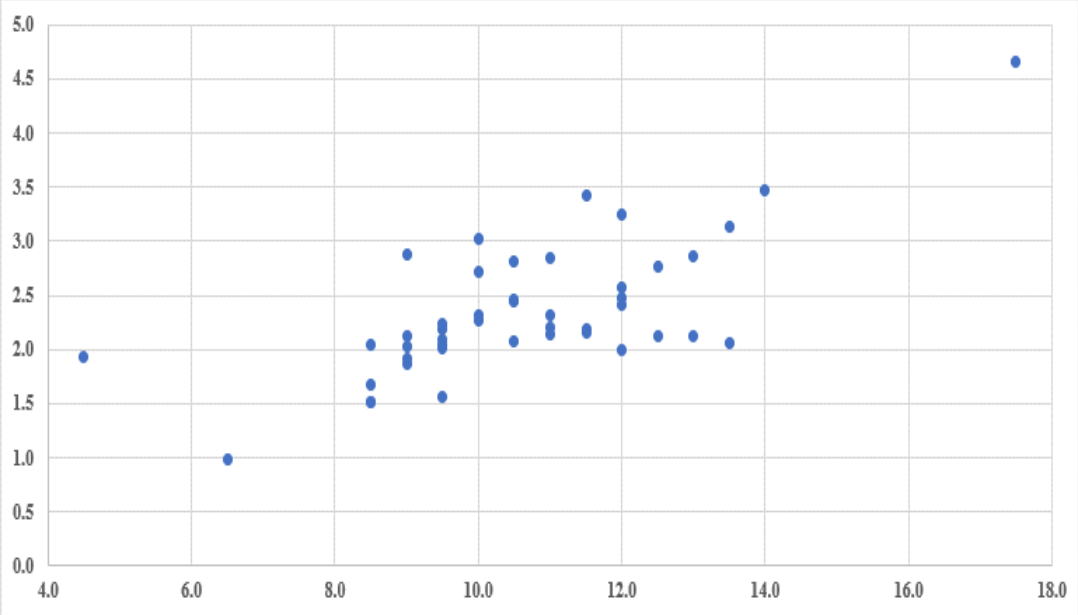
	2017 FQ4	2018 FQ1	2018 FQ2	2018 FQ3	2018 FQ4	2019 FQ1	2019 FQ2	2019 FQ3	
Delmarva Power & Light Co.	**12/31/2017**	**3/31/2018**	**6/30/2018**	**9/30/2018**	**12/31/2018**	**3/31/2019**	**6/30/2019**	**9/30/2019**	**Average**
Short-Term Debt	10.49%	10.22%	2.64%	2.62%	3.03%	3.18%	4.22%	4.82%	5.2%
Long-Term Debt	42.69%	42.90%	47.23%	46.99%	46.72%	46.47%	45.96%	45.70%	45.6%
Common Equity	46.83%	46.88%	50.13%	50.38%	50.25%	50.35%	49.82%	49.48%	49.3%
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.0%
	2017 FQ4	**2018 FQ1**	**2018 FQ2**	**2018 FQ3**	**2018 FQ4**	**2019 FQ1**	**2019 FQ2**	**2019 FQ3**	
Delmarva Power & Light Co.	**12/31/2017**	**3/31/2018**	**6/30/2018**	**9/30/2018**	**12/31/2018**	**3/31/2019**	**6/30/2019**	**9/30/2019**	**Average**
Long-Term Debt	47.69%	47.78%	48.51%	48.26%	48.18%	48.00%	47.98%	48.02%	48.1%
Common Equity	52.31%	52.22%	51.49%	51.74%	51.82%	52.00%	52.02%	51.98%	51.9%
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.0%

	2017 FQ4	2018 FQ1	2018 FQ2	2018 FQ3	2018 FQ4	2019 FQ1	2019 FQ2	2019 FQ3	
Exelon Corporation	**12/31/2017**	**3/31/2018**	**6/30/2018**	**9/30/2018**	**12/31/2018**	**3/31/2019**	**6/30/2019**	**9/30/2019**	**Average**
Short-Term Debt	4.48%	4.18%	3.52%	2.31%	2.95%	5.34%	6.84%	7.35%	4.6%
Long-Term Debt	47.75%	48.16%	48.49%	49.66%	49.24%	46.80%	45.16%	44.72%	47.5%
Common Equity	47.77%	47.66%	47.99%	48.03%	47.81%	47.86%	47.99%	47.93%	47.9%
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.0%
	2017 FQ4	**2018 FQ1**	**2018 FQ2**	**2018 FQ3**	**2018 FQ4**	**2019 FQ1**	**2019 FQ2**	**2019 FQ3**	
Exelon Corporation	**12/31/2017**	**3/31/2018**	**6/30/2018**	**9/30/2018**	**12/31/2018**	**3/31/2019**	**6/30/2019**	**9/30/2019**	**Average**
Long-Term Debt	49.99%	50.26%	50.26%	50.83%	50.74%	49.44%	48.48%	48.27%	49.8%
Common Equity	50.01%	49.74%	49.74%	49.17%	49.26%	50.56%	51.52%	51.73%	50.2%
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.0%

Source: S&P Global Market Intelligence

Exhibit JRW-4
Electric Utilities and Gas Distribution Companies

Market-to-Book



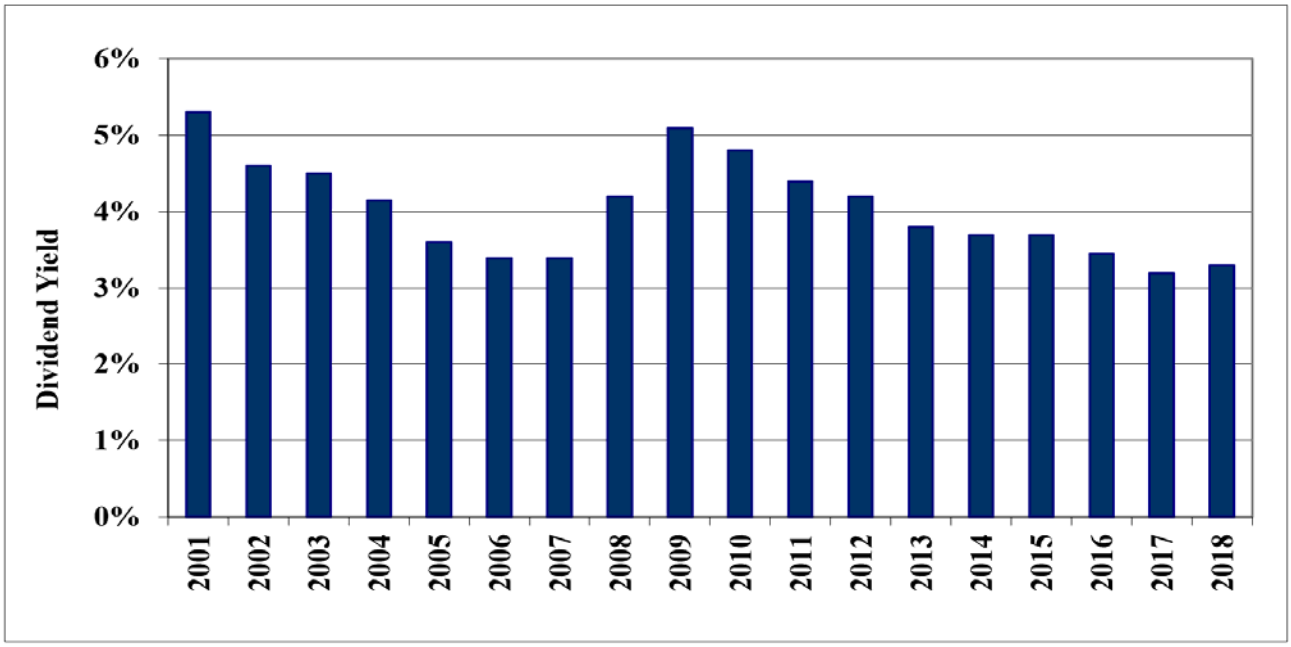
Expected Return on Equity
R-Square = .50, N=43

Exhibit JRW-5
Long-Term 'A' Rated Public Utility Bonds

Data Source: Mergent Bond Record

Exhibit JRW-5

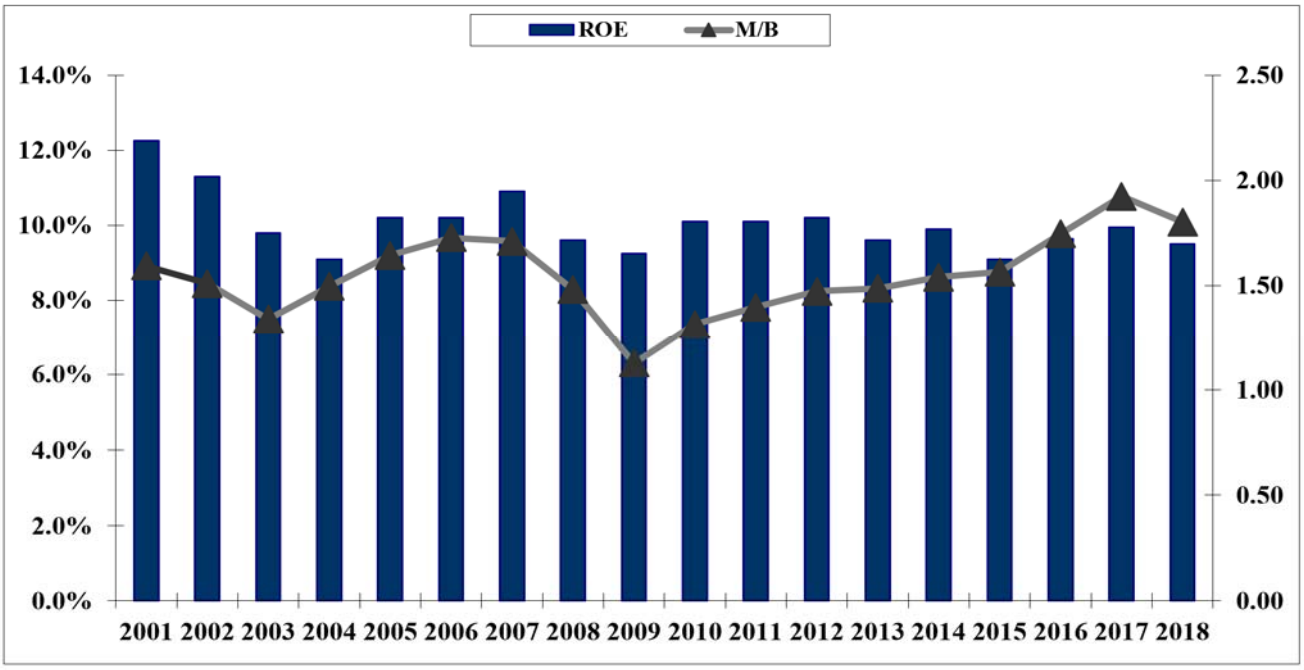
Electric Utility Average Dividend Yield



Data Source: ***Value Line Investment Survey.***

Exhibit JRW-5

Electric Utility Average Return on Equity and Market-to-Book Ratios



Data Source: *Value Line Investment Survey.*

Exhibit JRW-5
Industry Average Betas*
Value Line Investment Survey* Betas*
20-Jan-20

Rank	Industry	Beta	Rank	Industry	Beta	Rank	Industry	Beta
1	Petroleum (Producing)	1.81	34	Precision Instrument	1.18	67	Cable TV	1.05
2	Natural Gas (Div.)	1.77	35	Apparel	1.18	68	Funeral Services	1.04
3	Oilfield Svcs/Equip.	1.74	36	Paper/Forest Products	1.18	69	IT Services	1.04
4	Metals & Mining (Div.)	1.58	37	Advertising	1.16	70	Foreign Electronics	1.02
5	Steel	1.58	38	Homebuilding	1.16	71	Retail (Softlines)	1.02
6	Maritime	1.45	39	Retail Building Supply	1.16	72	Pharmacy Services	1.02
7	Metal Fabricating	1.44	40	Bank (Midwest)	1.16	73	Med Supp Non-Invasive	1.00
8	Oil/Gas Distribution	1.43	41	Internet	1.15	74	Healthcare Information	1.00
9	Chemical (Specialty)	1.39	42	Newspaper	1.15	75	Information Services	0.98
10	Petroleum (Integrated)	1.36	43	Entertainment	1.15	76	Retail Store	0.98
11	Chemical (Basic)	1.34	44	Computer Software	1.15	77	Med Supp Invasive	0.98
12	Chemical (Diversified)	1.33	45	Public/Private Equity	1.14	78	Educational Services	0.96
13	Engineering & Const	1.32	46	Drug	1.14	79	Investment Co.(Foreign)	0.94
14	Heavy Truck & Equip	1.31	47	Human Resources	1.14	80	Environmental	0.94
15	Hotel/Gaming	1.31	48	Telecom. Equipment	1.14	81	Thrift	0.93
16	Pipeline MLPs	1.29	49	Shoe	1.14	82	Reinsurance	0.93
17	Auto Parts	1.29	50	Power	1.14	83	Insurance (Prop/Cas.)	0.89
18	Office Equip/Supplies	1.29	51	Retail Automotive	1.14	84	Restaurant	0.88
19	Building Materials	1.28	52	Diversified Co.	1.13	85	Household Products	0.87
20	Electronics	1.28	53	Financial Svcs. (Div.)	1.13	86	Investment Co.	0.86
21	Computers/Peripherals	1.27	54	Packaging & Container	1.13	87	Beverage	0.84
22	Railroad	1.23	55	Bank	1.13	88	R.E.I.T.	0.84
23	Semiconductor	1.23	56	Wireless Networking	1.13	89	Tobacco	0.83
24	Semiconductor Equip	1.23	57	Furn/Home Furnishings	1.12	90	Food Processing	0.80
25	Machinery	1.22	58	Publishing	1.09	91	Retail/Wholesale Food	0.80
26	Electrical Equipment	1.21	59	Telecom. Utility	1.09	92	Water Utility	0.68
27	Air Transport	1.21	60	Medical Services	1.09	93	Natural Gas Utility	0.67
28	E-Commerce	1.20	61	Entertainment Tech	1.08	94	Precious Metals	0.64
29	Insurance (Life)	1.20	62	Industrial Services	1.07	95	Electric Util. (Central)	0.61
30	Automotive	1.20	63	Telecom. Services	1.06	96	Electric Utility (West)	0.59
31	Biotechnology	1.19	64	Toiletries/Cosmetics	1.06	97	Electric Utility (East)	0.56
32	Retail (Hardlines)	1.19	65	Recreation	1.06			
33	Trucking	1.19	66	Aerospace/Defense	1.05		Mean	1.12

* Industry averages for 97 industries using *Value Line*'s database of 1,706 companies - Updated 1-20-20.

** *Value Line* computes betas using monthly returns regressed against the New York Stock Exchange Index for five years. These betas are then adjusted as follows: *VL* Beta = [{(2/3) * Regressed Beta} + {(1/3) * (1.0)}] to account to tendency for Betas to regress toward average of 1.0. See M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

Exhibit JRW-6
DCF Model

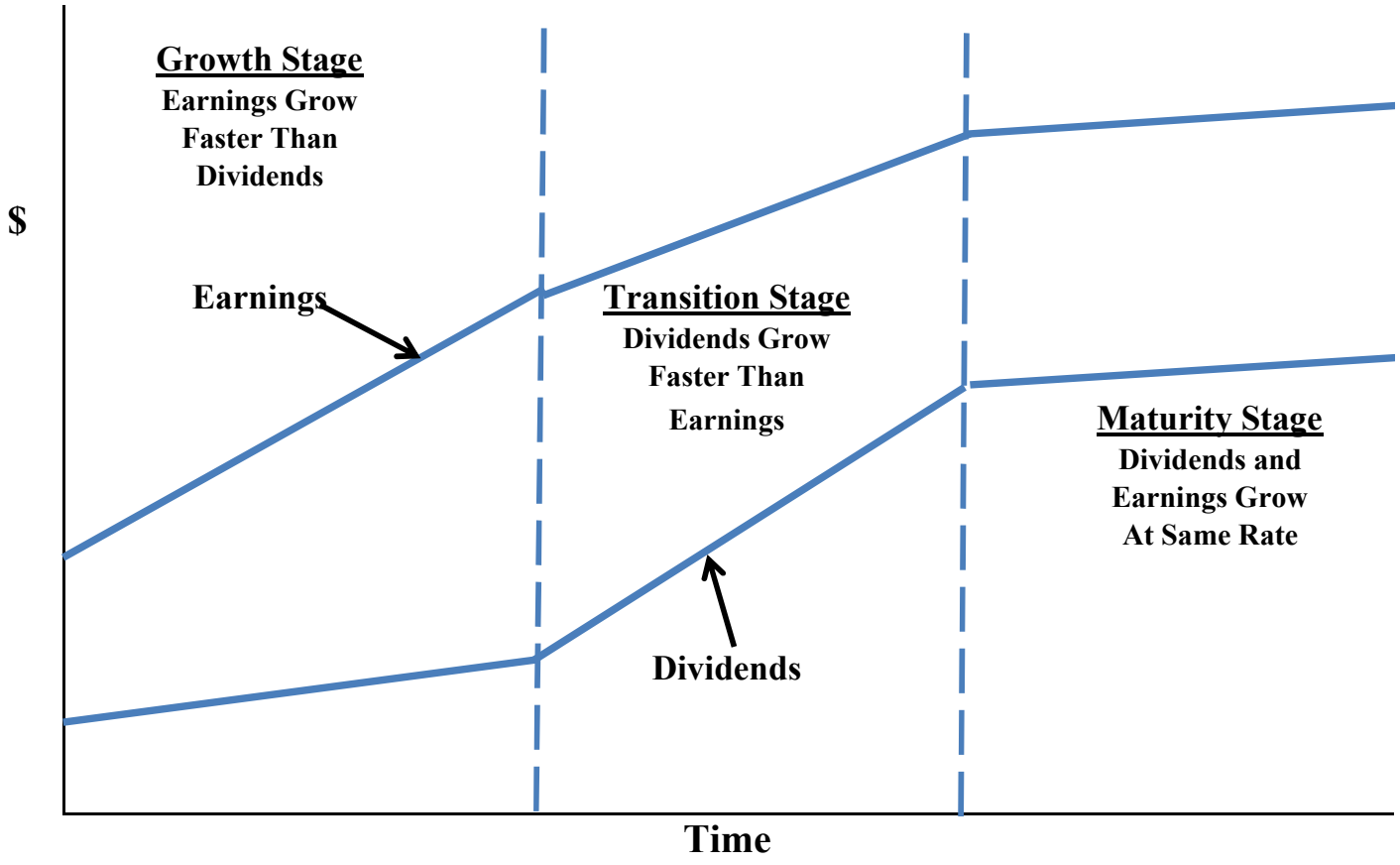


Exhibit JRW-7

Delmarva Power and Light Company
Discounted Cash Flow Analysis

Panel A
Electric Proxy Group

Dividend Yield*	3.15%
Adjustment Factor	1.025
Adjusted Dividend Yield	3.23%
Growth Rate**	5.00%
Equity Cost Rate	8.25%

* Page 2 of Exhibit JRW-7

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-7

Panel B
Hevert Proxy Group

Dividend Yield*	3.00%
Adjustment Factor	1.0265
Adjusted Dividend Yield	3.08%
Growth Rate**	5.30%
Equity Cost Rate	8.40%

* Page 2 of Exhibit JRW-7

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-7

Exhibit JRW-7

Delmarva Power and Light Company
Monthly Dividend Yields

Panel A
Electric Proxy Group*

Company	Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	$2.35	2.9%	2.8%	2.8%
Alliant Energy Corporation (NYSE-LNT)	$1.42	2.6%	2.7%	2.8%
Ameren Corporation (NYSE-AEE)	$1.98	2.6%	2.6%	2.6%
American Electric Power Co. (NYSE-AEP)	$2.80	3.0%	3.0%	3.1%
Avangrid (NYSE-AVG)	$1.76	3.5%	3.5%	3.5%
Avista Corporation (NYSE-AVA)	$1.55	3.3%	3.3%	3.4%
CMS Energy Corporation (NYSE-CMS)	$1.53	2.5%	2.5%	2.5%
Consolidated Edison, Inc. (NYSE-ED)	$2.96	3.4%	3.3%	3.3%
Dominion Resources, Inc. (NYSE-D)	$3.67	4.5%	4.5%	4.7%
Duke Energy Corporation (NYSE-DUK)	$3.78	4.2%	4.1%	4.2%
Edison International (NYSE-EIX)	$2.55	3.5%	3.6%	3.7%
Entergy Corporation (NYSE-ETR)	$3.72	3.1%	3.2%	3.4%
Evergy, Inc. (NYSE-EVRG)	$2.02	3.2%	3.2%	3.2%
Eversource Energy (NYSE-ES)	$2.14	2.6%	2.6%	2.7%
Exelon Corp. (NYSE-EXC)	$1.45	3.2%	3.2%	3.1%
FirstEnergy Corporation (ASE-FE)	$1.56	3.2%	3.3%	3.4%
Hawaiian Electric Inductries (NYSE-HE)	$1.28	2.8%	2.9%	2.9%
IDACORP, Inc. (NYSE-IDA)	$2.68	2.5%	2.5%	2.5%
MGE Energy, Inc. (NYSE-MGEE)	$1.41	1.8%	1.8%	1.9%
NextEra Energy Inc. (NYSE-NEE)	$5.00	2.1%	2.1%	2.3%
NorthWestern Corporation (NYSE-NWE)	$2.30	3.2%	3.2%	3.2%
OGE Energy Corp. (NYSE-OGE)	$1.55	3.6%	3.6%	3.6%
Pinnacle West Capital Corp. (NYSE-PNW)	$3.13	3.6%	3.4%	3.4%
Portland General Electric Company (NYSE-POR)	$1.54	2.8%	2.8%	2.8%
PNM Resources, Inc. (NYSE-PNM)	$1.23	2.5%	2.4%	2.5%
PPL Corporation (NYSE-PPL)	$1.65	4.7%	5.0%	5.2%
SEMPRA Energy (NYSE-SRE)	$3.87	2.6%	2.6%	2.7%
Southern Company (NYSE-SO)	$2.48	4.0%	4.0%	4.2%
WEC Energy Group (NYSE-WEC)	$2.53	2.8%	2.8%	2.9%
Xcel Energy Inc. (NYSE-XEL)	$1.62	2.6%	2.6%	2.6%
Mean		3.1%	3.1%	3.2%
Median		3.1%	3.1%	3.1%

Data Sources: http://quote.yahoo.com, January, 2020.

Panel B
Hevert Proxy Group

Company	Annual Dividend	Dividend Yield 30 Day	Dividend Yield 90 Day	Dividend Yield 180 Day
ALLETE, Inc. (NYSE-ALE)	$2.35	2.9%	2.8%	2.8%
Alliant Energy Corporation (NYSE-LNT)	$1.42	2.6%	2.7%	2.8%
Ameren Corporation (NYSE-AEE)	$1.98	2.6%	2.6%	2.6%
American Electric Power Co. (NYSE-AEP)	$2.80	3.0%	3.0%	3.1%
Avangrid (NYSE-AVG)	$1.76	3.5%	3.5%	3.5%
Avista Corporation (NYSE-AVA)	$1.55	3.3%	3.3%	3.4%
CenterPoint Energy (NYSE-CNP)	$1.15	4.4%	4.2%	4.1%
Consolidated Edison, Inc. (NYSE-ED)	$2.96	3.4%	3.3%	3.3%
CMS Energy Corporation (NYSE-CMS)	$1.53	2.5%	2.5%	2.5%
Duke Energy Corporation (NYSE-DUK)	$3.78	4.2%	4.1%	4.2%
DTE Energy Company (NYSE-DTE)	$4.05	3.2%	3.2%	3.2%
Evergy, Inc. (NYSE-EVRG)	$2.02	3.2%	3.2%	3.2%
Eversource Energy (NYSE-ES)	$2.14	2.6%	2.6%	2.7%
Hawaiian Electric Inductries (NYSE-HE)	$1.28	2.8%	2.9%	2.9%
NextEra Energy Inc. (NYSE-NEE)	$5.00	2.1%	2.1%	2.3%
NorthWestern Corporation (NYSE-NWE)	$2.30	3.2%	3.2%	3.2%
OGE Energy Corp. (NYSE-OGE)	$1.55	3.6%	3.6%	3.6%
Otter Tail Corporation (NDQ-OTTR)	$1.40	2.8%	2.7%	2.7%
Pinnacle West Capital Corp. (NYSE-PNW)	$3.13	3.6%	3.4%	3.4%
Portland General Electric Company (NYSE-POR)	$1.54	2.8%	2.8%	2.8%
PNM Resources, Inc. (NYSE-PNM)	$1.23	2.5%	2.4%	2.5%
Southern Company (NYSE-SO)	$2.48	4.0%	4.0%	4.2%
WEC Energy Group (NYSE-WEC)	$2.53	2.8%	2.8%	2.9%
Xcel Energy Inc. (NYSE-XEL)	$1.62	2.6%	2.6%	2.6%
Mean		3.1%	3.1%	3.1%
Median		3.0%	2.9%	3.0%

Data Sources: http://quote.yahoo.com, January, 2020.

Exhibit JRW-7

Delmarva Power and Light Company
DCF Equity Cost Growth Rate Measures
***Value Line* Historic Growth Rates**

Panel A
Electric Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)	1.0	3.0	5.5	4.0	3.0	5.5
Alliant Energy Corporation (NYSE-LNT)	4.5	7.5	4.0	4.5	7.0	4.5
Ameren Corporation (NYSE-AEE)	0.5	-3.5	-0.5	4.5	2.5	0.5
American Electric Power Co. (NYSE-AEP)	3.0	4.5	4.0	5.0	5.0	3.5
Avangrid (NYSE-AVG)						
Avista Corp (NYSE-AVA)	5.5	8.5	4.0	5.0	4.5	4.5
CMS Energy Corporation (NYSE-CMS)	10.0	21.5	4.5	7.0	7.0	5.5
Consolidated Edison, Inc. (NYSE-ED)	2.5	2.0	4.0	2.0	2.5	4.0
Dominion Energy Inc. (NYSE-D)	3.0	7.5	4.5	3.5	7.5	6.5
Duke Energy Corporation (NYSE-DUK)	2.5	7.0	1.0	0.5	3.0	1.5
Edison International (NYSE-EIX)	-3.5	6.5	3.0	-9.0	11.0	3.0
Entergy Corporation (NYSE-ETR)	0.5	3.0	1.0	-0.5	1.0	-2.5
Evergy (NYSE-EVRG)						
Eversource Energy (NYSE-ES)	8.0	9.5	6.5	7.0	8.0	5.0
Exelon Corporation (NYSE-EXC)	-5.5	-3.5	7.0	-3.5	-7.0	4.5
FirstEnergy Corporation (NYSE-FE)	-7.0	-2.5	-8.0	-2.5	-5.0	-17.5
Hawaiian Electric Industries (NYSE-HE)	5.0		3.0	4.0		3.5
IDACORP, Inc. (NYSE-IDA)	7.0	6.5	5.5	4.0	10.0	5.0
MGE Energy, Inc. (NYSE-MGEE)	4.5	3.0	5.5	3.5	4.0	6.0
Nextera Energy, Inc. (NYSE-NEE)	6.0	9.0	8.5	6.0	10.5	9.5
NorthWestern Corporation (NYSE-NWE)	8.5	5.0	5.5	7.0	7.0	8.0
OGE Energy Corp. (NYSE-OGE)	4.0	6.5	7.5	1.0	9.5	6.0
Pinnacle West Capital Corp. (NYSE-PNW)	4.5	2.5	2.5	5.0	3.0	4.5
PNM Resources, Inc. (NYSE-PNM)	7.0	2.5		6.0	11.0	1.0
Portland General Electric Company (NYSE-POR)	3.5	4.5	2.5	4.0	4.5	3.5
PPL Corporation (NYSE-PPL)		2.5	1.0	-0.5	2.0	-4.0
Sempra Energy (NYSE-SRE)	1.0	10.0	5.5	2.0	7.5	4.0
Southern Company (NYSE-SO)	3.0	3.5	4.0	2.5	3.5	3.0
WEC Energy Group (NYSE-WEC)	8.5	15.5	8.5	6.0	11.0	10.5
Xcel Energy Inc. (NYSE-XEL)	5.5	4.5	4.5	5.0	6.0	4.5
Mean	3.4	5.4	3.9	3.0	5.2	3.3
Median	4.0	4.5	4.0	4.0	5.0	4.5
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			4.3		

Panel B
Hevert Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
ALLETE, Inc. (NYSE-ALE)	1.0	3.0	5.5	4.0	3.0	5.5
Alliant Energy Corporation (NYSE-LNT)	4.5	7.5	4.0	4.5	7.0	4.5
Ameren Corporation (NYSE-AEE)	0.5	-3.5	-0.5	4.5	2.5	0.5
American Electric Power Co. (NYSE-AEP)	3.0	4.5	4.0	5.0	5.0	3.5
Avangrid (NYSE-AVG)						
Avista Corp (NYSE-AVA)	5.5	8.5	4.0	5.0	4.5	4.5
Centerpoint Energy (NYSE-CNP)	-1.5	5.5	6.5	-3.0	7.5	1.0
Consolidated Edison, Inc. (NYSE-ED)	2.5	2.0	4.0	2.0	2.5	4.0
CMS Energy Corporation (NYSE-CMS)	10.0	21.5	4.5	7.0	7.0	5.5
Duke Energy Corporation (NYSE-DUK)	2.5	7.0	1.0	0.5	3.0	1.5
DTE Energy Company (NYSE-DTE)	8.0	4.5	4.0	8.0	6.5	4.5
Evergy (NYSE-EVRG)						
Eversource Energy (NYSE-ES)	8.0	9.5	6.5	7.0	8.0	5.0
Hawaiian Electric Industries (NYSE-HE)	5.0		3.0	4.0		3.5
Nextera Energy, Inc. (NYSE-NEE)	6.0	9.0	8.5	6.0	10.5	9.5
NorthWestern Corporation (NYSE-NWE)	8.5	5.0	5.5	7.0	7.0	8.0
OGE Energy Corp. (NYSE-OGE)	4.0	6.5	7.5	1.0	9.5	6.0
Otter Tail Corporation (NDQ-OTTR)	2.0	1.0		14.0	1.5	3.5
Pinnacle West Capital Corp. (NYSE-PNW)	4.5	2.5	2.5	5.0	3.0	4.5
Portland General Electric Company (NYSE-POR)	3.5	4.5	2.5	4.0	4.5	3.5
PNM Resources, Inc. (NYSE-PNM)	7.0	2.5		6.0	11.0	1.0
Southern Company (NYSE-SO)	3.0	3.5	4.0	2.5	3.5	3.0
WEC Energy Group (NYSE-WEC)	8.5	15.5	8.5	6.0	11.0	10.5
Xcel Energy Inc. (NYSE-XEL)	5.5	4.5	4.5	5.0	6.0	4.5
Mean	4.6	5.9	4.5	4.8	5.9	4.4
Median	4.5	4.5	4.0	5.0	6.0	4.5
Data Source: *Value Line Investment Survey.*	Average of Median Figures =			4.8		

Exhibit JRW-7

Delmarva Power and Light Company
DCF Equity Cost Growth Rate Measures
***Value Line* Projected Growth Rates**

Panel A
Electric Proxy Group

Company	*Value Line* Projected Growth Est'd. '16-'18 to '22-'24			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	5.0	5.0	3.0	9.0%	34.0%	3.1%
Alliant Energy Corporation (NYSE-LNT)	6.5	5.5	7.5	10.0%	38.0%	3.8%
Ameren Corporation (NYSE-AEE)	6.5	4.5	5.5	10.5%	44.0%	4.6%
American Electric Power Co. (NYSE-AEP)	4.0	5.5	4.5	10.5%	32.0%	3.4%
Avangrid (NYSE-AVG)	8.5	3.0	1.0	5.5%	30.0%	1.7%
Avista Corp (NYSE-AVA)	3.5	3.5	3.5	8.0%	32.0%	2.6%
CMS Energy Corporation (NYSE-CMS)	7.0	7.0	7.0	13.5%	38.0%	5.1%
Consolidated Edison, Inc. (NYSE-ED)	3.0	3.5	3.5	8.5%	33.0%	2.8%
Dominion Energy Inc. (NYSE-D)	6.5	5.0	7.0	13.0%	21.0%	2.7%
Duke Energy Corporation (NYSE-DUK)	6.0	2.5	2.5	8.5%	30.0%	2.6%
Edison International (NYSE-EIX)	NMF	4.5	5.5	11.0%	41.0%	4.5%
Entergy Corporation (NYSE-ETR)	2.0	3.5	4.5	11.5%	36.0%	4.1%
Evergy (NYSE-EVRG)	NMF	NMF	NMF	8.5%	35.0%	3.0%
Eversource Energy (NYSE-ES)	5.5	5.5	4.5	9.0%	38.0%	3.4%
Exelon Corporation (NYSE-EXC)	9.0	5.5	5.0	9.0%	52.0%	4.7%
FirstEnergy Corporation (NYSE-FE)	6.5	3.5	7.0	16.0%	36.0%	5.8%
Hawaiian Electric Industries (NYSE-HE)	2.5	3.0	3.5	9.0%	32.0%	2.9%
IDACORP, Inc. (NYSE-IDA)	3.5	7.0	4.0	9.5%	37.0%	3.5%
MGE Energy, Inc. (NYSE-MGEE)	6.0	5.0	5.0	10.5%	46.0%	4.8%
Nextera Energy, Inc. (NYSE-NEE)	10.5	10.0	7.5	12.5%	40.0%	5.0%
NorthWestern Corporation (NYSE-NWE)	2.0	4.5	3.5	9.0%	31.0%	2.8%
OGE Energy Corp. (NYSE-OGE)	6.5	6.5	4.0	11.5%	33.0%	3.8%
Pinnacle West Capital Corp. (NYSE-PNW)	4.0	6.0	3.5	10.0%	32.0%	3.2%
PNM Resources, Inc. (NYSE-PNM)	7.0	7.0	5.0	9.0%	42.0%	3.8%
Portland General Electric Company (NYSE-POR)	4.5	6.5	3.0	9.0%	34.0%	3.1%
PPL Corporation (NYSE-PPL)	1.5	2.0	5.5	13.0%	36.0%	4.7%
Sempra Energy (NYSE-SRE)	11.0	8.0	6.5	11.5%	42.0%	4.8%
Southern Company (NYSE-SO)	3.5	3.0	3.5	12.5%	27.0%	3.4%
WEC Energy Group (NYSE-WEC)	6.0	6.0	3.5	12.0%	33.0%	4.0%
Xcel Energy Inc. (NYSE-XEL)	5.5	6.0	5.5	10.5%	36.0%	3.8%
Mean	5.5	5.1	4.7	10.4%	35.7%	3.7%
Median	5.8	5.0	4.5	10.3%	35.5%	3.6%
Average of Median Figures =		5.1			Median =	3.6%

*** 'Est'd. '16-'17 to '22-'24' is the estimated growth rate from the base period 2016 to 2018 until the future period 2022 to 2024.**
Data Source: *Value Line Investment Survey.*

Panel B
Hevert Proxy Group

Company	*Value Line* Projected Growth Est'd. '16-'18 to '22-'24			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
ALLETE, Inc. (NYSE-ALE)	5.0	5.0	3.0	9.0%	34.0%	3.1%
Alliant Energy Corporation (NYSE-LNT)	6.5	5.5	7.5	10.0%	38.0%	3.8%
Ameren Corporation (NYSE-AEE)	6.5	4.5	5.5	10.5%	44.0%	4.6%
American Electric Power Co. (NYSE-AEP)	4.0	5.5	4.5	10.5%	32.0%	3.4%
Avangrid (NYSE-AVG)	8.5	3.0	1.0	5.5%	30.0%	1.7%
Avista Corp (NYSE-AVA)	3.5	3.5	3.5	8.0%	32.0%	2.6%
Centerpoint Energy (NYSE-CNP)	10.5	2.5	12.5	9.5%	33.0%	3.1%
Consolidated Edison, Inc. (NYSE-ED)	3.0	3.5	3.5	8.5%	33.0%	2.8%
CMS Energy Corporation (NYSE-CMS)	7.0	7.0	7.0	13.5%	38.0%	5.1%
Duke Energy Corporation (NYSE-DUK)	6.0	2.5	2.5	8.5%	30.0%	2.6%
DTE Energy Company (NYSE-DTE)	4.5	7.0	6.0	9.5%	33.0%	3.1%
Evergy (NYSE-EVRG)	NMF	NMF	NMF	8.5%	35.0%	3.0%
Eversource Energy (NYSE-ES)	5.5	5.5	4.5	9.0%	38.0%	3.4%
Hawaiian Electric Industries (NYSE-HE)	2.5	3.0	3.5	9.0%	32.0%	2.9%
Nextera Energy, Inc. (NYSE-NEE)	10.5	10.0	7.5	12.5%	40.0%	5.0%
NorthWestern Corporation (NYSE-NWE)	2.0	4.5	3.5	9.0%	31.0%	2.8%
OGE Energy Corp. (NYSE-OGE)	6.5	6.5	4.0	11.5%	33.0%	3.8%
Otter Tail Corporation (NDQ-OTTR)	5.0	4.0	4.5	11.0%	34.0%	3.7%
Pinnacle West Capital Corp. (NYSE-PNW)	4.0	6.0	3.5	10.0%	32.0%	3.2%
Portland General Electric Company (NYSE-POR)	4.5	6.5	3.0	9.0%	34.0%	3.1%
PNM Resources, Inc. (NYSE-PNM)	7.0	7.0	5.0	9.0%	42.0%	3.8%
Southern Company (NYSE-SO)	3.5	3.0	3.5	12.5%	27.0%	3.4%
WEC Energy Group (NYSE-WEC)	6.0	6.0	3.5	12.0%	33.0%	4.0%
Xcel Energy Inc. (NYSE-XEL)	5.5	6.0	5.5	10.5%	36.0%	3.8%
Mean	5.5	5.1	4.7	9.9%	34.3%	3.4%
Median	5.5	5.5	4.0	9.5%	33.0%	3.3%
Average of Median Figures =		5.0			Median =	3.3%

*** 'Est'd. '16-'17 to '22-'24' is the estimated growth rate from the base period 2016 to 2018 until the future period 2022 to 2024.**

Exhibit JRW-7

Delmarva Power and Light Company
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Panel A
Electric Proxy Group

Company	Yahoo	Zacks	Mean
ALLETE, Inc. (NYSE-ALE)	7.0%	7.2%	7.1%
Alliant Energy Corporation (NYSE-LNT)	5.4%	5.5%	5.4%
Ameren Corporation (NYSE-AEE)	6.1%	5.7%	5.9%
American Electric Power Co. (NYSE-AEP)	4.6%	6.2%	5.4%
Avangrid (NYSE-AVG)	3.5%	3.4%	3.4%
Avista Corp (NYSE-AVA)	6.2%	7.4%	6.8%
CMS Energy Corporation (NYSE-CMS)	7.5%	6.4%	7.0%
Consolidated Edison, Inc. (NYSE-ED)	2.4%	2.0%	2.2%
Dominion Energy Inc. (NYSE-D)	4.4%	4.8%	4.6%
Duke Energy Corporation (NYSE-DUK)	4.4%	4.8%	4.6%
Edison International (NYSE-EIX)	3.9%	5.4%	4.7%
Entergy Corporation (NYSE-ETR)	-1.5%	7.0%	
Evergy (NYSE-EVRG)	6.7%	6.6%	6.6%
Eversource Energy (NYSE-ES)	5.5%	5.6%	5.5%
Exelon Corporation (NYSE-EXC)	0.5%	4.2%	2.3%
FirstEnergy Corporation (NYSE-FE)	-6.6%	6.0%	
Hawaiian Electric Industries (NYSE-HE)	3.4%	4.2%	3.8%
IDACORP, Inc. (NYSE-IDA)	2.5%	3.9%	3.2%
MGE Energy, Inc. (NYSE-MGEE)	4.0%	N/A	4.0%
Nextera Energy, Inc. (NYSE-NEE)	8.0%	8.0%	8.0%
NorthWestern Corporation (NYSE-NWE)	3.2%	2.8%	3.0%
OGE Energy Corp. (NYSE-OGE)	3.5%	4.3%	3.9%
Pinnacle West Capital Corp. (NYSE-PNW)	4.1%	4.9%	4.5%
PNM Resources, Inc. (NYSE-PNM)	6.3%	5.4%	5.8%
Portland General Electric Company (NYSE-POR)	4.8%	4.8%	4.8%
PPL Corporation (NYSE-PPL)	0.5%	N/A	0.5%
Sempra Energy (NYSE-SRE)	10.1%	7.7%	8.9%
Southern Company (NYSE-SO)	1.5%	4.5%	3.0%
WEC Energy Group (NYSE-WEC)	6.1%	6.1%	6.1%
Xcel Energy Inc. (NYSE-XEL)	6.1%	5.4%	5.8%
Mean	4.1%	5.4%	4.9%
Median	4.4%	5.4%	4.7%

Data Sources: www.zacks.com, http://quote.yahoo.com, January, 2020.
* Entergy and FirstEnergy were excluded from the DCF analysis due to negative projected EPS growth rates.

Panel B
Hevert Proxy Group

Company	Yahoo	Zacks	Mean
ALLETE, Inc. (NYSE-ALE)	7.0%	7.2%	7.1%
Alliant Energy Corporation (NYSE-LNT)	5.4%	5.5%	5.4%
Ameren Corporation (NYSE-AEE)	6.1%	5.7%	5.9%
American Electric Power Co. (NYSE-AEP)	4.6%	6.2%	5.4%
Avangrid (NYSE-AVG)	3.5%	3.4%	3.4%
Avista Corp (NYSE-AVA)	6.2%	7.4%	6.8%
CenterPoint Energy (NYSE-CNP)	3.6%	4.8%	4.2%
Consolidated Edison, Inc. (NYSE-ED)	2.4%	2.0%	2.2%
CMS Energy Corporation (NYSE-CMS)	7.5%	6.4%	7.0%
Duke Energy Corporation (NYSE-DUK)	4.4%	4.8%	4.6%
DTE Energy Company (NYSE-DTE)	4.8%	6.0%	5.4%
Evergy (NYSE-EVRG)	6.7%	6.6%	6.6%
Eversource Energy (NYSE-ES)	5.5%	5.6%	5.5%
Hawaiian Electric Industries (NYSE-HE)	3.4%	4.2%	3.8%
Nextera Energy, Inc. (NYSE-NEE)	8.0%	8.0%	8.0%
NorthWestern Corporation (NYSE-NWE)	3.2%	2.8%	3.0%
OGE Energy Corp. (NYSE-OGE)	3.5%	4.3%	3.9%
Otter Tail Corporation (NDQ-OTTR)	9.0%	7.0%	8.0%
Pinnacle West Capital Corp. (NYSE-PNW)	4.1%	4.9%	4.5%
Portland General Electric Company (NYSE-POR)	4.8%	4.8%	4.8%
PNM Resources, Inc. (NYSE-PNM)	6.3%	5.4%	5.8%
Southern Company (NYSE-SO)	1.5%	4.5%	3.0%
WEC Energy Group (NYSE-WEC)	6.1%	6.1%	6.1%
Xcel Energy Inc. (NYSE-XEL)	6.1%	5.4%	5.8%
Mean	5.1%	5.4%	5.3%
Median	5.1%	5.5%	5.4%

Data Sources: www.zacks.com, http://quote.yahoo.com, January, 2020.

Exhibit JRW-7

Delmarva Power and Light Company
DCF Growth Rate Indicators

Electric and Hevert Proxy Groups

Growth Rate Indicator	Electric Proxy Group	Hevert Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	4.3%	4.8%
Projected *Value Line* Growth in EPS, DPS, and BVPS	5.1%	5.0%
Sustainable Growth ROE * Retention Rate	3.6%	3.3%
Projected EPS Growth from Yahoo, Zacks, and Reuters - Mean/Median	4.9%/4.7%	5.3%/5.4%

Exhibit JRW-8

Delmarva Power and Light Company
Capital Asset Pricing Model

Panel A
Electric Proxy Group

Risk-Free Interest Rate	**3.75%**
Beta*	**0.55**
Ex Ante Equity Risk Premium**	**5.75%**
CAPM Cost of Equity	**6.9%**

* See page 3 of Exhibit JRW-8

** See pages 5 and 6 of Exhibit JRW-8

Panel B
Hevert Proxy Group

Risk-Free Interest Rate	**3.75%**
Beta*	**0.55**
Ex Ante Equity Risk Premium**	**5.75%**
CAPM Cost of Equity	**6.9%**

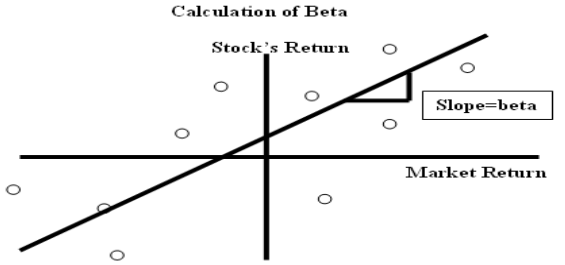
* See page 3 of Exhibit JRW-8

** See pages 5 and 6 of Exhibit JRW-8

Exhibit JRW-8

Thirty-Year U.S. Treasury Yields
2013-2020

Source: Federal Reserve Bank of St. Louis, FRED Database.



Panel A
Electric Proxy Group

Company Name	Beta
ALLETE, Inc. (NYSE-ALE)	0.65
Alliant Energy Corporation (NYSE-LNT)	0.60
Ameren Corporation (NYSE-AEE)	0.55
American Electric Power Co. (NYSE-AEP)	0.55
Avangrid (NYSE-AVG)	0.40
Avista Corp (NYSE-AVA)	0.60
CMS Energy Corporation (NYSE-CMS)	0.50
Consolidated Edison, Inc. (NYSE-ED)	0.45
Dominion Energy Inc. (NYSE-D)	0.55
Duke Energy Corporation (NYSE-DUK)	0.50
Edison International (NYSE-EIX)	0.55
Entergy Corporation (NYSE-ETR)	0.60
Evergy (NYSE:EVRG)	NMF
Eversource Energy (NYSE-ES)	0.55
Exelon Corporation (NYSE-EXC)	0.65
FirstEnergy Corporation (NYSE-FE)	0.65
Hawaiian Electric Industries (NYSE-HE)	0.55
IDACORP, Inc. (NYSE-IDA)	0.55
MGE Energy, Inc. (NYSE-MGEE)	0.55
NextEra Energy, Inc. (NYSE-NEE)	0.55
NorthWestern Corporation (NYSE-NWE)	0.60
OGE Energy Corp. (NYSE-OGE)	0.75
Pinnacle West Capital Corp. (NYSE-PNW)	0.50
PNM Resources, Inc. (NYSE-PNM)	0.60
Portland General Electric Company (NYSE-POR)	0.55
PPL Corporation (NYSE-PPL)	0.70
Sempra Energy (NYSE-SRE)	0.70
Southern Company (NYSE-SO)	0.50
WEC Energy Group (NYSE-WEC)	0.50
Xcel Energy Inc. (NYSE-XEL)	0.50
Mean	0.58
Median	0.55

Data Source: *Value Line Investment Survey* , 2019.

Panel B
Hevert Proxy Group

Company	Beta
ALLETE, Inc. (NYSE-ALE)	0.65
Alliant Energy Corporation (NYSE-LNT)	0.60
Ameren Corporation (NYSE-AEE)	0.55
American Electric Power Co. (NYSE-AEP)	0.55
Avangrid (NYSE-AVG)	0.40
Avista Corp (NYSE-AVA)	0.60
Centerpoint Energy (NYSE-CNP)	0.80
Consolidated Edison, Inc. (NYSE-ED)	0.45
CMS Energy Corporation (NYSE-CMS)	0.50
Duke Energy Corporation (NYSE-DUK)	0.50
DTE Energy Company (NYSE-DTE)	0.55
Evergy (NYSE:EVRG)	NMF
Eversource Energy (NYSE-ES)	0.55
Hawaiian Electric Industries (NYSE-HE)	0.55
NextEra Energy, Inc. (NYSE-NEE)	0.55
NorthWestern Corporation (NYSE-NWE)	0.60
OGE Energy Corp. (NYSE-OGE)	0.80
Otter Tail Corporation (NDQ-OTTR)	0.70
Pinnacle West Capital Corp. (NYSE-PNW)	0.50
Portland General Electric Company (NYSE-POR)	0.55
PNM Resources, Inc. (NYSE-PNM)	0.60
Southern Company (NYSE-SO)	0.50
WEC Energy Group (NYSE-WEC)	0.50
Xcel Energy Inc. (NYSE-XEL)	0.50
Mean	0.57
Median	0.55

Data Source: *Value Line Investment Survey* , 2019.

Exhibit JRW-8
Risk Premium Approaches

	Historical Ex Post Returns	**Surveys**	**Expected Return Models and Market Data**
Means of Assessing The Market Risk Premium	Historical Average Stock Minus Bond Returns	Surveys of CFOs, Financial Forecasters, Companies, Analysts on Expected Returns and Market Risk Premiums	Use Market Prices and Market Fundamentals (such as Growth Rates) to Compute Expected Returns and Market Risk Premiums
Problems/Debated Issues	Time Variation in Required Returns, Measurement and Time Period Issues, and Biases such as Market and Company Survivorship Bias	Questions Regarding Survey Histories, Responses, and Representativeness Surveys may be Subject to Biases, such as Extrapolation	Assumptions Regarding Expectations, Especially Growth

Source: Adapted from Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management* , (Winter 2003).

Exhibit JRW-8

Capital Asset Pricing Model
Market Risk Premium

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium										
	Ibbotson	2016	1928-2015	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Damodaran	2020	1928-2019	Historical Stock Returns - Bond Returns	Arithmetic				6.43%	
					Geometric				4.83%	
	Dimson, Marsh, Staunton _Credit Suisse Repor	2019	1900-2018	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
					Geometric					
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
					Geometric				4.60%	
	Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
	Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%	
	Median									5.50%
Ex Ante Models (Puzzle Research)										
	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield	Geometric				2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns,, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	Duff & Phelps	2019	Projection	Normalized with 3.5% Long-Term Treasury Yield					5.50%	
	Mschchowski - VL - 2014	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	American Appraisal Quarterly ERP	2015	Projection	Fundamental Economic and Market Factors					6.00%	
	Market Risk Premia	2019	Projection	Fundamental Economic and Market Factors					4.29%	
	KPMG	2019	Projection	Fundamental Economic and Market Factors					5.75%	
	Damodaran - 1-1-20	2020	Projection	Fundamentals - Implied from FCF to Equity Model (Trailing 12 month, with adjusted payout)					4.79%	
	Social Security									
	Office of Chief Actuary		1900-1995							
	John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%	
			Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%	
	Median									4.29%
Surveys										
	New York Fed	2015	Five-Year	Survey of Wall Street Firms					5.70%	
	Survey of Financial Forecasters	2019	10-Year Projection	About 20 Financial Forecastsers					1.85%	
	Duke - CFO Magazine Survey	2019	10-Year Projection	Approximately 200 CFOs					4.05%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics, Analysts, and Compan	2019	Long-Term	Survey of Academics, Analysts, and Companies					5.60%	
	Median									5.37%
Building Block										
	Ibbotson and Chen	2015	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.22%	5.21%	
					Geometric			4.20%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Median									4.06%
Mean										**4.80%**
Median										**4.83%**

Exhibit JRW-8

Capital Asset Pricing Model
Market Risk Premium

Summary of 2010-20 Equity Risk Premium Studies

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Average
Historical Risk Premium										
	Ibbotson	2016	1928-2015	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Damodaran	2020	1928-2019	Historical Stock Returns - Bond Returns	Arithmetic				6.43%	
					Geometric				4.83%	
	Dimson, Marsh, Staunton _Credit Suisse Report	2019	1900-2018	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
					Geometric					
	Median									5.43%
Ex Ante Models (Puzzle Research)										
	Siegel - Rethink ERP	2011	Projection	Real Stock Returns and Components					5.50%	
	Duff & Phelps	2019	Projection	Normalized with 3.5% Long-Term Treasury Yield					5.50%	
	Mschchowski - VL - 2014	2014	Projection	Fundamentals - Expected Return Minus 10-Year Treasury Rate					5.50%	
	American Appraisal Quarterly ERP	2015	Projection	Fundamental Economic and Market Factors					6.00%	
	Market Risk Premia	2019	Projection	Fundamental Economic and Market Factors					4.29%	
	KPMG	2019	Projection	Fundamental Economic and Market Factors					5.75%	
	Damodaran - 1-1-20	2020	Projection	Fundamentals - Implied from FCF to Equity Model (Trailing 12 month, with adjusted payout)					4.79%	
	Median									5.50%
Surveys										
	New York Fed	2015	Five-Year	Survey of Wall Street Firms					5.70%	
	Survey of Financial Forecasters	2019	10-Year Projection	About 20 Financial Forecastsers					1.85%	
	Duke - CFO Magazine Survey	2019	10-Year Projection	Approximately 200 CFOs					4.05%	
	Fernandez - Academics, Analysts, and Companies	2019	Long-Term	Survey of Academics, Analysts, and Companies					5.60%	
	Median									4.83%
Building Block										
	Ibbotson and Chen	2015	Projection	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			6.22%	5.21%	
					Geometric			4.20%		
	Chen - Rethink ERP	2010	20-Year Projection	Combination Supply Model (Historic and Projection)	Geometric				4.00%	
	Ilmanen - Rethink ERP	2010	Projection	Current Supply Model (D/P & Earnings Growth)	Geometric				3.00%	
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projection	Current Supply Model (D/P & Earnings Growth)	Arithmetic			4.63%	4.12%	
					Geometric			3.60%		
	Median									4.06%
Mean										**4.95%**
Median										**5.13%**

Duff & Phelps Risk-Free Interest Rates and Equity Risk Premium Estimates

Duff & Phelps Recommended U.S. Equity Risk Premium (ERP) and Corresponding Risk-free Rates (R_f); January 2008–Present

For additional information, please visit www.duffandphelps.com/CostofCapital

Date	Risk-free Rate (R_f)	R_f (%)	Duff & Phelps Recommended ERP (%)	What Changed
Current Guidance: December 31, 2018 – UNTIL FURTHER NOTICE	**Normalized 20-year U.S. Treasury yield**	**3.50**	**5.50**	**ERP**
September 5, 2017 – December 30, 2018	Normalized 20-year U.S. Treasury yield	3.50	5.00	ERP
November 15, 2016 – September 4, 2017	Normalized 20-year U.S. Treasury yield	3.50	5.50	R_f
January 31, 2016 – November 14, 2016	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
December 31, 2015	Normalized 20-year U.S. Treasury yield	4.00	5.00	
December 31, 2014	Normalized 20-year U.S. Treasury yield	4.00	5.00	
December 31, 2013	Normalized 20-year U.S. Treasury yield	4.00	5.00	
February 28, 2013 – January 30, 2016	Normalized 20-year U.S. Treasury yield	4.00	5.00	ERP
December 31, 2012	Normalized 20-year U.S. Treasury yield	4.00	5.50	
January 15, 2012 – February 27, 2013	Normalized 20-year U.S. Treasury yield	4.00	5.50	ERP
December 31, 2011	Normalized 20-year U.S. Treasury yield	4.00	6.00	
September 30, 2011 – January 14, 2012	Normalized 20-year U.S. Treasury yield	4.00	6.00	ERP
July 1 2011 – September 29, 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
June 1, 2011 – June 30, 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
May 1, 2011 – May 31, 2011	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
December 31, 2010	Spot 20-year U.S. Treasury yield	Spot	5.50	
December 1, 2010 – April 30, 2011	Spot 20-year U.S. Treasury yield	Spot	5.50	R_f
June 1, 2010 – November 30, 2010	Normalized 20-year U.S. Treasury yield	4.00	5.50	R_f
December 31, 2009	Spot 20-year U.S. Treasury yield	Spot	5.50	
December 1, 2009 – May 31, 2010	Spot 20-year U.S. Treasury yield	Spot	5.50	ERP
June 1, 2009 – November 30, 2009	Spot 20-year U.S. Treasury yield	Spot	6.00	R_f
December 31, 2008	Normalized 20-year U.S. Treasury yield	4.50	6.00	
November 1, 2008 – May 31, 2009	Normalized 20-year U.S. Treasury yield	4.50	6.00	R_f
October 27, 2008 – October 31, 2008	Spot 20-year U.S. Treasury yield	Spot	6.00	ERP
January 1, 2008 – October 26, 2008	Spot 20-year U.S. Treasury yield	Spot	5.00	Initialized

"Normalized" in this context means that in months where the risk-free rate is deemed to be abnormally low, a proxy for a longer-term sustainable risk-free rate is used.

Source: https://www.duffandphelps.com/-/media/assets/pdfs/publications/valuation/coc/erp-risk-free-rates-jan-2008-present.ashx?la=en

Panel A
KPMG Equity Risk Premium Recommendation

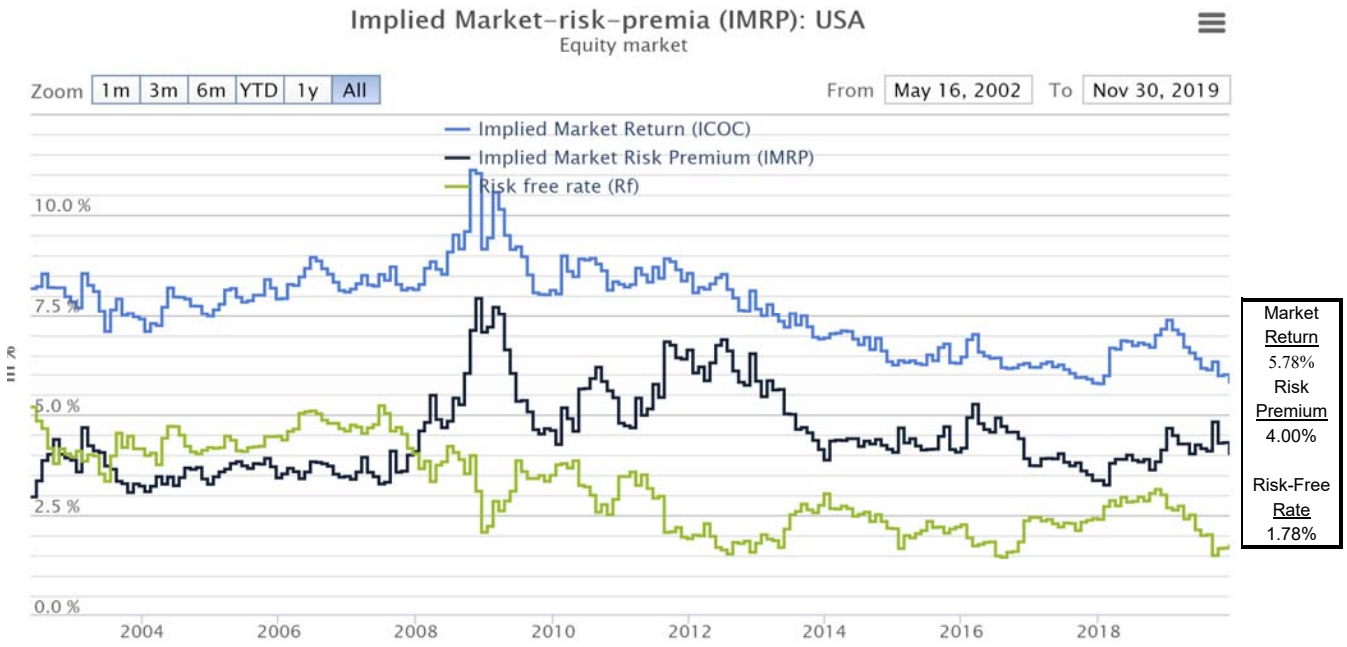
Appendix

Historic MRP estimates

Please find an overview of the historic MRP estimates by KPMG in the graph below.

Source: https://assets.kpmg/content/dam/kpmg/nl/pdf/2019/advisory/equity-market-research-summary.pdf

Panel B
Market-Risk-Premia.com Implied Market Risk Premium
30-Nov-19



Source: http://www.market-risk-premia.com/us.html

Capital Source	Capitalization Ratios*	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.47%	4.03%	1.99%
Common Equity	50.53%	10.30%	5.20%
Total Capitalization	100.00%		7.20%

Mr. Hevert's DCF Results

	Mean	Mean High
30-Day Average	8.54%	9.50%
90-Day Average	8.61%	9.57%
180-Day Average	8.71%	9.66%

Mr. Hevert's CAPM and Risk Premium Results

CAPM	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.18%)	7.51%	8.36%
Near Term Projected 30-Year Treasury (2.28%)	7.62%	8.46%
Long-Term Projected 30-Year Treasury (3.70%)	9.03%	9.88%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.18%)	8.25%	9.21%
Near Term Projected 30-Year Treasury (2.28%)	8.35%	9.32%
Long-Term Projected 30-Year Treasury (3.70%)	9.77%	10.73%
Empirical CAPM	**Bloomberg Derived Market Risk Premium**	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.18%)	8.84%	9.89%
Near Term Projected 30-Year Treasury (2.28%)	8.94%	10.00%
Long-Term Projected 30-Year Treasury (3.70%)	10.36%	11.41%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.18%)	9.39%	10.54%
Near Term Projected 30-Year Treasury (2.28%)	9.49%	10.64%
Long-Term Projected 30-Year Treasury (3.70%)	10.91%	12.05%
Bond Yield Plus Risk Premium Approach		
Current 30-Year Treasury (2.18%)	9.95%	
Near Term Projected 30-Year Treasury (2.28%)	9.93%	
Long-Term Projected 30-Year Treasury (3.70%)	10.05%	

Mr. Hevert's Expected Earnings Results
Mean - 10.13%

Southwestern Public Service Company

Constant Growth DCF Results

Case No. 9630
Exhibit JRW-9
Hevert DCF Results with/without Exclusions
Page 3 of 3

Hevert DCF Results with/without Exclusions
Source: Attachment AEB-RR-2, Page 1 of 3
30-DAY CONSTANT GROWTH DCF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Earnings Growth	Low ROE	Mean ROE	High ROE	Low ROE with Exclusions	Mean ROE with Exclusions	High ROE with Exclusions
ALLETE, Inc.	ALE	$2.35	$81.31	2.89%	2.98%	5.00%	6.00%	7.20%	6.07%	7.96%	9.04%	10.19%	7.96%	9.04%	10.19%
Alliant Energy Corporation	LNT	$1.42	$47.20	3.01%	3.10%	6.50%	5.85%	5.40%	5.92%	8.49%	9.01%	9.61%	8.49%	9.01%	9.61%
Ameren Corporation	AEE	$1.90	$73.07	2.60%	2.68%	6.50%	4.90%	6.20%	5.87%	7.56%	8.54%	9.18%	7.56%	8.54%	9.18%
American Electric Power Company, Inc.	AEP	$2.68	$85.25	3.14%	3.22%	4.00%	5.79%	5.60%	5.13%	7.21%	8.35%	9.02%	7.21%	8.35%	9.02%
DTE Energy Company	DTE	$3.78	$125.38	3.01%	3.09%	5.00%	4.16%	6.00%	5.05%	7.24%	8.14%	9.11%	7.24%	8.14%	9.11%
Duke Energy Corporation	DUK	$3.71	$88.29	4.20%	4.31%	6.00%	4.60%	4.80%	5.13%	8.90%	9.44%	10.33%	8.90%	9.44%	10.33%
Exelon Corporation	EXC	$1.45	$49.35	2.94%	3.01%	10.50%	1.33%	3.80%	5.21%	4.29%	8.22%	13.59%		8.22%	13.59%
Evergy, Inc.	EVRG	$1.90	$57.85	3.28%	3.39%	NA	6.15%	6.60%	6.38%	9.54%	9.76%	9.99%	9.54%	9.76%	9.99%
Hawaiian Electric Industries, Inc.	HE	$1.28	$41.56	3.08%	3.16%	4.50%	6.10%	5.60%	5.40%	7.65%	8.56%	9.27%	7.65%	8.56%	9.27%
IDACORP, Inc.	IDA	$2.52	$100.49	2.51%	2.55%	3.50%	2.40%	3.80%	3.23%	4.94%	5.78%	6.36%			
NorthWestern Corporation	NWE	$2.30	$70.39	3.27%	3.31%	3.00%	2.86%	2.80%	2.89%	6.11%	6.20%	6.32%			
OGE Energy Corporation	OGE	$1.46	$41.87	3.49%	3.57%	6.50%	3.80%	4.60%	4.97%	7.35%	8.54%	10.10%	7.35%	8.54%	10.10%
Otter Tail Corporation	OTTR	$1.40	$50.75	2.76%	2.85%	5.00%	9.00%	7.00%	7.00%	7.83%	9.85%	11.88%	7.83%	9.85%	11.88%
Pinnacle West Capital Corporation	PNW	$2.95	$94.73	3.11%	3.19%	5.00%	5.01%	5.00%	5.00%	8.19%	8.20%	8.20%	8.19%	8.20%	8.20%
PNM Resources, Inc.	PNM	$1.16	$46.65	2.49%	2.57%	8.50%	5.70%	5.20%	6.47%	7.75%	9.03%	11.09%	7.75%	9.03%	11.09%
Portland General Electric Company	POR	$1.45	$52.39	2.77%	2.84%	4.50%	5.20%	4.90%	4.87%	7.33%	7.70%	8.04%	7.33%	7.70%	8.04%
PPL Corporation	PPL	$1.65	$30.59	5.39%	5.42%	1.50%	0.59%	NA	1.05%	6.00%	6.47%	6.93%			
MEAN				**3.17%**	**3.25%**	**5.34%**	**4.67%**	**5.28%**	**5.04%**	**7.31%**	**8.29%**	**9.37%**	**7.92%**	**8.74%**	**9.97%**
Flotation Cost										**#REF!**	**0.11%**	**0.11%**	**0.11%**	**0.11%**	**0.11%**
Flotation Cost Adjusted DCF Result										**#REF!**	**8.39%**	**9.47%**	**8.03%**	**8.85%**	**10.08%**

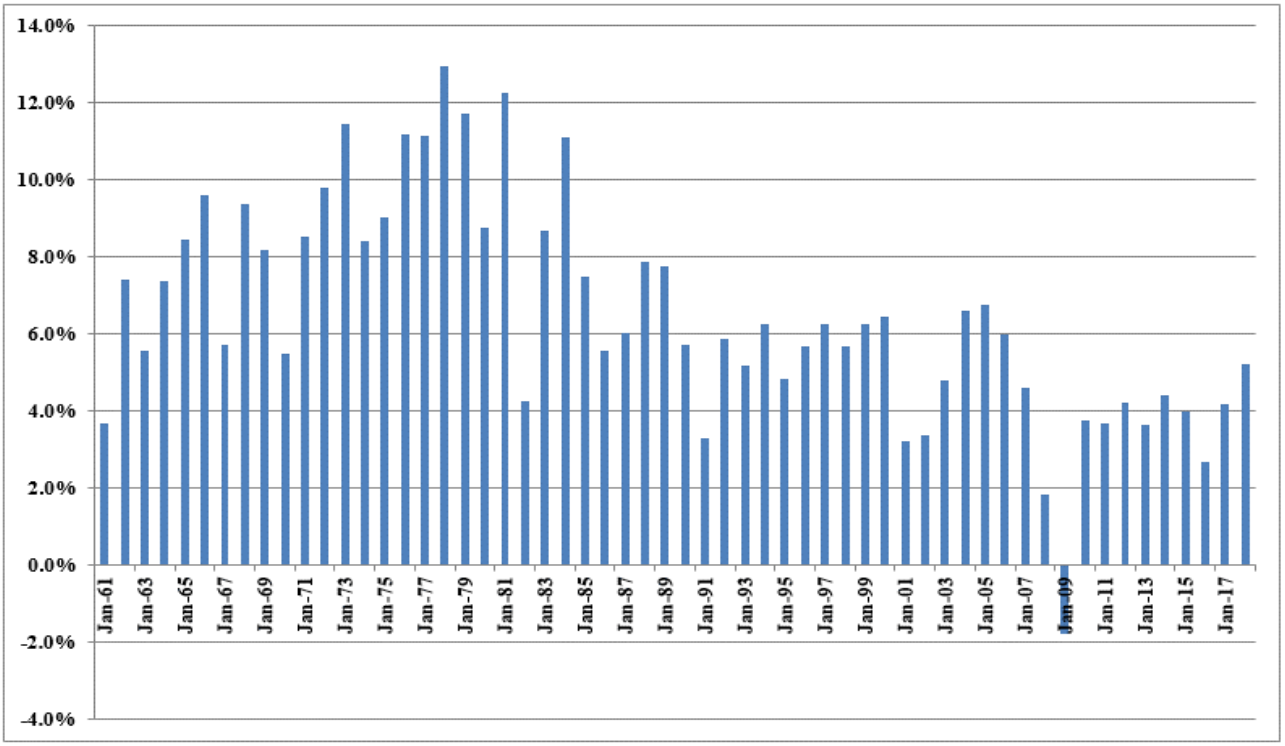
Growth Rates
GDP, S&P 500 Price, EPS, and DPS

		GDP	S&P 500	S&P 500 EPS	S&P 500 DPS	
	1960	542.38	58.11	3.10	1.98	
1	1961	562.21	71.55	3.37	2.04	
2	1962	603.92	63.10	3.67	2.15	
3	1963	637.45	75.02	4.13	2.35	
4	1964	684.46	84.75	4.76	2.58	
5	1965	742.29	92.43	5.30	2.83	
6	1966	813.41	80.33	5.41	2.88	
7	1967	859.96	96.47	5.46	2.98	
8	1968	940.65	103.86	5.72	3.04	
9	1969	1017.62	92.06	6.10	3.24	
10	1970	1073.30	92.15	5.51	3.19	
11	1971	1164.85	102.09	5.57	3.16	
12	1972	1279.11	118.05	6.17	3.19	
13	1973	1425.38	97.55	7.96	3.61	
14	1974	1545.24	68.56	9.35	3.72	
15	1975	1684.90	90.19	7.71	3.73	
16	1976	1873.41	107.46	9.75	4.22	
17	1977	2081.83	95.10	10.87	4.86	
18	1978	2351.60	96.11	11.64	5.18	
19	1979	2627.33	107.94	14.55	5.97	
20	1980	2857.31	135.76	14.99	6.44	
21	1981	3207.04	122.55	15.18	6.83	
22	1982	3343.79	140.64	13.82	6.93	
23	1983	3634.04	164.93	13.29	7.12	
24	1984	4037.61	167.24	16.84	7.83	
25	1985	4338.98	211.28	15.68	8.20	
26	1986	4579.63	242.17	14.43	8.19	
27	1987	4855.22	247.08	16.04	9.17	
28	1988	5236.44	277.72	24.12	10.22	
29	1989	5641.58	353.40	24.32	11.73	
30	1990	5963.14	330.22	22.65	12.35	
31	1991	6158.13	417.09	19.30	12.97	
32	1992	6520.33	435.71	20.87	12.64	
33	1993	6858.56	466.45	26.90	12.69	
34	1994	7287.24	459.27	31.75	13.36	
35	1995	7639.75	615.93	37.70	14.17	
36	1996	8073.12	740.74	40.63	14.89	
37	1997	8577.55	970.43	44.09	15.52	
38	1998	9062.82	1229.23	44.27	16.20	
39	1999	9630.66	1469.25	51.68	16.71	
40	2000	10252.35	1320.28	56.13	16.27	
41	2001	10581.82	1148.09	38.85	15.74	
42	2002	10936.42	879.82	46.04	16.08	
43	2003	11458.25	1111.91	54.69	17.88	
44	2004	12213.73	1211.92	67.68	19.41	
45	2005	13036.64	1248.29	76.45	22.38	
46	2006	13814.61	1418.30	87.72	25.05	
47	2007	14451.86	1468.36	82.54	27.73	
48	2008	14712.85	903.25	65.39	28.05	
49	2009	14448.93	1115.10	59.65	22.31	
50	2010	14992.05	1257.64	83.66	23.12	
51	2011	15542.58	1257.60	97.05	26.02	
52	2012	16197.01	1426.19	102.47	30.44	
53	2013	16784.85	1848.36	107.45	36.28	
54	2014	17521.75	2058.90	113.01	39.44	
55	2015	18219.30	2043.94	106.32	43.16	
56	2016	18707.19	2238.83	108.86	45.03	
57	2017	19485.39	2673.61	124.94	49.73	
58	2018	20500.64	2506.85	148.34	53.61	**Average**
	Growth Rates	**6.46**	**6.71**	**6.89**	**5.85**	**6.48**

A -http://research.stlouisfed.org/fred2/series/GDPA/downloaddata

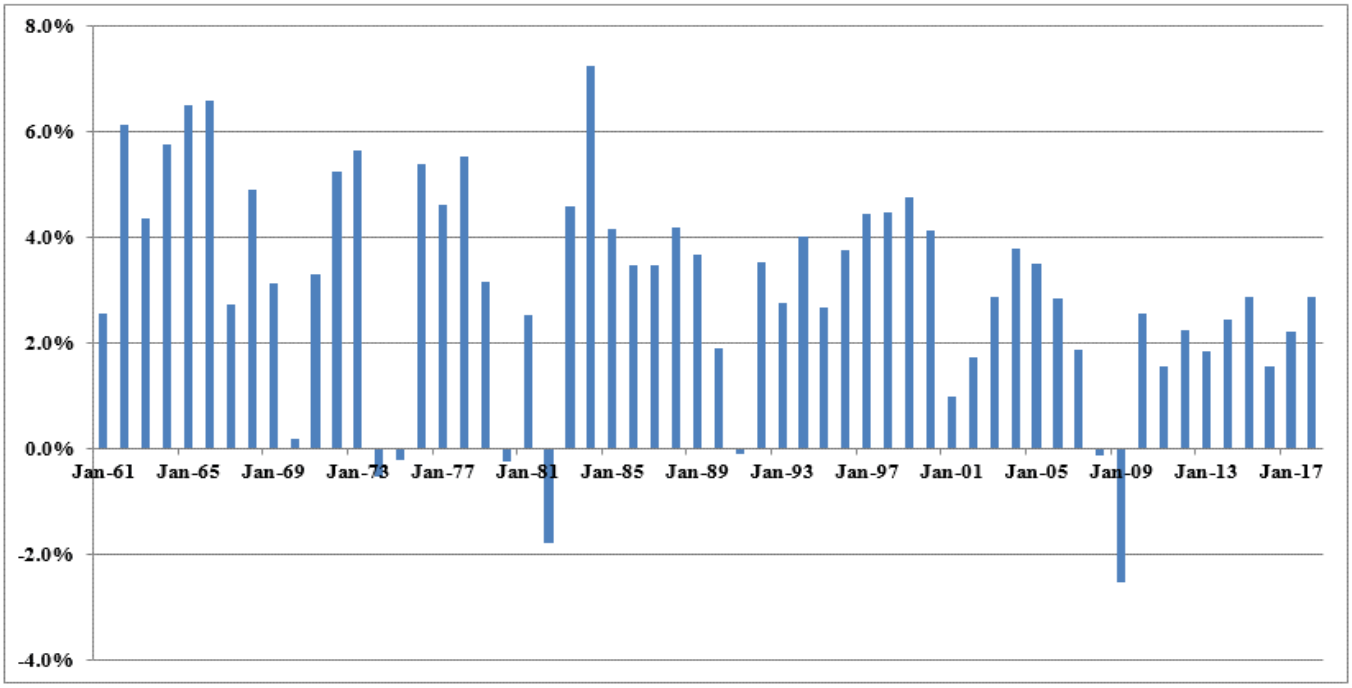
, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/

Nominal GDP Growth Rates
Annual Growth Rates - 1961-2018



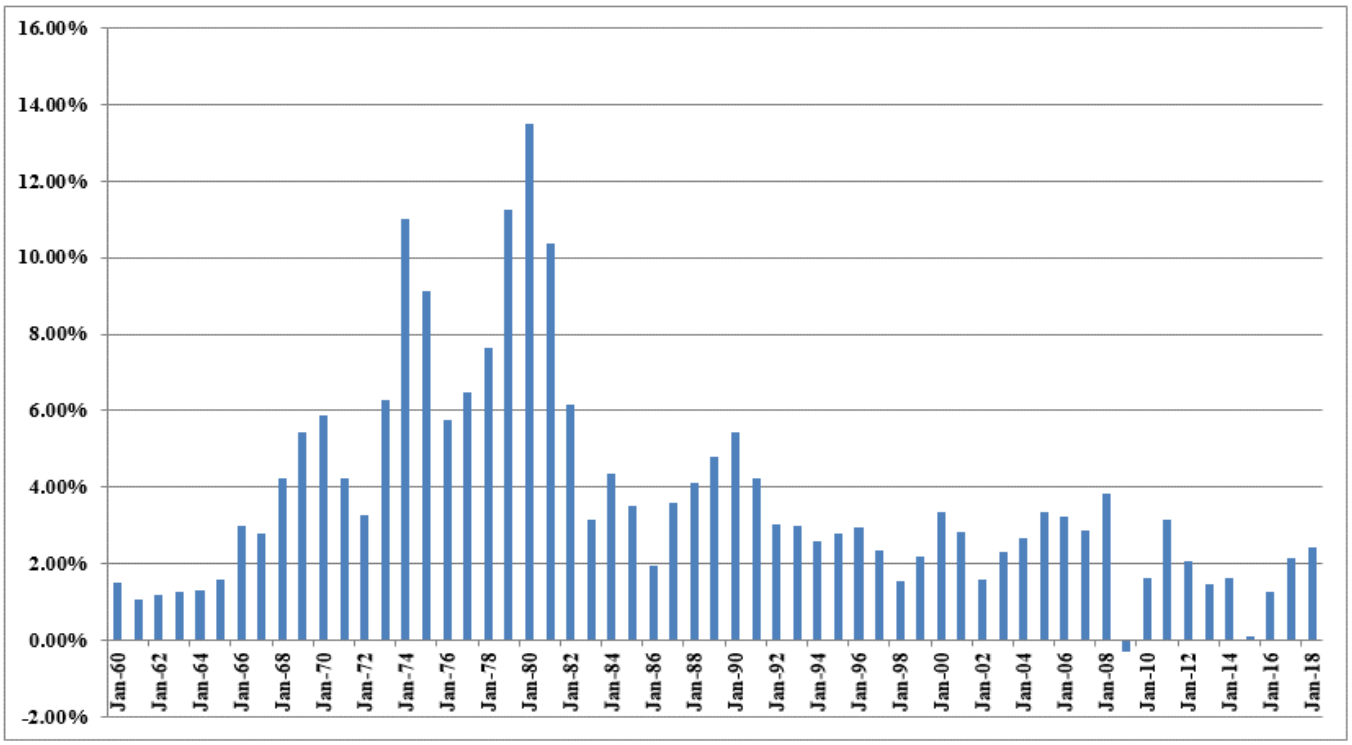
Data Sources: GDPA -https://fred.stlouisfed.org/series/GDPA

Annual Real GDP Growth Rates
1961-2018



Data Sources: GDPC1 - https://fred.stlouisfed.org/series/GDPCA

Annual Inflation Rates
1961-2018



Data Sources: CPIAUCSL - https://fred.stlouisfed.org/series/CPIAUCSL

Panel A
Historic GDP Growth Rates

10-Year Average		**3.37%**
20-Year Average		**4.17%**
30-Year Average		**4.65%**
40-Year Average		**5.56%**
50-Year Average		**6.36%**

Calculated using GDP data on Page 1 of Exhibit JRW-10

Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	**2018-2048**	**4.0%**
Survey of Financial Forecasters	**Ten Year**	**4.3%**
Social Security Administration	**2018-2095**	**4.4%**
Energy Information Administration	**2017-2050**	**4.3%**

Sources:

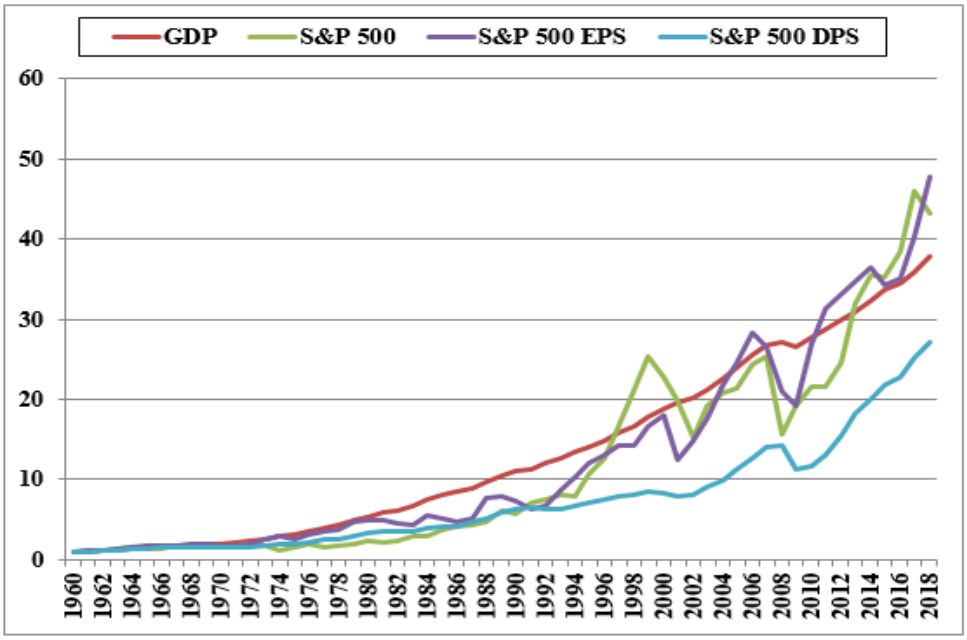
Congressional Budget Office,The *2018 Long-Term Budget Outlook* , June 1, 2018.
https://www.cbo.gov/system/files?file=2018-06/53919-2018ltbo.pdf

U.S. Energy Information Administration, *Annual Energy Outlook 2018* , Table: Macroeconomic Indicators, *https://www.eia.gov/outlooks/aeo/data/browser/#/?id=18-AEO2018&sourcekey=0.*

Social Security Administration, 2018 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program, Table VI.G4, p. 211(June 15, 2018), https://www.ssa.gov/oact/tr/2018/lr6g4.html. The 4.4% represents the compounded growth rate in projected GDP from $20,307 trillion in 2018 to $548,108 trillion in 2095.

https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/

Long-Term Growth of GDP, S&P 500, S&P 500 EPS, and S&P 500 DPS



	GDP	S&P 500	S&P 500 EPS	S&P 500 DPS
Growth Rates	6.47	6.95	6.70	5.82