

**BEFORE THE
PUBLIC SERVICE COMMISSION OF MARYLAND**

Potomac Electric Power Company's Application
for Adjustments to its Retail Rates for the
Distribution of Electric Energy

Case No. 9820

DIRECT TESTIMONY

OF

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ON BEHALF OF THE OFFICE OF PEOPLE'S COUNSEL

JANUARY 30, 2026

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APPENDICES

- Appendix A: Discounted Cash Flow Model Theory
- Appendix B: Capital Asset Pricing Model Theory

1 description of my qualifications and regulatory experience is included in my
2 curriculum vitae.¹

3 **Q. Describe the purpose and scope of your testimony in this proceeding.**

4 A. I am testifying on behalf of the Maryland Office of People’s Counsel (“OPC”).
5 My testimony addresses Potomac Electric Power Company’s (“Pepco” or the
6 “company”) cost of capital, capital structure, and fair rate of return. I respond to
7 the direct testimony of company witness Adrien McKenzie.

8 **I. EXECUTIVE SUMMARY**

9 **Q. Please describe what Pepco’s authorized return on equity should be based on.**

10 A. Pepco’s authorized return on equity (“ROE”) should be primarily based on its
11 market-based cost of equity. A company’s cost of equity can be closely estimated
12 using financial models that have been used throughout the investment industry for
13 many years. In contrast, Pepco’s authorized ROE should not be based on an
14 average of authorized utility ROEs in other jurisdictions or past utility ROEs
15 adopted by the Maryland Public Service Commission. Doing so will likely result
16 in an authorized ROE that clearly exceeds any reasonable estimate of the
17 company’s market-based cost of equity.

¹ Attachment DJG-1.

1 **Q. Describe Pepco’s position regarding the awarded rate of return in this case.**

2 A. Pepco proposes an awarded return on equity (“ROE”) of 10.5%, as testified to by
3 company witness McKenzie.² Pepco also proposes a capital structure consisting
4 of 48.75 long-term debt, and 51.25% equity.³ Mr. McKenzie relies on the
5 Discounted Cash Flow Model (“DCF Model”), the Capital Asset Pricing Model
6 (“CAPM”), and another risk premium model as part of his recommendation.

7 **Q. Summarize your analyses and conclusions regarding Pepco’s cost of equity.**

8 A. A utility’s authorized ROE should be based on its estimated cost of equity. Thus,
9 in developing my recommended ROE for Pepco, I analyzed its cost of equity by
10 utilizing several financial models designed for that purpose. These models
11 include multiple variations of the CAPM and DCF Model. My results are
12 summarized in the following figure.

13

² Direct Testimony of Adrien McKenzie at 3.

³ *Id.* at 27.

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**Figure 1:
Cost of Equity Model Results**

Model	Cost of Equity
Double Leverage ROE (Parent WACC)	5.7%
CAPM (at Proxy Debt Ratio)	8.2%
Hamada CAPM (at Company-Proposed Debt Ratio)	7.7%
DCF Model (Sustainable Growth)	7.3%
Model Average	7.2%
Recommended ROE	7.7%

3 As shown in Figure 1 above, my cost of equity modeling results range from 5.7% -
4 8.2%. The average of these results is 7.2%.

5 **Q. What is your authorized ROE recommendation for Pepco?**

6 A. I recommend an authorized ROE of 7.7% for Pepco. My recommendation takes
7 into consideration all of my modeling results and incorporates the concept of
8 gradualism. The model results strongly indicate that Pepco's market-based cost of
9 equity is notably lower than the level of authorized ROEs that are typically
10 adopted by regulatory commissions. However, Pepco's authorized ROE in this
11 proceeding should not be based on authorized ROEs from other jurisdictions or
12 even prior authorized ROEs from the Commission. Basing Pepco's authorized

1 ROE on an objective estimate of its cost of equity results in a fair and reasonable
2 authorized rate of return, and it provides the company an opportunity to earn a fair
3 return for its investors.

4 **Q. How does your cost of equity estimate and proposed ROE compare with the**
5 **expected returns on the U.S. equity market among prominent investment**
6 **companies?**

7 A. Several prominent asset management companies have recently projected relatively
8 modest estimates on the expected returns of the U.S. equity market over the next
9 10 years. For example, Schwab expects “U.S. large-cap equities to deliver
10 annualized returns of 5.9% over the next decade, down slightly from last year's
11 outlook of 6%.”⁴ Blackrock projects an even smaller return of 5.2% over the same
12 time period.⁵ J.P. Morgan estimates 6.7% U.S. equity returns over a 10-15 year
13 period.⁶ These low projections for the entire U.S. equity market stand in contrast
14 to the level of authorized ROEs typically adopted in utility rate proceeds, which
15 are closer to 9.5% on average. As discussed in my testimony, the expected return
16 (i.e., cost of equity) for relatively low-risk companies, such as utility companies,

⁴ Schwab's 2026 Long-Term Capital Market Expectations, <https://www.schwab.com/learn/story/schwabs-long-term-capital-market-expectations>

⁵ Capital Market Assumptions, <https://www.blackrock.com/institutions/en-us/insights/thought-leadership/capital-market-assumptions>

⁶ 2026 Long-Term Capital Market Assumptions, p. 12, <https://am.jpmorgan.com/us/en/asset-management/institutional/insights/portfolio-insights/lcma/>

1 must be less than the expected return on the entire U.S. equity market. From this
2 perspective, my recommended ROE for Pepco in this case, while lower than
3 average authorized ROEs, is more consistent with these projections for the U.S.
4 equity market. The primary basis for my cost of equity estimates in this case is the
5 results of the financial models presented in my testimony, rather than these broad
6 market projections. However, these projections provided another indication about
7 the reasonable range for utility cost of equity.

8 **Q. How are you incorporating the concept of gradualism into your ROE**
9 **recommendation?**

10 A. As detailed previously, the results of my models and the expected returns of asset
11 management companies for the entire U.S. equity market indicate that Pepco's
12 true cost of capital may be significantly below 7.7%. My recommendation of 7.7%
13 is made in part with the concept of gradualism in mind. The idea behind
14 gradualism is to smooth out large rate changes, rather than having large shifts
15 occur all at once. Taking that into consideration, I believe an authorized 7.7%
16 ROE would be appropriate to get Pepco closer to its true cost of equity, while
17 mitigating shock to existing investors.

1 **Q. Are you proposing an adjustment to the company's ratemaking capital**
2 **structure?**

3 A. Pepco's proposed debt ratio is notably lower than the average debt ratio of the
4 proxy group, which is 57%.⁷ This means that Pepco has much less financial risk
5 relative to the proxy group. Pepco's indicated cost of equity based on its lower
6 level of financial risk relative to the proxy group can be properly adjusted using
7 the Hamada variation of the CAPM, which is discussed later in my testimony.⁸

8 **Q. Please summarize your recommendation to the Commission regarding**
9 **Pepco's authorized rate of return.**

10 A. The following figure summarizes these positions and the resulting weighted
11 average rate of return.

⁷ McKenzie Direct Testimony at AMM-4.

⁸ The Hamada equation is a method of analyzing a firm's cost of capital as it uses additional financial leverage. It draws upon the Modigliani-Miller theorem on capital structure. The higher the Hamada equation beta coefficient, the higher the risk associated with the firm. Hamada's equation is useful because it is an in-depth analysis of a company's cost of capital, showing how additional aspects of financial leverage relate to the overall riskiness of the business. Later in my testimony, I discuss in greater depth the nature, application and import of the Hamada equation.

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**Figure 2:
Awarded Rate of Return Recommendation**

Capital Component	Proposed Ratio	Cost Rate	Weighted Cost
Long-Term Debt	57.0%	5.10%	2.91%
Common Equity	43.0%	7.70%	3.31%
Total	100.0%		6.22%

3 As shown in Figure 2, adopting my proposed ROE would result in a weighted
4 average authorized rate of return of 6.22%.

5 **II. REGULATORY STANDARDS**

6 **Q. Please briefly summarize the legal standards governing cost of capital.**

7 A. First, risk is the most important factor when determining the awarded return. The
8 awarded return should be commensurate with those on investments of
9 corresponding risk. As discussed in my testimony, Pepco (and the utility proxy
10 group used for the cost of equity analysis) is a relatively low-risk company. Thus,
11 the company's cost of equity is relatively small compared with other companies in
12 the U.S. equity market. Second, the awarded return should be sufficient to assure
13 financial soundness under efficient management. Setting the authorized ROE

1 close to the company's estimated cost of equity will provide the company a fair
2 opportunity to remain financially sound under efficient management.

3 **Q. Discuss the legal standards governing the awarded rate of return on capital**
4 **investments for regulated utilities.**

5 A. In *Wilcox v. Consolidated Gas Co. of New York*,⁹ the Supreme Court first
6 addressed the meaning of a fair rate of return for public utilities. The Court found
7 that "the amount of risk in the business is a most important factor" in determining
8 the appropriate allowed rate of return.¹⁰ Later in two landmark cases, *Bluefield*
9 and *Hope Natural Gas*, the Court set forth the standards by which utilities are
10 allowed to earn a return on capital investments. In *Bluefield Water Works &*
11 *Improvement Co. v. Public Service Commission of West Virginia*,¹¹ the Court
12 held:

13 A public utility is entitled to such rates as will permit it to earn a
14 return on the value of the property which it employs for the
15 convenience of the public . . . but it has no constitutional right to
16 profits such as are realized or anticipated in highly profitable
17 enterprises or speculative ventures. The return should be reasonably
18 sufficient to assure confidence in the financial soundness of the
19 utility and should be adequate, under efficient and economical

⁹ *Wilcox v. Consolidated Gas Co. of New York*, 212 U.S. 19 (1909).

¹⁰ *Id.* at 48.

¹¹ *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, 692-93 (1923).

1 management, to maintain and support its credit and enable it to raise
2 the money necessary for the proper discharge of its public duties.

3 In *Federal Power Commission v. Hope Natural Gas Company*,¹² the Court
4 expanded on the guidelines set forth in *Bluefield* and stated:

5 From the investor or company point of view it is important that there
6 be enough revenue not only for operating expenses *but also for the*
7 *capital costs of the business*. These include service on the debt and
8 dividends on the stock. By that standard the return to the equity
9 owner should be commensurate with returns on investments in other
10 enterprises having corresponding risks. That return, moreover,
11 should be sufficient to assure confidence in the financial integrity of
12 the enterprise, so as to maintain its credit and to attract capital.

13 The cost of capital models I have employed in this case are in accordance with the
14 foregoing legal standards.

15 **Q. Is it important that the awarded rate of return be based on the company's**
16 **actual cost of capital?**

17 A. Yes. The Court in *Hope* makes it clear that the allowed return should be based on
18 the actual cost of capital. Under the rate base rate of return model, a utility should
19 be allowed to recover all its reasonable expenses, its capital investments through
20 depreciation, and a return on its capital investments sufficient to satisfy the
21 required return of its investors. The “required return” from the investors’
22 perspective is synonymous with the “cost of capital” from the utility’s perspective.

¹² *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944) (emphasis added).

1 Scholars agree that the allowed rate of return should be based on the actual cost of
2 capital:

3 Since by definition the cost of capital of a regulated firm represents
4 precisely the expected return that investors could anticipate from
5 other investments while bearing no more or less risk, and since
6 investors will not provide capital unless the investment is expected
7 to yield its opportunity cost of capital, the correspondence of the
8 definition of the cost of capital with the court's definition of legally
9 required earnings appears clear.¹³

10 The models I have employed in this case closely estimate the company's true cost
11 of equity. If the Commission sets the awarded return based on my lower, and
12 more reasonable rate of return, it will: comply with the U.S. Supreme Court's
13 standards; allow the company to maintain its financial integrity; and satisfy the
14 claims of its investors. On the other hand, if the Commission sets the allowed rate
15 of return *higher* than the true cost of capital, it arguably results in an inappropriate
16 transfer of wealth from ratepayers to shareholders. As Dr. Morin notes:

¹³ A. Lawrence Kolbe, James A. Read, Jr. & George R. Hall, *The Cost of Capital: Estimating the Rate of Return for Public Utilities* 21 (The MIT Press 1984).

1 [I]f the allowed rate of return is greater than the cost of capital,
2 capital investments are undertaken and investors' opportunity costs
3 are more than achieved. Any excess earnings over and above those
4 required to service debt capital accrue to the equity holders, and the
5 stock price increases. In this case, the wealth transfer occurs from
6 ratepayers to shareholders.¹⁴

7 Thus, it is important to understand that the awarded return and the cost of capital
8 are different but related concepts. The two concepts are related in that the legal
9 and technical standards encompassing this issue require that the awarded return
10 reflects the true cost of capital. On the other hand, the two concepts are different
11 in that the legal standards do not mandate that awarded returns exactly match the
12 cost of capital. Awarded returns are set through the regulatory process and may be
13 influenced by factors other than objective market drivers. The cost of capital, on
14 the other hand, should be evaluated objectively and be tied to economic realities.
15 In other words, the cost of capital is driven by stock prices, dividends, growth
16 rates, and—most importantly—risk. The cost of capital can be estimated by
17 financial models used by firms, investors, and academics around the world for
18 decades. The problem is, with respect to regulated utilities, there has been a trend
19 in which awarded returns fail to closely track with actual market-based cost of

¹⁴ Roger A. Morin, *New Regulatory Finance* 23-24 (Public Utilities Reports, Inc. 2006) (1994).

1 capital as further discussed below. To the extent this occurs, the results are
2 detrimental to ratepayers and the state's economy.

3 **Q. Describe the economic impact that occurs when the awarded return strays**
4 **too far from the U.S. Supreme Court's cost of equity standard.**

5 A. As discussed further in the sections below, Pepco witness McKenzie's
6 recommended awarded ROE is much higher than the company's actual cost of
7 capital based on objective market data. When the awarded ROE is set far above
8 the *cost* of equity, it runs the risk of violating the U.S. Supreme Court's standards
9 that the awarded return should be *based on the cost of capital*. If the Commission
10 were to adopt the company's position in this case, it would be permitting an excess
11 transfer of wealth from customers to company shareholders, which is decidedly
12 unfair to customers. Moreover, such an excess transfer of wealth results in
13 economic inefficiencies and would not result in marginally better service for
14 customers. In a competitive market environment, capital is efficiently allocated
15 and such excess, unfair wealth transfers would not exist. A regulator standing in
16 the place of competition must minimize this excess wealth transfer by setting the
17 authorized ROE close to the company's market-based cost of equity.

1 **Q. Please summarize the legal standards governing the awarded ROE issue.**

2 A. The Commission should strive to move the awarded return to a level more closely
3 aligned with the company's actual, market-derived cost of capital while keeping in
4 mind the following legal principles:

5 **1. Risk is the most important factor when determining the awarded**
6 **return. The awarded return should be commensurate with those on**
7 **investments of corresponding risk.**

8 The legal standards articulated in *Hope* and *Bluefield* demonstrate that the Court
9 understands one of the most basic, fundamental concepts in financial theory: the
10 more (less) risk an investor assumes, the more (less) return the investor requires.
11 Utility equity investors' required return should be relatively low because utility
12 stocks are very low risk. I have used financial models in this case to closely
13 estimate Pepco's cost of equity, and these financial models account for risk. The
14 public utility industry is one of the least risky industries in the entire country. As
15 discussed further below, this fact can be directly observed in the low betas of
16 utility stocks. In addition, utilities provide a service with a relatively inelastic
17 demand under a regulated monopoly structure to a captive customer base. These
18 factors also contribute to the relative low risk profiles of utility companies. The
19 cost of equity models confirm this fact in that they produce relatively low cost of

1 equity results. In turn, the awarded ROE in this case should reflect the fact that
2 Pepco is a low-risk company.

3 **2. The awarded return should be sufficient to assure financial soundness**
4 **under efficient management.**

5 The Commission should authorize an ROE for Pepco that accurately reflects the
6 company's market-based cost of equity. This determination is necessary to afford
7 Pepco a reasonable opportunity to earn a fair return and maintain financial
8 integrity under efficient and prudent management, consistent with established
9 regulatory principles.

10 **III. GENERAL CONCEPTS AND METHODOLOGY**

11 **Q. Discuss your approach to estimating the cost of equity in this case.**

12 A. Although a competitive firm must estimate its own cost of capital to assess the
13 profitability of competing capital projects, regulators determine a utility's cost of
14 capital to establish a fair rate of return. The legal standards set forth above do not
15 include specific guidelines regarding the models that must be used to estimate the
16 cost of equity. Over the years, however, regulatory commissions have consistently
17 relied on several models. The models I have employed in this case have been the
18 two most widely used and accepted models in regulatory proceedings for many

1 years. These models are the DCF Model and the CAPM. The specific inputs and
2 calculations for these models are described in more detail below.

3 **Q. Please explain why multiple models are used to estimate the cost of equity.**

4 A. The models used to estimate the cost of equity attempt to measure the return on
5 equity required by investors by estimating several different inputs. It is preferable
6 to use multiple models because the results of any one model may contain a degree
7 of imprecision, especially depending on the reliability of the inputs used at the
8 time of conducting the model. By using multiple models, the analyst can compare
9 the results of the models and look for outlying results and inconsistencies.

10 Likewise, if multiple models produce a similar result, it may indicate a narrower
11 range for the cost of equity estimate.

12 **Q. Please discuss the benefits of choosing a proxy group of companies in**
13 **conducting cost of capital analyses.**

14 A. The cost of equity models in this case can be used to estimate the cost of capital of
15 any individual, publicly traded company. There are advantages, however, to
16 conducting cost of capital analysis on a “proxy group” of companies that are
17 comparable to the target company. First, it is better to assess the financial
18 soundness of a utility by comparing it to a group of other financially sound
19 utilities. Second, using a proxy group provides more reliability and confidence in
20 the overall results because there is a larger sample size. Finally, the use of a proxy

1 group is often a pure necessity when the target company is a subsidiary that is not
2 publicly traded, because the financial models used to estimate the cost of equity
3 require information from publicly traded firms, such as stock prices and dividends.

4 **Q. Describe the proxy group you selected in this case.**

5 A. In this case, I used the same proxy group as Mr. McKenzie used. Thus, the
6 difference in our modeling results is due to the different inputs and assumptions
7 we used in the models, rather than the composition of the proxy group.

8 **Q. Discuss the general relationship between risk and return.**

9 A. As discussed above, risk is the most important factor for the Commission to
10 consider when determining the allowed return and there is a direct relationship
11 between risk and return: the more (or less) risk an investor assumes, the larger (or
12 smaller) return the investor will demand. There are two primary types of risk:
13 firm-specific risk and market risk. Firm-specific risk affects individual companies,
14 while market risk affects all companies in the market to varying degrees.

15 **Q. Discuss the differences between firm-specific risk and market risk.**

16 A. Firm-specific risk affects individual companies, rather than the entire market. For
17 example, a competitive firm might overestimate customer demand for a new
18 product, resulting in reduced sales revenue. This is an example of a firm-specific

1 risk called “project risk.”¹⁵ There are several other types of firm-specific risks,
2 including: (1) “financial risk”—the risk that equity investors of leveraged firms
3 face as residual claimants on earnings; (2) “default risk”—the risk that a firm will
4 default on its debt securities; and (3) “business risk”—which encompasses all
5 other operating and managerial factors that may result in investors realizing less
6 than their expected return in that particular company.

7 Although firm-specific risk affects individual companies, market risk
8 affects all companies in the market to varying degrees. Examples of market risk
9 include interest rate risk, inflation risk, and the risk of major socio-economic
10 events. When there are changes in these risk factors, they affect all firms in the
11 market to some extent.¹⁶

12 Analysis of the U.S. market in 2001 provides a good example for
13 contrasting firm-specific risk and market risk and highlights the importance of
14 diversification. During that year, Enron Corp.’s stock fell from \$80 per share and
15 the company filed for bankruptcy at the end of the year. If an investor’s portfolio
16 had held only Enron stock at the beginning of 2001, this irrational investor would

¹⁵ Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 62-63 (3rd ed., John Wiley & Sons, Inc. 2012).

¹⁶ See Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 149 (9th ed., McGraw-Hill/Irwin 2013).

1 have lost the entire investment by the end of the year due to assuming the full
2 exposure of Enron's firm-specific risk (in that case, imprudent management). On
3 the other hand, a rational, diversified investor who invested the same amount of
4 capital in a portfolio holding every stock in the S&P 500 would have had a much
5 different result that year. The rational investor would have been relatively
6 unaffected by the fall of Enron because her portfolio included about 499 other
7 stocks. Each of those stocks, however, would have been affected by various
8 *market* risk factors that occurred that year, including the terrorist attacks on
9 September 11th, which affected all stocks in the market. Thus, the rational
10 investor would have incurred a relatively minor loss due to market risk factors,
11 while the irrational investor would have lost everything due to firm-specific risk
12 factors.

13 **Q. Can investors minimize firm-specific risk?**

14 A. Yes. A fundamental concept in finance is that firm-specific risk can be eliminated
15 through diversification.¹⁷ If someone irrationally invested all their funds in one
16 firm (such as Enron), they would be exposed to all the firm-specific risk *and* the
17 market risk inherent in that single firm. Rational investors, however, are risk-

¹⁷ See John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 179-80 (3rd ed., South Western Cengage Learning 2010).

1 averse and seek to eliminate risk they can control. Investors can essentially
2 eliminate firm-specific risk by adding more stocks to their portfolio through a
3 process called “diversification.”

4 There are two reasons why diversification eliminates firm-specific risk.
5 First, each stock in a diversified portfolio represents a much smaller percentage of
6 the overall portfolio than it would in a portfolio of just one or a few stocks. Thus,
7 any firm-specific action that changes the stock price of one stock in the diversified
8 portfolio will have only a small impact on the entire portfolio.¹⁸ The second
9 reason why diversification eliminates firm-specific risk is that the effects of firm-
10 specific actions on stock prices can be either positive or negative for each stock.
11 Thus, in large, diversified portfolios, the net effect of these positive and negative
12 firm-specific risk factors will be essentially zero out and will not affect the value
13 of the overall portfolio.¹⁹ Firm-specific risk is also called “diversifiable risk”
14 because it can easily be eliminated through diversification.

¹⁸ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 64 (3rd ed., John Wiley & Sons, Inc. 2012).

¹⁹ *Id.*

1 **Q. Do investors expect an additional return for assuming firm-specific risks?**

2 A. No. Because investors eliminate firm-specific risk through diversification, they
3 know they cannot expect a higher return for assuming the firm-specific risk in any
4 one company. Thus, the risks associated with an individual firm's operations are
5 not rewarded by the market. In fact, firm-specific risk is also called "unrewarded"
6 risk for this reason.

7 **Q. Do investors expect an additional return for assuming market risks?**

8 A. Yes. Unlike firm-specific risk, market risk cannot be eliminated through
9 diversification. Because market risk cannot be eliminated through diversification,
10 investors expect a return for assuming this type of risk. Market risk is also called
11 "systematic risk." Scholars recognize the fact that market risk, or "systematic
12 risk," is the only type of risk for which investors expect a return for bearing:

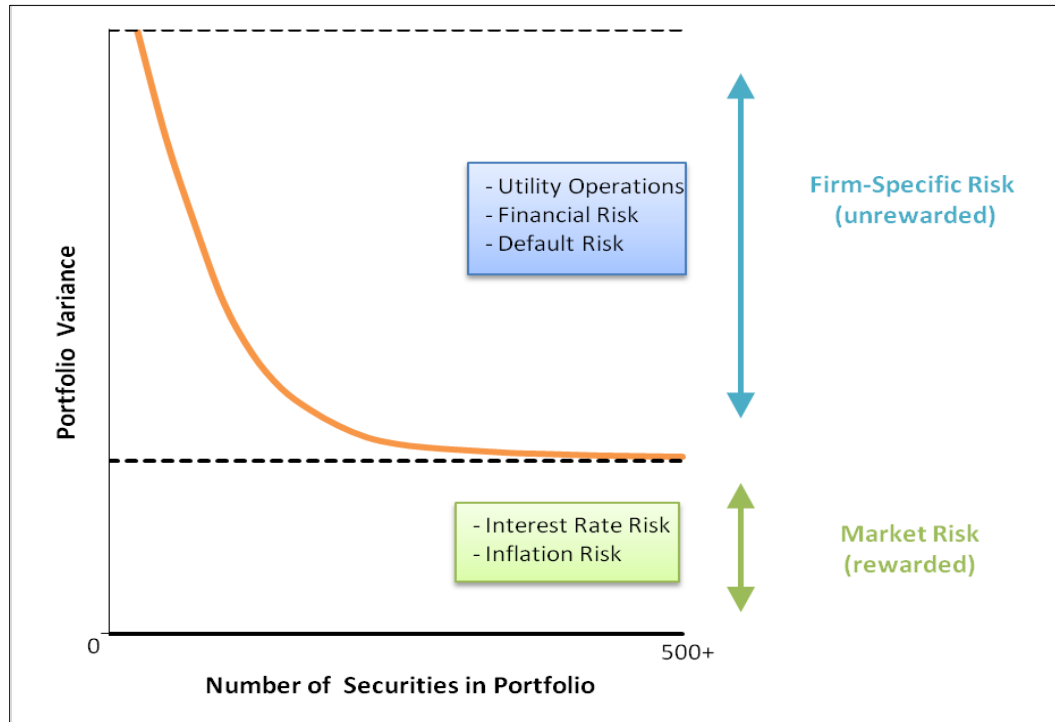
13 If investors can cheaply eliminate some risks through diversification,
14 then we should not expect a security to earn higher returns for risks
15 that can be eliminated through diversification. Investors can expect
16 compensation *only* for bearing systematic risk (i.e., risk that cannot
17 be diversified away).²⁰

18 These important concepts are illustrated in the figure below. Some form of this
19 figure is found in many financial textbooks.

²⁰ See John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180 (3rd ed., South Western Cengage Learning 2010).

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**Figure 3:
Effects of Portfolio Diversification**



3 Figure 4 shows that as stocks are added to a portfolio, the amount of firm-specific
4 risk is reduced until it is essentially eliminated. No matter how many stocks are
5 added, however, there remains a certain level of fixed market risk. The level of
6 market risk will vary from firm to firm. Market risk is the only type of risk that is
7 rewarded by the market and is thus the primary type of risk the Commission
8 should consider when determining the allowed return.

1 **Q. Please describe how market risk is measured.**

2 A. Investors who want to eliminate firm-specific risk must hold a fully diversified
3 portfolio. To determine the amount of risk that a single stock adds to the overall
4 market portfolio, investors measure the covariance between a single stock and the
5 market portfolio. The result of this calculation is called “beta.”²¹ Beta represents
6 the sensitivity of a given security to the market as a whole. The market portfolio
7 of all stocks has a beta equal to one. Stocks with betas greater than one are
8 relatively more sensitive to market risk than the average stock. For example, if the
9 market increases by 1.0%, a stock with a beta of 1.5 will increase by 1.5%. This
10 would be an example of a relatively risky stock. In contrast, stocks with betas of
11 less than one are less sensitive to market risk, such that if the market increases
12 (decreases) by 1.0%, a stock with a beta of 0.5 will, on average, only increase
13 (decrease) by 0.5%. Thus, stocks with low betas are relatively insulated from
14 market conditions. The beta term is used in the CAPM to estimate the cost of
15 equity, which is discussed in more detail later.²²

²¹ *Id.* at 180-81.

²² Though it will be discussed in more detail later, Attachment DJG-8 shows that the average beta of the proxy group was less than 1.0. This confirms the well-known concept that utilities are relatively low-risk firms.

1 **Q. Are public utilities characterized as defensive firms that have low betas, low**
2 **market risk, and are relatively insulated from overall market conditions?**

3 A. Yes. Although market risk affects all firms in the market, it affects different firms
4 to varying degrees. Firms with high betas are affected more than firms with low
5 betas, which is why firms with high betas are riskier. Stocks with betas greater
6 than one are generally known as “cyclical stocks.” Firms in cyclical industries are
7 sensitive to recurring patterns of recession and recovery known as the “business
8 cycle.”²³ Thus, cyclical firms are exposed to a greater level of market risk.
9 Securities with betas less than one, on the other hand, are known as “defensive
10 stocks.” Companies in defensive industries, such as public utility companies,
11 “will have low betas and performance that is comparatively unaffected by overall
12 market conditions.”²⁴ In fact, financial textbooks often use utility companies as
13 prime examples of low-risk, defensive firms. The figure below compares the betas
14 of several industries and illustrates that the utility industry is one of the least risky
15 industries in the U.S. market.²⁵

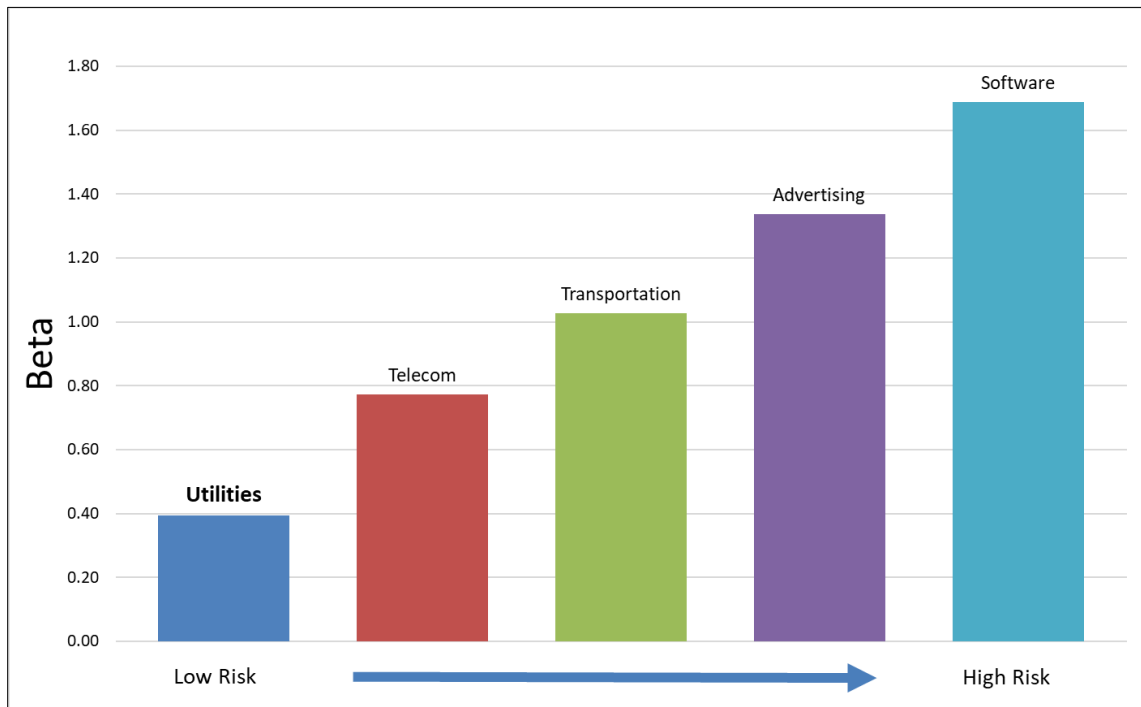
²³ See Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 382 (9th ed., McGraw-Hill/Irwin 2013).

²⁴ *Id.* at 383.

²⁵ See Betas by Sector (US) available at <http://pages.stern.nyu.edu/~adamodar/> (2018). (After clicking the link, click “Data” then “Current Data” then “Risk / Discount Rate” from the drop down menu, then “Total Beta by Industry Sector”). The exact beta calculations are not as important as illustrating the well-known

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**Figure 4:
Beta by Industry**



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The fact that utilities are defensive firms that are exposed to little market risk is beneficial to society. When the business cycle enters a recession, consumers can be assured that their utility companies will be able to maintain normal business operations and provide safe and reliable service under prudent management. Likewise, utility investors can be confident that utility stock prices will not widely fluctuate. So, while it is recognized and accepted that utilities are

fact that utilities are very low-risk companies. The fact that the utility industry is one of the lowest risk industries in the country should not change from year to year.

1 defensive firms that experience little market risk and are relatively insulated from
2 market conditions, this fact should also be appropriately reflected in the
3 company's awarded return.

4 **IV. DISCOUNTED CASH FLOW ANALYSIS**

5 **Q. Describe the DCF Model.**

6 A. The DCF Model is based on a fundamental financial model called the “dividend
7 discount model,” which maintains that the value of a security is equal to the
8 present value of the future cash flows it generates.²⁶ Cash flows from common
9 stock are paid to investors in the form of dividends. There are several variations
10 of the DCF Model, including the constant growth DCF Model I used in this case.²⁷
11 These versions, along with other formulas and theories related to the DCF Model
12 are discussed in more detail in Appendix A.

13 **Q. Describe the inputs to the DCF Model.**

14 A. There are three primary inputs in the DCF Model: (1) stock price; (2) dividend
15 amount; and (3) the long-term growth rate. The stock prices and dividends are

²⁶ Present value (PV) is the current value of a future sum of money or stream of cash flows given a specified rate of return. Present value takes the future value and applies a discount rate or the interest rate that could be earned if invested.

²⁷ The analyst growth and sustainable growth DCF Models I conducted in this case are both considered constant growth DCF Models.

1 known inputs based on recorded data, while the growth rate projection must be
2 estimated. I discuss each of these inputs separately below.

3 **A. Stock Price**

4 **Q. How did you determine the stock price input of the DCF Model?**

5 A. For the stock price (P_0), I used a 30-day average of stock prices for each company
6 in the proxy group.²⁸ Analysts sometimes rely on average stock prices for longer
7 periods (e.g., 60, 90, or 180 days). According to the efficient market hypothesis,
8 however, markets reflect all relevant information available at a particular time, and
9 prices adjust instantaneously to the arrival of new information.²⁹ Past stock prices,
10 in essence, reflect outdated information. The DCF Model used in utility rate cases
11 is a derivation of the dividend discount model, which is used to determine the
12 current value of an asset. Thus, according to the dividend discount model and the
13 efficient market hypothesis, the value for the “ P_0 ” term in the DCF Model should
14 technically be the current stock price, rather than an average.

²⁸ Attachment DJG-3.

²⁹ See Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, Vol. 25, No. 2 *The Journal of Finance* 383 (1970); see also John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 357 (3rd ed., South Western Cengage Learning 2010). The efficient market hypothesis was formally presented by Eugene Fama in 1970 and is a cornerstone of modern financial theory and practice.

1 **Q. Why did you use a 30-day average for the current stock price input?**

2 A. Using a short-term average of stock prices for the current stock price input adheres
3 to market efficiency principles while avoiding any irregularities that may arise
4 from using a single current stock price. In the context of a utility rate proceeding,
5 there is a significant length of time from when an application is filed, and
6 testimony is due. Choosing a current stock price for one particular day could raise
7 a separate issue concerning which day was chosen to be used in the analysis. In
8 addition, a single stock price on a particular day may be unusually high or low. It
9 is arguably ill-advised to use a single stock price in a model that is ultimately used
10 to set rates for several years, especially if a stock is experiencing some volatility.
11 Thus, it is preferable to use a short-term average of stock prices, which represents
12 a good balance between adhering to well-established principles of market
13 efficiency while avoiding any unnecessary contentions that may arise from using a
14 single stock price on a given day. The stock prices I used in my DCF analysis are
15 based on 30-day averages of adjusted closing stock prices for each company in the
16 proxy group.³⁰

³⁰ Attachment DJG-3. Adjusted closing prices, rather than actual closing prices, are ideal for analyzing historical stock prices. The adjusted price provides an accurate representation of the firm's equity value beyond the mere market price because it accounts for stock splits and dividends.

1 **B. Dividend**

2 **Q. Describe how you determined the dividend input of the DCF Model.**

3 A. The dividend term in the DCF Model represents dividends per share (d_0). I used
4 forward-looking annualized dividends published by Yahoo! Finance for the
5 dividend input to my constant growth DCF Model.³¹ Dividing these dividends by
6 the stock prices for each proxy company results in the dividend yield for each
7 company.³²

8 **C. Growth Rate**

9 **Q. Summarize the growth rate input in the DCF Model.**

10 A. The most critical input in the DCF Model is the growth rate. Unlike the stock
11 price and dividend inputs, the growth rate input (g) must be estimated. As a result,
12 the growth rate is often the most contentious issue related to DCF Model inputs in
13 utility rate cases. The DCF Model used in this case is based on the sustainable
14 growth valuation model. Under this model, a stock is valued by the present value
15 of its future cash flows in the form of dividends. Before future cash flows are
16 discounted by the cost of equity, however, they must be “grown” into the future by

³¹ Attachment DJG-4.

³² *Id.*

1 a sustainable growth rate. As stated above, one of the inherent assumptions of this
2 model is that these cash flows in the form of dividends grow at a sustainable rate
3 forever. For young, high-growth firms, estimating the growth rate to be used in
4 the model can be especially difficult, and may require the use of multi-stage
5 growth models. For mature, low-growth firms such as utilities, however,
6 estimating the sustainable growth rate is more transparent. The growth term of the
7 DCF Model is one of the most important, yet least understood, aspects of cost of
8 equity estimations in utility regulatory proceedings. Therefore, I provide a more
9 detailed explanation of the various determinants of growth below.

10 **Q. Describe the various determinants of growth that can be considered for the**
11 **growth rate input in the DCF Model.**

12 A. Although the DCF Model directly considers the growth of dividends, there are a
13 variety of growth determinants that should be considered when estimating growth
14 rates. It should be noted that these various growth determinants are used primarily
15 to determine the short-term growth rates in multi-stage DCF models. For utility
16 companies, it is necessary to focus primarily on a long-term growth rate in
17 dividends. This is also known as a “sustainable” growth rate, since this is the
18 growth rate assumed for the company’s dividends in perpetuity. That is not to say
19 that these growth determinants cannot be considered when estimating sustainable
20 growth; however, as discussed below, sustainable growth must be constrained

1 much more than short-term growth, especially for young firms with high growth
2 opportunities. Additionally, I briefly discuss these growth determinants here
3 because it may reveal some of the source of confusion in this area.

4 **1. Historical Growth**

5 Looking at a firm's actual historical experience may theoretically provide a
6 good starting point for estimating short-term growth. However, past growth is not
7 always a good indicator of future growth.³³ Some metrics that might be
8 considered here are a historical growth in revenues, operating income, and net
9 income. Because dividends are paid from earnings, estimating historical earnings
10 growth may provide an indication of future earnings and dividend growth. In
11 general, however, revenue growth tends to be more consistent and predictable than
12 earnings growth because it is less likely to be influenced by accounting
13 adjustments.³⁴

³³ This fact is required on all advertisements for investments in stock or bond funds, i.e., "*Past performance is no guarantee of future results*. Investment return and principal value of an investment will fluctuate; therefore, you may have a gain or loss when you sell your shares. Current performance may be higher or lower than the performance stated."

³⁴ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, p. 279 (3rd ed., John Wiley & Sons, Inc. 2012).

1 **2. Analyst Growth Rates**

2 Analyst growth rates refer to short-term projections of earnings growth
3 published by institutional research analysts such as Value Line and Bloomberg.

4 Analyst growth rates, including the limitations with using them in the DCF Model
5 to estimate utility cost of equity, are discussed in more detail below.

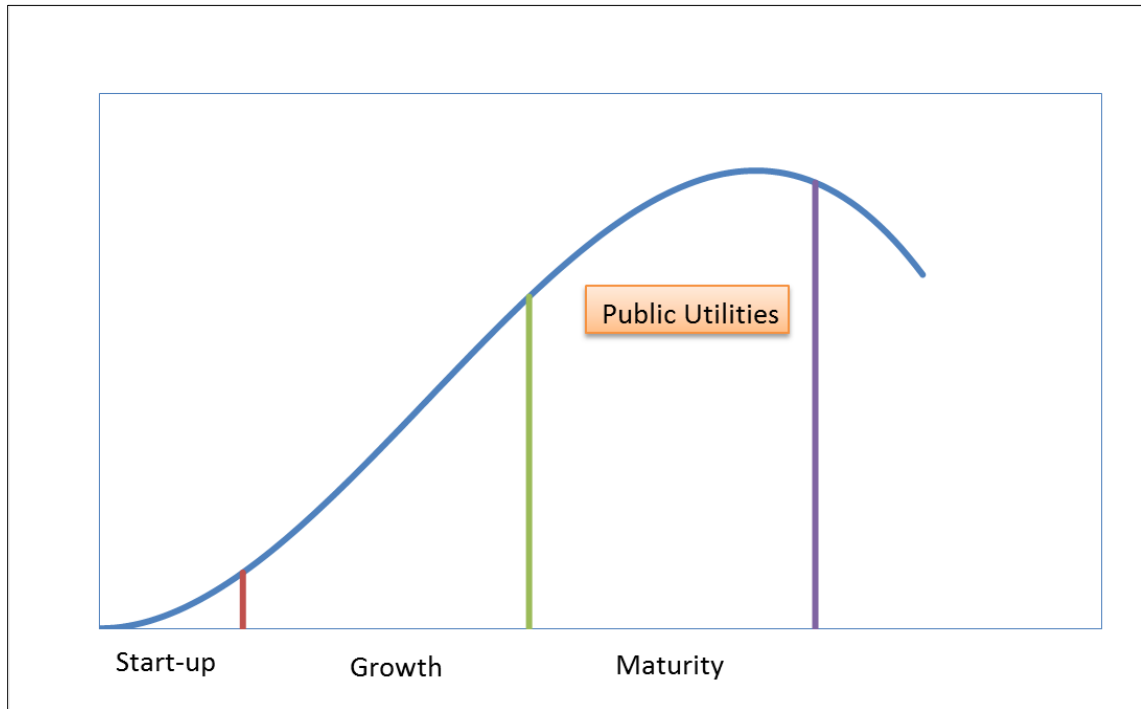
6 **3. Sustainable Growth Rates**

7 To make the DCF Model a viable, practical model, an infinite stream of
8 future cash flow must be estimated and then discounted back to the present.

9 Otherwise, each annual cash flow would have to be estimated separately. Some
10 analysts use “multi-stage” DCF Models to estimate the value of high-growth firms
11 through two or more stages of growth, with the final stage of growth being
12 sustainable. However, it is not necessary to use multi-stage DCF Models to
13 analyze the cost of equity of regulated utility companies. This is because
14 regulated utilities are already in their “sustainable,” low-growth stage. Unlike
15 most competitive firms, the growth of regulated utilities is constrained by physical
16 service territories and limited primarily by ratepayer and load growth within those
17 territories. The figure below illustrates the well-known business/industry life-
18 cycle pattern.

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**Figure 5:
Industry Life Cycle**



3 In an industry's early stages, there are ample opportunities for growth and
4 profitable reinvestment. In the maturity stage however, growth opportunities
5 diminish, and firms choose to pay out a larger portion of their earnings in the form
6 of dividends instead of reinvesting them in operations to pursue further growth
7 opportunities. Once a firm is in the maturity stage, it is not necessary to consider
8 higher short-term growth metrics in multi-stage DCF Models; rather, it is
9 sufficient to analyze the cost of equity using a stable growth DCF Model with one
10 sustainable growth rate.

1 **Q. Should the annual sustainable growth rate used in the DCF Model exceed the**
2 **annual growth rate of the aggregate economy?**

3 A. No. A fundamental concept in finance is that no firm can grow forever at a rate
4 higher than the growth rate of the economy in which it operates.³⁵ Thus, the
5 sustainable growth rate used in the DCF Model should not exceed the aggregate
6 economic growth rate. This is especially true when the DCF Model is conducted
7 on public utilities because these firms have defined service territories. As stated
8 by Dr. Damodaran: “[i]f a firm is a purely domestic company, either because of
9 internal constraints . . . or external constraints (such as those imposed by a
10 government), the growth rate in the domestic economy will be the limiting
11 value.”³⁶

12 In fact, it is reasonable to assume that a regulated utility would grow at a
13 rate that is *less* than the United States’ economic growth rate. Unlike competitive
14 firms, which might increase their growth by launching a new product line,
15 franchising, or expanding into new and developing markets, utility operating
16 companies with defined service territories cannot do any of these things to grow.
17 Gross Domestic Product (“GDP”) is one of the most widely used measures of

³⁵ *See id.* at p. 306.

³⁶ *Id.*

1 economic production and is used to measure aggregate economic growth.
2 According to the Congressional Budget Office’s 2025 Long-Term Budget
3 Outlook, the long-term forecast for nominal United States’ GDP growth is 3.7%.³⁷
4 This is the figure I used as the terminal growth rate for each proxy company in the
5 sustainable growth variation of my DCF Model.³⁸

6 For the “analyst growth” variation of the DCF model, I considered
7 historical, short-term annual dividend growth rates reported by Value Line.³⁹ I
8 show this variation of the DCF model because it is often presented in rate cases by
9 cost of capital witnesses and considered by regulators when assessing the awarded
10 ROE.

11 **Q. Why does the analyst growth variation of the DCF Model not reflect an**
12 **accurate estimate of Pepco’s cost of equity?**

13 There are several reasons that analysts’ growth rates are problematic to use in the
14 DCF Model—specifically to assess the cost of equity of a regulated utility. First,
15 there is an inherent circular reference, or feedback loop problem with the DCF
16 Model (a problem the CAPM does not share). That is, the inputs to the model

³⁷ Congressional Budget Office, The 2024 Long-Term Budget Outlook,
<https://www.cbo.gov/publication/59711>.

³⁸ Attachment DJG-5.

³⁹ Attachment DJG-6.

1 (stock price, dividend, and dividend/earnings growth) can be affected by the very
2 output of the model (the indicated cost of equity—particularly to the extent the
3 authorized ROE is based on the model output). If an ROE witness uses a high
4 growth rate in the DCF Model that was published by a commercial analyst, and it
5 results in a high DCF Model result, and the regulator then authorizes an ROE
6 based on the high model result, it could lead to a high indicated earnings growth
7 that will again influence the analysts' high growth rate projections—and the cycle
8 continues. Another problem with using analysts' published growth rates is that
9 they appear to be strictly quantitative in nature and do not consider aspects of
10 ratemaking, fairness, and qualitative growth factors in the growth rate projections.
11 If a regulator consistently approves above-market rate increases for a utility,
12 perhaps driven by rate base increases, the commercial analyst will project a high,
13 quantitative earnings growth rate for the utility, perhaps without considering what
14 the growth rate is actually based on. A purely competitive firm such as Wal-Mart
15 cannot generate earnings growth by simply replacing old Wal-Mart stores with
16 new stores in order to serve the same customer base (i.e., not increasing its market
17 share). In fact, such a decision would likely have a negative impact on earnings
18 growth. However, utilities can achieve quantitative earnings growth by
19 increasing rate base, even if demand and/or customer growth is stagnant. In this

1 regard, the DCF Model has some shortcomings in terms of estimating the cost of
2 equity for a regulated utility, particularly regarding the growth rate input.

3 **Q. What are the final results of your DCF Models?**

4 A. The sustainable growth rate DCF model produced an indicated cost of equity of
5 7.3%. The analyst growth variation of the DCF produced a result of 9.0%. In my
6 opinion, the analyst growth variation of the DCF clearly overstates Pepco's cost of
7 equity in this case. For that reason, I did not directly incorporate the results of this
8 model into my cost of equity analysis or authorized ROE recommendation.
9 Instead, I present the results of this model because it is often presented in
10 regulatory proceedings. In addition, I presented the results of this variation of the
11 DCF Model to contrast the results with those of a similar model presented by Mr.
12 McKenzie in this case, which is further discussed below.

13 **D. Response to Mr. McKenzie's DCF model**

14 **Q. Please summarize the results of Mr. McKenzie's DCF analyses.**

15 A. Mr. McKenzie's DCF analyses produced results ranging from 9.3% - 10.5%.⁴⁰

⁴⁰ McKenzie Direct Testimony at 43, Table 4.

1 **Q. Do the results of Mr. McKenzie's DCF analyses indicate a reasonable cost of**
2 **equity estimate for Pepco?**

3 A. No. The lowest end of Mr. McKenzie's DCF Model range is fairly similar to the
4 results of the analyst growth variation of my DCF Model. However, as discussed
5 above, this variation of the DCF Model overstates the company's cost of equity in
6 my opinion. This is because the model relies on the short-term, quantitative
7 growth rate estimates for the long-term growth input in the DCF model.
8 Moreover, this variation of the model suffers from a circular reference problem in
9 that the inputs of the model (stock price, dividends, and dividend growth), are
10 heavily influenced by the output of the model (to the extent it influences the
11 authorized ROE).

12 **Q. Please describe the problems with Mr. McKenzie's long-term growth input.**

13 A. Mr. McKenzie's application of the DCF Model incorporates short-term growth
14 rate estimates from various analysts, which he then applies in perpetuity in his
15 model. As discussed above, assuming that a domestic firm can sustain earnings or
16 dividend growth that exceed U.S. GDP over the long run is not reasonable. For
17 these reasons, Mr. McKenzie's DCF Model results overstate Pepco's market-
18 based cost of equity.

1 **V. CAPITAL ASSET PRICING MODEL ANALYSIS**

2 **Q. Describe the Capital Asset Pricing Model.**

3 A. The CAPM is a market-based model founded on the principle that investors expect
4 higher returns for incurring additional risk.⁴¹ The CAPM estimates this expected
5 return. The various assumptions, theories, and equations involved in the CAPM
6 are discussed further in Appendix B. Using the CAPM to estimate the cost of
7 equity of a regulated utility is consistent with the legal standards governing the fair
8 rate of return. The U.S. Supreme Court has recognized that “the amount of *risk* in
9 the business is a most important factor” in determining the allowed rate of
10 return,⁴² and that “the return to the equity owner should be commensurate with
11 returns on investments in other enterprises having corresponding *risks*.”⁴³ The
12 CAPM is a useful model because it directly considers the amount of risk inherent
13 in a business and directly measures the most important component of a fair rate of
14 return analysis: Risk.

⁴¹ William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963);
see also John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory
to What Companies Do* 208 (3rd ed., South-Western Cengage Learning 2010).

⁴² *Wilcox*, 212 U.S. at 48 (emphasis added).

⁴³ *Hope Natural Gas Co.*, 320 U.S. at 603 (emphasis added).

1 **Q. Describe the inputs for the CAPM.**

2 A. The basic CAPM equation requires only three inputs to estimate the cost of equity:
3 (1) the risk-free rate; (2) the beta coefficient; and (3) the equity risk premium.
4 Each input is discussed separately below.

5 **A. The Risk-Free Rate**

6 **Q. Explain the risk-free rate.**

7 A. The first term in the CAPM is the risk-free rate (R_F). The risk-free rate is simply
8 the level of return investors can achieve without assuming any risk. The risk-free
9 rate represents the bare minimum return that any investor would require on a risky
10 asset. Even though no investment is technically void of risk, investors often use
11 U.S. Treasury securities to represent the risk-free rate because they accept that
12 those securities essentially contain no default risk. The Treasury issues securities
13 with different maturities, including short-term Treasury Bills, intermediate-term
14 Treasury Notes, and long-term Treasury Bonds.

15 **Q. Is it preferable to use the yield on long-term Treasury bonds for the risk-free**
16 **rate in the CAPM?**

17 A. Yes. In valuing an asset, investors estimate cash flows over long periods of time.
18 Common stock is viewed as a long-term investment, and the cash flows from
19 dividends are assumed to last indefinitely. As a result, short-term Treasury bill
20 yields are rarely used in the CAPM to represent the risk-free rate. Short-term rates

1 are subject to greater volatility and thus can lead to unreliable estimates. Instead,
2 long-term Treasury bonds are usually used to represent the risk-free rate in the
3 CAPM. I considered a 30-day average of daily Treasury yield curve rates on 30-
4 year Treasury bonds in my risk-free rate estimate, which resulted in a risk-free rate
5 of 4.65%.⁴⁴

6 **B. The Beta Coefficient**

7 **Q. How is the beta coefficient used in this model?**

8 A. As discussed above, beta represents the sensitivity of a given security to
9 movements in the overall market. The CAPM states that in efficient capital
10 markets, the expected risk premium on each investment is proportional to its beta.
11 Recall that a security with a beta greater than one is riskier than the market
12 portfolio. Conversely, a security with a beta less than one is less risky than the
13 market portfolio. An index such as the S&P 500 Index is used as a proxy for the
14 market portfolio. The historical betas for publicly traded firms are published by
15 various institutional analysts. Beta may also be calculated through a linear
16 regression analysis, which provides additional statistical information about the
17 relationship between a single stock and the market portfolio. The market portfolio

⁴⁴ Attachment DJG-7.

1 of all stocks has a beta equal to one. Stocks with betas greater than one are
2 relatively more sensitive to market risk than the average stock. In contrast, stocks
3 with betas of less than one are less sensitive to market risk.

4 **Q. Describe the source for the betas you used in your CAPM analysis.**

5 A. I used two sources for my beta inputs. First, I used betas recently published by
6 Value Line Investment Survey. Value Line calculates betas by using a regression
7 analysis on weekly stock price changes compared with NYSE Composite Index
8 over a five-year historical period. Value Line also applies an adjustment to the
9 raw betas obtained from this calculation which accounts for betas tendency to
10 revert to the market mean of 1.0 over time. In other words, this adjustment
11 increases the raw beta calculation for utility companies. I also used betas
12 published by Yahoo! Finance, which are calculated through a similar regression
13 analysis, but using the S&P 500 Index instead of the NYSE Composite Index.
14 Arguably, the S&P 500 is preferable to the NYSE index for beta regression
15 because it's a more accurate proxy for the overall "market" (systematic risk) due to
16 its market-cap weighting and broader sector representation, whereas NYSE indices
17 can be skewed by a narrower focus, which makes the S&P 500 better at reflecting
18 the core economic drivers and market volatility used in CAPM. It is also worth
19 noting that based on my experience, the betas published by Value Line tend to be

1 the highest out of those from other sources such as Yahoo, Bloomberg, and other
2 sources. In addition, my equity risk premium analysis (discussed further below) is
3 also based primarily on the S&P 500 index. In that regard, incorporating beta
4 analyses based on the S&P 500 is consistent. For my CAPM analysis, I averaged
5 the betas for each proxy company from these two sources.⁴⁵

6 **C. The Equity Risk Premium**

7 **Q. Describe the equity risk premium.**

8 A. The final term of the CAPM is the equity risk premium (“ERP”), which is the
9 required return on the market portfolio less the risk-free rate ($R_M - R_F$). In other
10 words, the ERP is the level of return investors expect above the risk-free rate in
11 exchange for investing in risky securities. Many experts agree that “the single
12 most important variable for making investment decisions is the equity risk
13 premium.”⁴⁶ Likewise, the ERP is arguably the single most important factor in
14 estimating the cost of capital in this matter. There are three basic methods that can
15 be used to estimate the ERP: (1) calculating a historical average; (2) taking a

⁴⁵ Attachment DJG-8. *See also* Appendix B for a more detailed discussion of raw beta calculations and adjustments.

⁴⁶ Elroy Dimson, Paul Marsh & Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns* 4 (Princeton University Press 2002).

1 survey of experts; and (3) calculating the implied ERP. I will discuss each method
2 in turn, noting advantages and disadvantages of these methods.

3 **1. Historical Average**

4 **Q. Describe the historical equity risk premium.**

5 A. The historical ERP may be calculated by simply taking the difference between
6 returns on stocks and returns on government bonds over a certain period of time.

7 Many practitioners rely on the historical ERP as an estimate for the forward-
8 looking ERP because it is easy to obtain. However, there are disadvantages to
9 relying on the historical ERP.

10 **Q. What are the limitations of relying solely on a historical average to estimate**
11 **the current or forward-looking ERP?**

12 A. As I mentioned, many investors use the historic ERP because it is convenient and
13 easy to calculate. But what matters in the CAPM model is the current and
14 forward-looking risk premium.⁴⁷ Some investors may think that a historic ERP
15 provides some indication of what the prospective risk premium is; however, there
16 is empirical evidence to suggest the prospective, forward-looking ERP is actually
17 *lower* than the historical ERP. In *Triumph of the Optimists*, a landmark publication

⁴⁷ John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 330 (3rd ed., South-Western Cengage Learning 2010).

1 on risk premiums around the world, the authors suggest through extensive
2 empirical research that the prospective ERP is lower than the historical ERP.⁴⁸
3 This is due in large part to what is known as “survivorship bias” or “success
4 bias”—a tendency for failed companies to be excluded from historical indices.⁴⁹
5 From their extensive analysis, the authors make the following conclusion
6 regarding the prospective ERP:

7 The result is a forward-looking, geometric mean risk premium for
8 the United States . . . of around 2½ to 4 percent and an arithmetic
9 mean risk premium . . . that falls within a range from a little below 4
10 to a little above 5 percent.⁵⁰

11 Indeed, these results are lower than many reported historical risk premiums. Other
12 noted experts agree:

⁴⁸ Elroy Dimson, Paul Marsh & Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns* 194 (Princeton University Press 2002).

⁴⁹ *Id.* at 34.

⁵⁰ *Id.* at 194.

1 The historical risk premium obtained by looking at U.S. data is
2 biased upwards because of survivor bias. . . . The true premium, it is
3 argued, is much lower. This view is backed up by a study of large
4 equity markets over the twentieth century (*Triumph of the*
5 *Optimists*), which concluded that the historical risk premium is
6 closer to 4%.⁵¹

7 Regardless of the variations in historic ERP estimates, many leading scholars and
8 practitioners agree that simply relying on a historic ERP to estimate the risk
9 premium going forward is not ideal. Fortunately, “a naïve reliance on long-run
10 historical averages is not the only approach for estimating the expected risk
11 premium.”⁵²

12 **Q. Did you rely on the historical ERP as part of your CAPM analysis in this**
13 **case?**

14 A. No. Due to the limitations of this approach, I primarily relied on the ERP reported
15 in expert surveys and the implied ERP method discussed below.

16 2. Expert Surveys

17 **Q. Describe the expert survey approach to estimating the ERP.**

18 A. As its name implies, the expert survey approach to estimating the ERP involves
19 conducting a survey of experts including professors, analysts, chief financial

⁵¹ Aswath Damodaran, *Equity Risk Premiums: Determinants, Estimation and Implications – The 2015 Edition* 17 (New York University 2015).

⁵² John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 330 (3rd ed., South Western Cengage Learning 2010).

1 officers, and other executives around the country and asking them what they think
2 the ERP is. The IESE Business School conducts such a survey each year. Their
3 2025 expert survey reported an average ERP of 5.5%.⁵³

4 **3. Implied Equity Risk Premium**

5 **Q. Describe the implied equity risk premium approach.**

6 A. The third method of estimating the ERP is arguably the best. The implied ERP
7 relies on the stable growth model proposed by Gordon, often called the “Gordon
8 Growth Model,” which is a basic stock valuation model widely used in finance for
9 many years.⁵⁴ This model is a mathematical derivation of the DCF Model. In
10 fact, the underlying concept in both models is the same: The current value of an
11 asset is equal to the present value of its future cash flows. Instead of using this
12 model to determine the discount rate of one company, we can use it to determine
13 the discount rate for the entire market by substituting the inputs of the model.
14 Specifically, instead of using the current stock price (P_0), we will use the current

⁵³ Pablo Fernandez, Pablo Linares & Isabel F. Acin, *Survey: Market Risk Premium and Risk-Free Rate used for 81 countries in 2020* (IESE Business School 2020), copy available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4754347. IESE Business School is the graduate business school of the University of Navarra. IESE offers Master of Business Administration (MBA), Executive MBA and Executive Education programs. IESE is consistently ranked among the leading business schools in the world.

⁵⁴ Myron J. Gordon and Eli Shapiro, *Capital Equipment Analysis: The Required Rate of Profit* 102-10 (Management Science Vol. 3, No. 1 Oct. 1956).

1 value of the S&P 500 (V_{500}). Instead of using the dividends of a single firm, we
2 will consider the dividends paid by the entire market. Additionally, we should
3 consider potential dividends. In other words, stock buybacks should be considered
4 in addition to paid dividends, as stock buybacks represent another way for the firm
5 to transfer free cash flow to shareholders. Focusing on dividends alone without
6 considering stock buybacks could understate the cash flow component of the
7 model and ultimately understate the implied ERP. The market dividend yield plus
8 the market buyback yield gives us the gross cash yield to use as our cash flow in
9 the numerator of the discount model. This gross cash yield is increased each year
10 over the next five years by the growth rate. These cash flows must be discounted
11 to determine their present value. The discount rate in each denominator is the
12 risk-free rate (R_F) plus the discount rate (K). Equation 1 below shows how the
13 implied return is calculated. Because the current value of the S&P is known, we
14 can solve for K : The implied market return.⁵⁵

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⁵⁵ See Attachment DJG-9 for detailed calculation.

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**Equation 1:
Implied Market Return**

$$V_{500} = \frac{CY_1(1 + g)^1}{(1 + R_F + K)^1} + \frac{CY_2(1 + g)^2}{(1 + R_F + K)^2} + \dots + \frac{CY_5(1 + g)^5 + TV}{(1 + R_F + K)^5}$$

where: V_{500} = current value of index (S&P 500)
 CY_{1-5} = average cash yield over last five years (includes dividends and buybacks)
 g = compound growth rate in earnings over last five years
 R_F = risk-free rate
 K = implied market return (this is what we are solving for)
 TV = terminal value = $CY_5 (1+R_F) / K$

The discount rate is called the “implied” return because it is based on the current value of the index as well as the value of free cash flow to investors projected over the next five years. Thus, based on these inputs, the market is “implying” the expected return; or in other words, based on the current value of all stocks (the index price) and the projected value of future cash flows, the market is telling us the return expected by investors for investing in the market portfolio. After solving for the implied market return (K), we simply subtract the risk-free rate from it to arrive at the implied ERP as shown in Equation 2.

1 **Equation 2:**
2 **Implied Equity Risk Premium**

3 *Implied Expected Market Return – R_F = Implied ERP*

4 **Q. Discuss the results of your implied ERP calculation.**

5 A. After collecting data for the index value, operating earnings, dividends, and
6 buybacks for the S&P 500 over the past six years, I calculated the dividend yield,
7 buyback yield, and gross cash yield for each year. I also calculated the compound
8 annual growth rate (g) from operating earnings. I used these inputs, along with the
9 risk-free rate and current value of the index to calculate a current expected return
10 on the entire market of 9.8%. I subtracted the risk-free rate to arrive at the implied
11 equity risk premium of 5.0%.⁵⁶ Dr. Damodaran, one of the world's leading
12 experts on the ERP, promotes the implied ERP method discussed above. He
13 calculates monthly and annual implied ERPs with several variations of this
14 method and publishes his results. Dr. Damodaran's average ERP estimate for
15 January 2026 using several implied ERP variations was 4.4%.⁵⁷

⁵⁶ *Id.*

⁵⁷ <http://pages.stern.nyu.edu/~adamodar/>

1 **Q. What are the results of your final ERP estimate?**

2 A. For the final ERP estimate I used in my CAPM analysis, I considered the results of
3 the ERP expert survey, the estimated ERP calculated by Dr. Damodaran, and the
4 implied ERP based on my calculations. In addition, I also considered a recent
5 ERP estimate published by Kroll (formerly Duff & Phelps), which is 5.0 percent.⁵⁸
6 The results are presented in the following figure:

7 **Figure 6:**
8 **Equity Risk Premium Results**

Source	ERP Estimate
IESE Business School Survey	5.5%
Kroll (Duff & Phelps) Report	5.0%
Damodaran (average)	4.4%
Garrett	5.0%
Average	5.0%

9 I used the average ERP of 5.0% from these sources in my CAPM.

⁵⁸ Kroll, *Cost of Capital Recommendations and Potential Upcoming Changes – February 8, 2024 Update* <https://www.kroll.com/-/media/kroll-images/pdfs/cost-of-capital-recommendations-upcoming-changes-feb-2024.pdf> (last visited June 11, 2024).

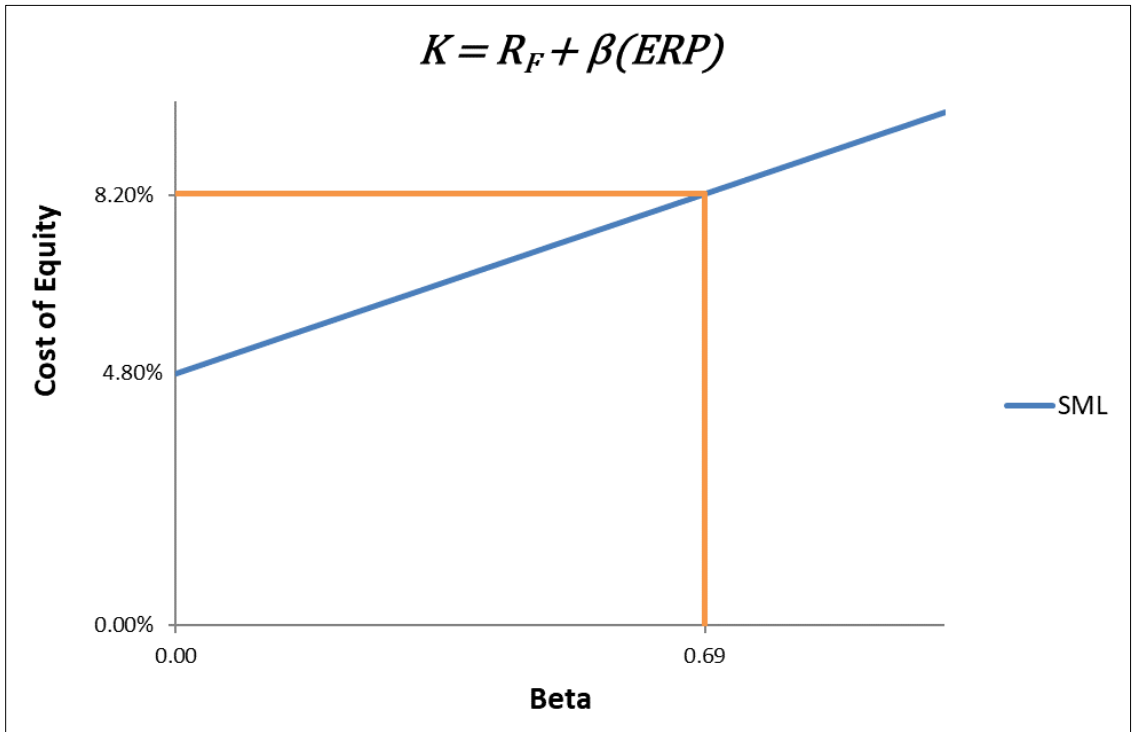
1 **Q. Please explain the final results of your CAPM analysis.**

2 A. Using the inputs for the risk-free rate, beta, and equity risk premium discussed
3 above, I estimate that the company’s CAPM cost of equity is 8.2%.⁵⁹ The CAPM
4 can be displayed graphically through what is known as the Security Market Line
5 (“SML”). The figure below shows the expected return (cost of equity) on the y-
6 axis, and the average beta for the proxy group on the x-axis. The SML intercepts
7 the y-axis at the level of the risk-free rate. The slope of the SML is the equity risk
8 premium.

⁵⁹ Attachment DJG-11.

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**Figure 7:
CAPM Graph**



3 The SML provides the rate of return that will compensate investors for the beta risk
4 of that investment. Thus, at an average beta of 0.69 for the proxy group, the
5 estimated CAPM cost of equity for the company is 8.2%.

1 **D. Response to Mr. McKenzie’s CAPM Analysis and Other Issues**

2 **Q. Please summarize the results of Mr. McKenzie’s CAPM analysis.**

3 A. Mr. McKenzie’s CAPM application produced results ranging from 10.4% -
4 10.7%.⁶⁰

5 **Q. Do the results of Mr. McKenzie’s CAPM analyses indicate a reasonable cost**
6 **of equity estimate for Pepco?**

7 A. No. The primary reason the base results of Mr. McKenzie’s CAPM analysis are
8 unreasonably high is that he used an unreasonably high input for the ERP. Mr.
9 McKenzie also added an inappropriate “size premium” into this CAPM analysis.
10 In addition, Mr. McKenzie conducted a variation of the CAPM called the
11 “empirical” CAPM (“ECAPM”), which not only uses the same unreasonably high
12 ERP as his traditional CAPM, but also makes unnecessary, upward adjustments to
13 the beta term in the CAPM. Finally, in addition to the CAPM, Mr. McKenzie
14 conducted another type of risk premium model which produces an unreasonably
15 high cost of equity estimate for the company. I discuss these issues below.

⁶⁰ McKenzie Direct Testimony at 48.

1 **1. Equity Risk Premium**

2 **Q. Did Mr. McKenzie rely on a reasonable measure for the ERP?**

3 A. No. Mr. McKenzie used an ERP of 7.2%.⁶¹ The ERP is one of three inputs in the
4 CAPM equation, and it is one of the most single important factors for estimating
5 the cost of equity in this case. As discussed above, I used three widely accepted
6 methods for estimating the ERP, including consulting expert surveys, calculating
7 the implied ERP based on aggregate market data, and considering the ERPs
8 published by reputable analysts. The average ERP produced from my various
9 sources is only 5.0%.⁶² This means that Mr. McKenzie's ERP estimate is
10 significantly higher than average ERP from the objective sources discussed above.

11 **Q. Please discuss and illustrate how Mr. McKenzie's ERP compares with other**
12 **estimates for the ERP.**

13 A. As discussed above, the 2025 IESE Business School expert survey reports an
14 average ERP of 5.5%. Similarly, Kroll recently estimated an ERP of 5.0%. The
15 following figure illustrates that Mr. McKenzie's ERP estimate of 7.27% is far out
16 of line with industry norms.⁶³

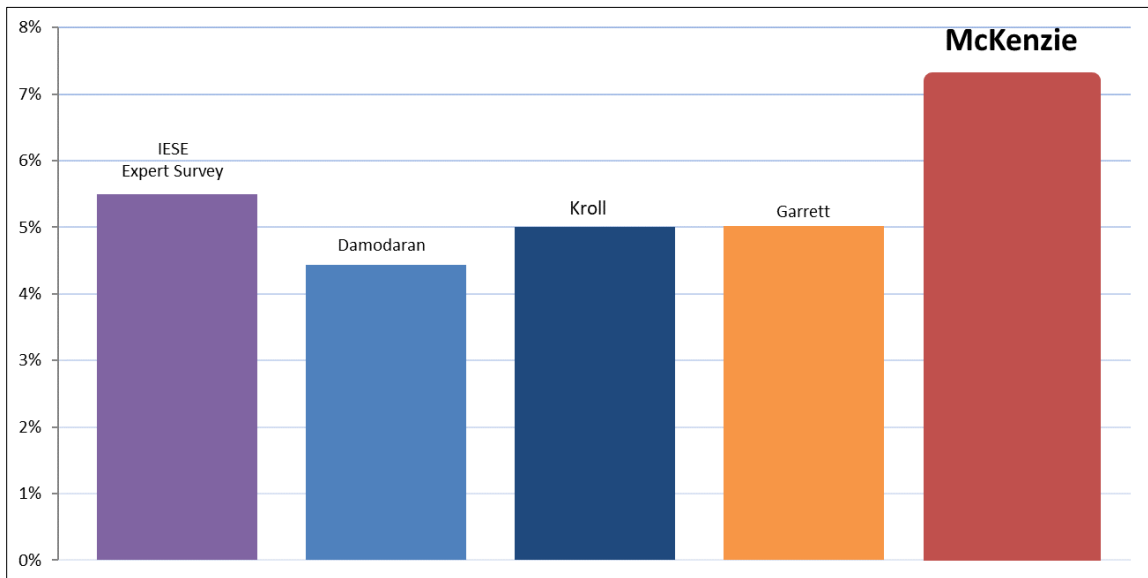
⁶¹ McKenzie Direct Testimony at 45:20.

⁶² Attachment DJG-10.

⁶³ The ERP estimated by Dr. Damodaran is the average of several ERP estimates under slightly differing assumptions.

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**Figure 8:
Equity Risk Premium Comparison**



3 When compared with other independent sources for the ERP (as well as my
4 estimate), which do not have a wide variance, Mr. McKenzie’s ERP estimate is
5 clearly not within the range of reasonableness. As a result, his CAPM cost of
6 equity estimate is overstated and unreliable.

7 **2. Size Adjustment**

8 **Q. Please summarize Mr. McKenzie’s size adjustment.**

9 A. Mr. McKenzie applies additional basis points to his CAPM proxy group results for
10 what he calls a size adjustment.⁶⁴ In effect, he increases the ROE results for the

⁶⁴ McKenzie Direct Testimony at 46-48, Schedule AMM-7.

1 entire proxy group based on the premise that the CAPM “overstates returns to
2 companies with larger market capitalizations and understates returns for relatively
3 smaller firms.”⁶⁵

4 **Q. Do you agree with Mr. McKenzie regarding the size effect?**

5 A. No. The “size effect” phenomenon arose from a 1981 study conducted by Banz,
6 which found that “in the 1936 – 1975 period, the common stock of small firms
7 had, on average, higher risk-adjusted returns than the common stock of large
8 firms.”⁶⁶ According to Ibbotson, Banz’s size effect study was “[o]ne of the most
9 remarkable discoveries of modern finance.”⁶⁷ Perhaps there was some merit to
10 this idea at the time, but the size effect phenomenon was short lived. Banz’s 1981
11 publication generated much interest in the size effect and spurred the launch of
12 significant new small cap investment funds. However, this “honeymoon period
13 lasted for approximately two years. . . .”⁶⁸ After 1983, U.S. small-cap stocks
14 actually underperformed relative to large cap stocks. In other words, the size
15 effect essentially reversed. In *Triumph of the Optimists*, the authors conducted an

⁶⁵ *Id.* at 46.

⁶⁶ Rolf W. Banz, *The Relationship Between Return and Market Value of Common Stocks* 3-18 (Journal of Financial Economics 9 (1981)).

⁶⁷ 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook 99 (Morningstar 2015).

⁶⁸ Elroy Dimson, Paul Marsh & Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns* 131 (Princeton University Press 2002).

1 extensive empirical study of the size effect phenomenon around the world. They
2 found that after the size effect phenomenon was discovered in 1981, it disappeared
3 within a few years:

4 It is clear . . . that there was a global reversal of the size effect in
5 virtually every country, with the size premium not just disappearing
6 but going into reverse. Researchers around the world universally fell
7 victim to Murphy’s Law, with the very effect they were
8 documenting – and inventing explanations for – promptly reversing
9 itself shortly after their studies were published.⁶⁹

10 In other words, the authors assert that the very discovery of the size effect
11 phenomenon likely caused its own demise. The authors ultimately concluded that
12 it is “inappropriate to use the term ‘size effect’ to imply that we should
13 automatically expect there to be a small-cap premium,” yet this is exactly what
14 utility witnesses often do in attempting to artificially inflate the cost of equity with
15 a size premium. Other prominent sources have agreed that the size premium is a
16 dead phenomenon. According to Ibbotson:

⁶⁹ *Id.* at 133.

1 The unpredictability of small-cap returns has given rise to another
2 argument against the existence of a size premium: that markets have
3 changed so that the size premium no longer exists. As evidence, one
4 might observe the last 20 years of market data to see that the
5 performance of large-cap stocks was basically equal to that of small
6 cap stocks. In fact, large-cap stocks have outperformed small-cap
7 stocks in five of the last 10 years.⁷⁰

8 In addition to the studies discussed above, other scholars have concluded similar
9 results. According to Kalesnik and Beck:

10 Today, more than 30 years after the initial publication of Banz's
11 paper, the empirical evidence is extremely weak even before
12 adjusting for possible biases. . . . The U.S. long-term size premium is
13 driven by the extreme outliers, which occurred three-quarters of a
14 century ago. . . . Finally, adjusting for biases . . . makes the size
15 premium vanish. If the size premium were discovered today, rather
16 than in the 1980s, it would be challenging to even publish a paper
17 documenting that small stocks outperform large ones.⁷¹

18 For all of these reasons, the Commission should reject the arbitrary size premium
19 proposed by the company.

⁷⁰ 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook 112 (Morningstar 2015).

⁷¹ Vitali Kalesnik and Noah Beck, *Busting the Myth About Size* (Research Affiliates 2014), available at https://www.researchaffiliates.com/Our%20Ideas/Insights/Fundamentals/Pages/284_Busting_the_Myth_About_Size.aspx (emphasis added).

1 **3. Empirical CAPM**

2 **Q. Please summarize Mr. McKenzie’s Empirical CAPM (“ECAPM”) analysis.**

3 A. Mr. McKenzie offers another version of the CAPM called ECAPM.⁷² The premise
4 of the ECAPM is that the standard CAPM underestimates the return required from
5 low-beta securities, such as those of the proxy group. Mr. McKenzie factored the
6 results of the ECAPM into his overall CAPM cost of equity estimate.

7 **Q. Do the results of Mr. McKenzie’s ECAPM indicate a reasonable cost of**
8 **equity estimate for Pepco?**

9 A. No. The premise of Mr. McKenzie’s ECAPM is that the standard CAPM
10 underestimates the return required from low-beta securities. There are several
11 problems with this concept. First, the Value Line betas both Mr. McKenzie and I
12 used in the real CAPM have already been adjusted upward to account for the
13 theory that low-beta stocks might have a tendency to be underestimated. Thus,
14 there is no need to make an additional, upward adjustment to these betas. Second,
15 there is empirical evidence suggesting that the type of beta-adjustment method
16 used by Value Line actually overstates betas from consistently low-beta industries
17 like utilities. According to this research, it is better to employ an adjustment

⁷² McKenzie Direct Testimony at 48.

1 method that adjusts raw betas toward an industry average, rather than the market
2 average, which ultimately would result in betas that are lower than those published
3 in Value Line.⁷³ Finally (and most pertinently), Mr. McKenzie’s ECAPM still
4 suffers from the same overestimated ERP input discussed above.

5 **4. Utility Risk Premium Model**

6 **Q. Please summarize the results of Mr. McKenzie’s other utility risk premium**
7 **model.**

8 A. I am addressing Mr. McKenzie’s other risk premium analysis in this section
9 because the CAPM itself is a risk premium model. In this case, Mr. McKenzie
10 conducted his own “utility risk premium” model, which incorporates the
11 authorized ROEs for utilities dating back to 1974.⁷⁴

12 **Q. Does Mr. McKenzie’s risk premium model indicate a reasonable cost of**
13 **equity estimate for Pepco?**

14 A. No. Mr. McKenzie’s risk premium model does not even assess the cost of equity.
15 Instead, his risk premium model relies on a national average of authorized ROEs
16 dating back to 1974. Data that old is of no relevance because cost of equity
17 estimation is essentially a forward-looking process. Moreover, authorized ROEs

⁷³ See Appendix B for further discussion on these theories.

⁷⁴ McKenzie Direct Testimony, Schedule AMM-9.

1 are not market-based in the same manner in which betas, the ERP, and other inputs
2 to the CAPM and DCF Model are.

3 Furthermore, the risk premium analysis offered by Mr. McKenzie is
4 completely unnecessary when we already have a real risk premium model to use:
5 the CAPM. The CAPM itself is a “risk premium” model; it takes the bare
6 minimum return any investor would require for assuming no risk (the risk-free
7 rate), then adds a *premium* to compensate the investor for the extra risk he or she
8 assumes by buying a stock rather than a riskless U.S. Treasury security. The
9 CAPM has been utilized by companies around the world for decades for the same
10 purpose we are using it in this case – to estimate cost of equity.

11 Unlike the CAPM, which is found in almost every comprehensive financial
12 textbook, the types of risk premium models used by Mr. McKenzie in this case are
13 almost exclusively found in the texts and testimonies of utility witnesses.
14 Specifically, these risk premium models attempt to create an inappropriate link
15 between market-based factors, such as interest rates, with awarded returns on
16 equity. Inevitably, this type of model is used to justify a cost of equity that is
17 much higher than one that would be dictated by market forces. For these reasons,
18 the Commission should reject the results of Mr. McKenzie’s risk premium model
19 as having any bearing on Pepco’s current cost of equity.

1 **VI. CAPITAL STRUCTURE**

2 **Q. Describe in general the concept of a company's capital structure.**

3 A. "Capital structure" refers to the way a company finances its overall operations
4 through external financing. The primary sources of long-term, external financing
5 are debt capital and equity capital. Debt capital usually comes in the form of
6 contractual bond issuances that require the firm to make payments, while equity
7 capital represents an ownership interest in the form of stock. Because a firm
8 cannot pay dividends on common stock until it satisfies its debt obligations to
9 bondholders, stockholders are referred to as "residual claimants." The fact that
10 stockholders have a lower priority to claims on company assets increases their risk
11 and required return relative to bondholders. Thus, equity capital has a higher cost
12 than debt capital. Firms can reduce their weighted average cost of capital
13 ("WACC") by recapitalizing and increasing their debt financing. In addition,
14 because interest expense is deductible, increasing debt also adds value to the firm
15 by reducing the firm's tax obligation.

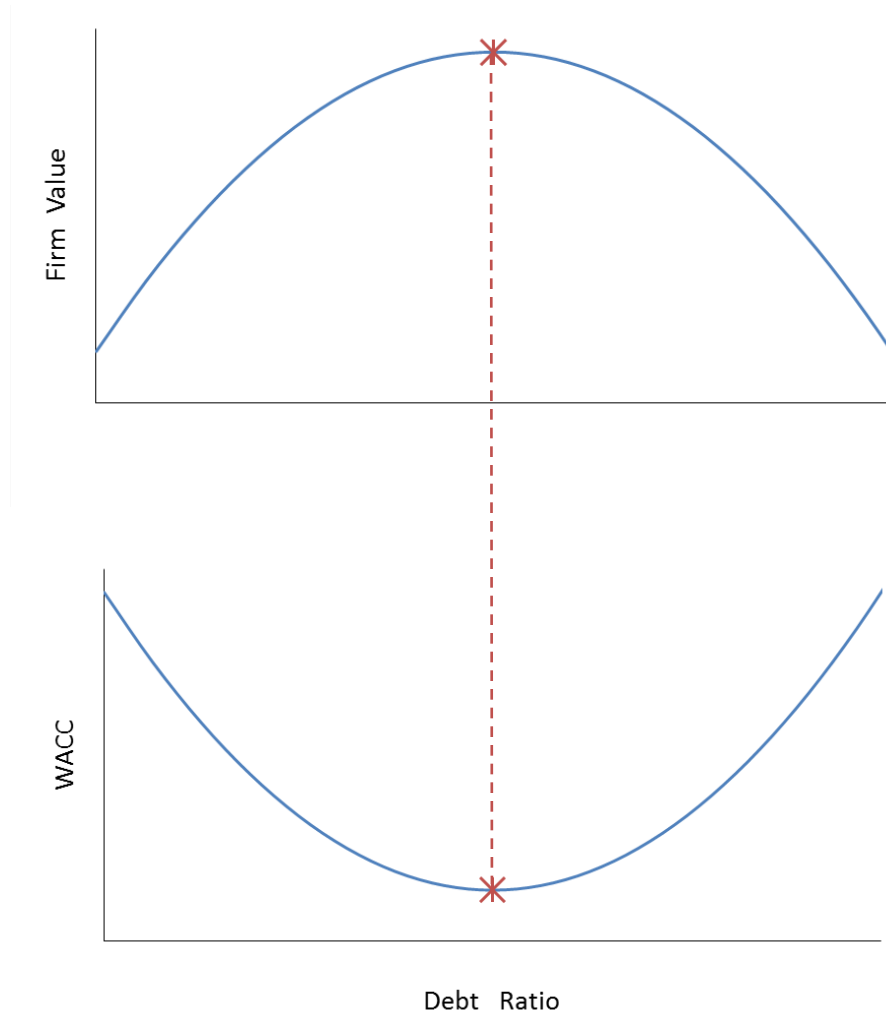
16 **Q. Is it true that, by increasing debt, competitive firms can add value and reduce**
17 **their WACC?**

18 A. Yes, it is. A competitive firm can add value by increasing debt. After a certain
19 point, however, the marginal cost of additional debt outweighs its marginal
20 benefit. This is because the more debt the firm uses, the higher interest expense it

1 must pay, and the likelihood of loss increases. This also increases the risk of non-
2 recovery for both bondholders and shareholders, causing both groups of investors
3 to demand a greater return on their investment. Thus, if debt financing is too high,
4 the firm's WACC will increase instead of decrease. The following figure
5 illustrates these concepts.

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**Figure 9:
Optimal Debt Ratio**



3 As shown in this figure, a competitive firm's value is maximized when the WACC
4 is minimized. In both graphs, the debt ratio is shown on the x-axis. By increasing
5 its debt ratio, a competitive firm can minimize its WACC and maximize its value.
6 At a certain point, however, the benefits of increasing debt do not outweigh the

1 costs of the additional risks to both bondholders and shareholders, as each type of
2 investor will demand higher returns for the additional risk they have assumed.⁷⁵

3 **Q. Does the rate base rate of return model effectively incentivize utilities to**
4 **operate at the optimal capital structure?**

5 A. No. While it is true that competitive firms maximize their value by minimizing
6 their WACC, this is not the case for regulated utilities. Under the rate base rate of
7 return model, a higher WACC results in higher rates, all else held constant. The
8 basic revenue requirement equation is as follows:

9 **Equation 3:**
10 **Revenue Requirement for Regulated Utilities**

11
$$RR = O + d + T + r(A - D)$$

where: RR = revenue requirement
 O = operating expenses
 d = depreciation expense
 T = corporate tax
 r = **weighted average cost of capital (WACC)**
 A = plant investments
 D = accumulated depreciation

12 As shown in Equation 3, utilities can increase their revenue requirement by
13 increasing their WACC, not by minimizing it. Thus, because there is no incentive

⁷⁵ See John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 440-41 (3rd ed., South Western Cengage Learning 2010).

1 for a regulated utility to minimize its WACC, a commission standing in the place
2 of competition must ensure that the regulated utility is operating at the lowest
3 reasonable WACC.

4 **Q. Can utilities generally afford to have higher debt levels than other industries?**

5 A. Yes. Because regulated utilities have large amounts of fixed assets, stable
6 earnings, and low risk relative to other industries, they can afford to have
7 relatively higher debt ratios (or “leverage”). As aptly stated by Dr. Damodaran:

8 Since financial leverage multiplies the underlying business risk, it
9 stands to reason that firms that have high business risk should be
10 reluctant to take on financial leverage. It also stands to reason that
11 firms that operate in stable businesses should be much more willing
12 to take on financial leverage. Utilities, for instance, have historically
13 had high debt ratios but have not had high betas, mostly because
14 their underlying businesses have been stable and fairly predictable.⁷⁶

15 Note that the author explicitly contrasts utilities with firms that have high
16 underlying business risk. Because utilities have low levels of risk and operate a
17 stable business, they should generally operate with relatively high levels of debt to
18 achieve their optimal capital structure.

⁷⁶ Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 196 (3rd ed., John Wiley & Sons, Inc. 2012).

1 **Q. Describe the approach you used to assess the reasonableness of Pepco's**
2 **capital structure for ratemaking purposes.**

3 A. To assess a reasonable capital structure for Pepco, I examined the capital
4 structures of the proxy group and Pepco's ultimate parent company, Exelon
5 Corporation ("Exelon"). I also compared Pepco's proposed debt ratio with debt
6 ratios observed in other industries. I discuss each of these approaches in more
7 detail below.

8 **A. Proxy and Industry Debt Ratios**

9 **Q. Please describe the debt ratios of the proxy group.**

10 A. According to the debt ratios recently reported in Value Line for the utility proxy
11 group (the same utility proxy group used by Mr. McKenzie), the average debt ratio
12 of the proxy group is 57%.⁷⁷ This is notably higher than Pepco's proposed debt
13 ratio of only 49%.

⁷⁷ Attachment DJG-13.

1 **Q. Please describe the debt ratios recently observed in competitive U.S.**
2 **industries.**

3 A: There are currently more than 2,000 companies in the U.S. with debt ratios higher
4 than 50%.⁷⁸ The following figure shows a sample of these industries with debt
5 ratios higher than 56%.

⁷⁸ Attachment DJG-14.

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Figure 10:
Sample of Debt Ratios by Industry

Industry	# Firms	Debt Ratio
Financial Svcs. (Non-bank & Insurance)	166	92%
Hotel/Gaming	65	86%
Brokerage & Investment Banking	30	80%
Retail (Automotive)	29	80%
Hospitals/Healthcare Facilities	33	76%
Air Transport	24	76%
Bank (Money Center)	15	71%
Rubber& Tires	3	67%
Recreation	50	66%
Food Wholesalers	14	66%
Transportation	21	66%
Computers/Peripherals	35	65%
Cable TV	9	65%
Advertising	54	64%
Retail (Grocery and Food)	17	64%
Retail (Special Lines)	98	64%
Telecom (Wireless)	11	63%
Power	48	62%
R.E.I.T.	192	62%
Oil/Gas Distribution	24	62%
Transportation (Railroads)	4	62%
Telecom. Services	32	62%
Chemical (Diversified)	4	61%
Auto & Truck	34	61%
Aerospace/Defense	67	60%
Broadcasting	22	60%
Packaging & Container	22	60%
Apparel	37	59%
Beverage (Soft)	29	59%
Utility (General)	14	59%
Retail (Distributors)	66	58%
Farming/Agriculture	35	57%
Green & Renewable Energy	18	57%
Information Services	16	57%

1 Many of the industries shown here, like public utilities, are generally well-
2 established industries with large amounts of capital assets. The shareholders of
3 these industries generally prefer these higher debt ratios to maximize their profits.
4 There are several notable industries that are relatively comparable to public
5 utilities. For example, the Cable TV, Telecom, and Power industries have debt
6 ratios of at least 60%. I am not basing my capital structure recommendation in
7 this case on the average debt ratios of any of these industries. Rather, I present
8 this analysis to show that it is not uncommon for many companies to operate with
9 high amounts of leverage.

10 **Q. Please summarize the results of your capital structure analyses and your**
11 **recommendation regarding capital structure.**

12 A. The results of my analyses are summarized in the figure below:

Figure 11:
Capital Structure Analysis – Summary of Results

Source	Debt Ratio
Cable TV	65%
Power	62%
Telecom Services	62%
Proxy Group of Utilities	57%
Company Proposal	49%

1 As shown in this figure, Pepco’s proposed debt ratio is clearly too low. This
2 results in excessively high capital costs and utility rates.⁷⁹ My analysis indicates
3 that Pepco’s debt ratio for ratemaking purposes should be 57%. Thus, I
4 recommend the Commission adopt a capital structure for Pepco consisting of 57%
5 debt and 43% equity.⁸⁰

6 **B. The Hamada Model: Capital Structure’s Effect on ROE**

7 **Q. Have you considered the impact that your capital structure recommendation**
8 **could have on the company’s indicated cost of equity?**

9 A. Yes. I assessed the impact of my capital structure proposal on the company’s cost
10 of equity estimate by using the Hamada model.

11 **Q. What is the premise of the Hamada model?**

12 A. The Hamada formula can be used to analyze changes in a firm’s cost of capital as
13 it adds or reduces financial leverage, or debt, in its capital structure by starting
14 with an “unlevered” beta and then “relevering” the beta at different debt ratios. As

⁷⁹ *Re Chesapeake & Potomac Tel. Co. of Maryland*, Order No. 67042, 76 Md. P.S.C. 238 (Case Nos. 7851, 7816, May 29, 1985) (“In recognition that the use of a capital structure has a significant influence on the financial integrity of the corporation, it is generally accepted that the methods of raising capital should be vested within the discretion of corporate management. However, the Commission has the duty to examine the capital structure adopted by a utility to determine that it is safe and economical; that is, balancing the interest of the company, as well as the ratepayers. This type of examination is necessary since a capital structure that contains unnecessarily large amounts of equity results in the imposition of higher rates to its customers than would otherwise be required.”)

⁸⁰ *See* Attachment DJG-17.

1 leverage increases, equity investors bear increasing amounts of risk, leading to
2 higher betas. Before the effects of financial leverage can be accounted for,
3 however, the effects of leverage must first be removed, which is accomplished
4 through the Hamada formula. The Hamada formula for unlevering beta is stated
5 as follows:⁸¹

**Equation 4:
Hamada Formula**

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - T_c) \left(\frac{D}{E}\right)\right]}$$

where: β_U = unlevered beta (or “asset” beta)
 β_L = average levered beta of proxy group
 T_c = corporate tax rate
 D = book value of debt
 E = book value of equity

8 Using Equation 4, the beta for the firm can be unlevered, and then “relevered”
9 based on various debt ratios (by rearranging this equation to solve for β_L).

10 **Q. Please summarize the results of the Hamada formula based on your proposed**
11 **capital structure for the company.**

12 A. The average capital structure of the proxy group consists of 57% debt and 43%
13 equity. Because Pepco’s debt ratio is so much lower than that of the proxy group,

⁸¹ Damodaran *supra* n. 18, at 197. This formula was originally developed by Hamada in 1972.

1 when we “relever” Pepco relative to the proxy group, it results in a much lower
 2 ROE than if Pepco had been operating with a capital structure equal to that of the
 3 proxy group. This makes sense because Pepco is much less risky relative to the
 4 proxy group due to the decreased amount of debt in its capital structure. The
 5 results of my Hamada model are presented in the figure below.

**Figure 12:
 Hamada Model ROE**

Unlevering Beta			
Proxy Debt Ratio		57%	
Proxy Equity Ratio		43%	
Proxy Debt / Equity Ratio		1.3	
Tax Rate		21%	
Equity Risk Premium		5.0%	
Risk-free Rate		4.8%	
Proxy Group Beta		0.69	
Unlevered Beta		0.34	
Relevered Betas and Cost of Equity Estimates			
Debt Ratio	D/E Ratio	Levered Beta	Cost of Equity
0%	0.0	0.34	6.5%
20%	0.3	0.40	6.8%
25%	0.3	0.42	6.9%
30%	0.4	0.45	7.0%
49%	1.0	0.59	7.7%
57%	1.3	0.69	8.2%
60%	1.5	0.73	8.5%

1 **Q. Based on these results, why are you recommending both a capital structure**
2 **adjustment in addition to an authorized ROE of 7.7%?**

3 A. Although my recommended ROE of 7.7% is equal to the results of the Hamada
4 model *without* a capital structure adjustment, I believe an authorized ROE of 7.7%
5 is still a reasonable estimate of Pepco's cost of equity, even if the capital structure
6 adjustment is adopted. This is because there are other modeling results that
7 indicate Pepco's cost of equity could be even lower than 7.7%, as further
8 discussed below.

9 **VII. DOUBLE LEVERAGE COST OF EQUITY**

10 **Q. Please describe the concept of double leverage.**

11 A. In this context, the term "double leverage" refers to a scenario in which a parent
12 holding company has both debt and equity capital, then uses that capital to fund a
13 wholly owned subsidiary. The parent's funds are reported as "equity" on the
14 subsidiary's balance sheet, while the subsidiary also issues its own debt. Thus,
15 there is debt at both the parent and subsidiary levels.


16 **Q. According to the concept of double leverage, what is the cost of the "equity"**
17 **capital of a wholly owned subsidiary?**

18 A. If a stand-alone company issues equity to the market, then its cost of equity can be
19 estimated with financial models such as the CAPM. Once its capital structure and
20 cost of debt are also considered, then its weighted average cost of capital

1 (“WACC”) can be calculated. However, at the subsidiary level, the “equity” on
 2 the subsidiary’s balance sheet is comprised of the entire capital mix of the parent
 3 company (i.e., WACC), which also includes debt. Thus, under the double
 4 leverage approach, the subsidiary’s cost of equity is equal to the parent’s WACC.
 5 This concept is illustrated in the following diagram.

Figure 13:
Double Leverage Example

	Capital Component	Ratio	Cost Rate	Weighted Cost
Parent Corp, Inc.	Debt	50.0%	5.00%	2.50%
	Equity	50.0%	10.00%	5.00%
	Total			7.50%
Subsidiary, Inc.	"Equity"	50.0%	7.50%	3.75%
	Debt	50.0%	5.00%	2.50%
	Total			6.25%



8 As shown in this figure, the cost of the subsidiary’s “equity” is lower than the
 9 parent’s cost of equity, because the subsidiary’s “equity” also includes a
 10 significant portion (50% in this example) of low-cost debt.

1 **Q. Did you conduct a cost of capital analysis of Pepco’s parent company, Exelon**
 2 **Corp.?**

3 A. Yes. Pursuant to this double leverage approach, I first estimate the WACC of
 4 Pepco’s parent company, Exelon. A summary of my analysis is presented in the
 5 following figure.

Figure 14:
Exelon WACC

Capital Component	Proposed Ratio	Est Cost	Weighted Cost
Long-Term Debt	61.0%	4.10%	2.50%
Common Equity	39.0%	8.07%	3.15%
Total	100.0%		5.65%

8 In this figure, Exelon’s cost of equity estimate is based on my CAPM analysis of
 9 the proxy group, which includes Exelon. Even if it was assumed that Exelon’s
 10 cost of equity was higher, such as 9.5% (a level closer to authorized ROEs in rate
 11 cases), then its WACC (i.e., Pepco’s cost of equity) would still be less than 6.5%.

12 **Q. Is the double leverage approach typically presented in regulatory proceedings**
 13 **and considered by regulators?**

14 A. No, not based on my experience. The typical approach views operating
 15 subsidiaries as standalone companies and does not consider the real-world source
 16 of the equity capital on the subsidiary’s balance sheet. In fact, the other models I

1 present in my testimony and attachments are effectively based on the presumption
2 that Pepco is a standalone company. Although the concept of double leverage as I
3 describe in my testimony is certainly not novel in the financial world, it is not
4 typically presented in this fashion in regulatory proceedings as an alternative
5 approach to estimating a subsidiary-applicant's cost of equity.

6 **Q. In your opinion, does the double leverage approach result in a reasonable**
7 **estimate for Pepco's cost of equity?**

8 A. Yes. While the standalone approach can produce reasonable cost of equity
9 estimates, it does not account for the real-world cost of the actual capital being
10 analyzed. From this perspective, an accurate analysis of Pepco's cost of "equity"
11 must include the fact that most of that "equity" is actually low-cost debt. To
12 ignore this relationship results in parent utilities being able to borrow money at the
13 low cost of debt, inject the subsidiary with that capital and call it "equity," and
14 demand a high equity return from customers. Although this strategy is profitable
15 for the parent's shareholders, there is no way to describe it as fair to ratepayers.

16 **Q. Are you setting your recommended ROE for Pepco in this case equal to your**
17 **estimated cost of capital for Exelon?**

18 A. No. Although the double leverage approach indicates a cost of "equity" of 5.65%
19 for Pepco, I am recommending an authorized ROE of 7.7% for the company. This
20 recommendation is based in part on the concept of gradualism. Pepco's currently

1 authorized ROE is 9.5%. Moving from 9.5% to an ROE lower than 7.7% would
2 be a significant change that could be a bit of a shock for existing investors.

3 Notably, this is regarding existing investors who may be expecting a 9.5% ROE;
4 not new investors the utility would attempt to raise capital from in the future.

5 Future investors would be aware of changes in Pepco's ROE. And while utilities
6 commonly complain that they require exorbitant ROEs or they will not be able to
7 raise capital, this has never been demonstrated to be an actual problem, as even
8 bankrupt utilities have been able to raise billions of dollars of capital.⁸²

9 However, authorizing an ROE above 7.7% would arguably be unfair to
10 customers as it would deviate from Pepco's cost of equity as indicated through the
11 various models presented in my testimony. As such, I recommend a 7.7%, taking
12 gradualism into account. Regardless, it is important for the Commission to
13 consider the double leverage approach and its results when determining a fair
14 authorized return on "equity" for Pepco.

15 **Q. Does this conclude your direct testimony?**

16 **A.** Yes.

⁸² "PG&E Completes Initial Stage of Bankruptcy Exit Financing." *PG&E Corporation*, June 21, 2020. <https://investor.pgecorp.com/news-events/press-releases/press-release-details/2020/PGE-Completes-Initial-Stage-of-Bankruptcy-Exit-Financing/default.aspx>.

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EDUCATION

University of Oklahoma Master of Business Administration Areas of Concentration: Finance, Energy	Norman, OK 2014
University of Oklahoma College of Law Juris Doctor Member, American Indian Law Review	Norman, OK 2007
University of Oklahoma Bachelor of Business Administration Major: Finance	Norman, OK 2003

PROFESSIONAL DESIGNATIONS

Society of Depreciation Professionals
Certified Depreciation Professional (CDP)

Society of Utility and Regulatory Financial Analysts
Certified Rate of Return Analyst (CRRA)

WORK EXPERIENCE

Resolve Utility Consulting PLLC <u>Managing Member</u> Provide expert analysis and testimony specializing in depreciation and cost of capital issues for clients in utility regulatory proceedings.	Oklahoma City, OK 2016 – Present
Oklahoma Corporation Commission <u>Public Utility Regulatory Analyst</u> <u>Assistant General Counsel</u> Represented commission staff in utility regulatory proceedings and provided legal opinions to commissioners. Provided expert analysis and testimony in depreciation, cost of capital, incentive compensation, payroll and other issues.	Oklahoma City, OK 2012 – 2016 2011 – 2012
Perebus Counsel, PLLC <u>Managing Member</u> Represented clients in the areas of family law, estate planning, debt negotiations, business organization, and utility regulation.	Oklahoma City, OK 2009 – 2011

Moricoli & Schovanec, P.C.

Associate Attorney

Represented clients in the areas of contracts, oil and gas, business structures and estate administration.

Oklahoma City, OK
2007 – 2009

TEACHING EXPERIENCE

University of Oklahoma

Adjunct Instructor – “Conflict Resolution”

Adjunct Instructor – “Ethics in Leadership”

Norman, OK

2014 – 2021

Rose State College

Adjunct Instructor – “Legal Research”

Adjunct Instructor – “Oil & Gas Law”

Midwest City, OK

2013 – 2015

PROFESSIONAL ASSOCIATIONS

Oklahoma Bar Association

2007 – Present

Society of Depreciation Professionals

Board Member – President

Participate in management of operations, attend meetings, review performance, organize presentation agenda.

2014 – Present

2017

Society of Utility Regulatory Financial Analysts

2014 – Present

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Pennsylvania Public Utility Commission	The York Water Company, et al	R-2025-3053442 R-2025-3053573	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Pennsylvania Public Utility Commission	UGI Utilities, Inc.	R-2024-3052716	Cost of capital, depreciation rates, net salvage	Pennsylvania Office of Consumer Advocate
Wyoming Public Service Commission	Rocky Mountain Power	20000-671-ER-24	Cost of capital and authorized rate of return	Wyoming Industrial Energy Consumers
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 2023-000086	Cost of capital, depreciation rates, net salvage	Oklahoma Industrial Energy Consumers
Public Service Commission of South Carolina	Piedmont Natural Gas Company	2022-89-G 2024-179-G	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Florida Public Service Commission	Peoples Gas System	20250029-GU	Cost of capital, awarded rate of return, capital structure	Florida Office of Public Counsel
Public Service Commission of the State of Montana	NorthWestern Energy	2024.05.053	Cost of capital, depreciation rates, net salvage	Montana Consumer Counsel and Montana Large Customer Group
New York State Public Service Commission	Niagara Mohawk Power Corporation	24-E-0322 24-G-0323	Depreciation rates, service lives, net salvage, depreciation reserve	Utility Intervention Unit of the New York State Department of State's Division of Consumer Protection
Public Utilities Commission of Ohio	Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company	24-468-EL-AIR, et seq .	Depreciation rates, service lives, net salvage	Office of the Ohio Consumers' Counsel
Public Utility Commission of Texas	El Paso Electric Company	PUC 57568	Depreciation rates, service lives, net salvage	The City of El Paso
Public Service Commission of Utah	Enbridge Gas Utah	25-057-06	Cost of capital, depreciation rates, net salvage	Office of Consumer Services
Pennsylvania Public Utility Commission	Pennsylvania-American Water Company	A-2025-3052983	Fair market value review (Elizabeth Borough)	Pennsylvania Office of Consumer Advocate
Commonwealth of Virginia State Corporation Commission	Virginia Electric and Power Company	PUR-2025-00058	Cost of capital, awarded rate of return, capital structure	Data Center Coalition
Delaware Public Service Commission	Delmarva Power & Light Company	24-1044	Cost of capital, depreciation rates, net salvage	Division of the Public Advocate

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
New York State Public Service Commission	Consolidated Edison Company of New York, Inc.	25-E-0072 25-G-0073	Depreciation rates, service lives, net salvage, depreciation reserve	Utility Intervention Unit of the New York State Department of State's Division of Consumer Protection
Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	R-2025-3053499	Cost of capital, depreciation rates, net salvage	Pennsylvania Office of Consumer Advocate
Public Utility Commission of Texas	CenterPoint Energy Houston Electric	PUC 58028	System restoration costs	Texas Coast Utilities Coalition
Mississippi Public Service Commission	Atmos Energy Corporation	2025-UN-59	Depreciation rates, service lives, net salvage	Mississippi Public Utilities Staff
Public Service Commission of West Virginia	Appalachian Power Company and Wheeling Power Company	24-0854-E-42T	Cost of capital, awarded rate of return, capital structure	Consumer Advocate Division of the Public Service Commission of West Virginia
Public Service Commission of West Virginia	Appalachian Power Company and Wheeling Power Company	24-0670-E-D	Depreciation rates, service lives, net salvage	Consumer Advocate Division of the Public Service Commission of West Virginia
New Jersey Board of Public Utilities	Atlantic City Electric Company	ER24110854	Cost of capital, awarded rate of return, capital structure	Staff of the New Jersey Board of Public Utilities
Pennsylvania Public Utility Commission	Aqua Pennsylvania, Inc.	A-2022-3033138	Fair market value review (Beaver Falls)	Pennsylvania Office of Consumer Advocate
Mississippi Public Service Commission	Mississippi Power Company	2024-UN-117	Depreciation rates, service lives, net salvage	Mississippi Public Utilities Staff
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	2024.05.061	Cost of capital, depreciation rates, net salvage	Montana Consumer Counsel
Maryland Public Service Commission	Columbia Gas of Maryland	9754	Cost of capital, depreciation rates, net salvage	Maryland Office of People's Counsel
Railroad Commission of Texas	Atmos Energy, Mid-Tex Division	OS-24-00019196	Depreciation rates, service lives, net salvage	Atmos Texas Municipalities
Wyoming Public Service Commission	Montana-Dakota Utilities Co.	30013-415-GR-24	Depreciation rates, service lives, net salvage	Wyoming Office of Consumer Advocate
Indiana Utility Regulatory Commission	Duke Energy Indiana	46038	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Railroad Commission of Texas	Atmos Energy, West Texas Division	OS-24-00018879	Depreciation rates, service lives, net salvage	The Cities of Amarillo, Lubbock, Dalhart, and Channing
Washington Utilities & Transportation Commission	Cascadia Water, LLC	UW-240151	Cost of capital, awarded rate of return, capital structure	Washington Office of Attorney General
Railroad Commission of Texas	West Texas Gas Utility	OS-24-00017816	Cost of capital, depreciation rates, net salvage	Alliance of WTG Municipalities
Maryland Public Service Commission	Washington Gas Light Company	9737	Cost of capital, awarded rate of return, capital structure	Maryland Office of People's Counsel
Railroad Commission of Texas	Texas Gas Services Company	OS-24-00017471	Depreciation rates, service lives, net salvage	The Steering Committee of Cities
Pennsylvania Public Utility Commission	Veolia Water Pennsylvania, Inc.	R-2024-3045192 R-2024-3045193	Cost of capital, depreciation rates, net salvage	Pennsylvania Office of Consumer Advocate
Pennsylvania Public Utility Commission	PECO Energy Company - Gas Division	R-2024-3046932	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Pennsylvania Public Utility Commission	PECO Energy Company - Electric Division	R-2024-3046931	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 2023-000087	Cost of capital, depreciation rates, net salvage	Oklahoma Industrial Energy Consumers
Maryland Public Service Commission	Maryland Water Service, Inc.	9729	Cost of capital, awarded rate of return, capital structure	Maryland Office of People's Counsel
Kansas Corporation Commission	Kansas Gas Service	24-KGSG-610-RTS	Depreciation rates, service lives, net salvage	The Citizens' Utility Ratepayer Board
Pennsylvania Public Utility Commission	FirstEnergy Pennsylvania Electric Company	R-2024-3047068	Depreciation rates, service lives, net salvage	Pennsylvania Office of Consumer Advocate
Maryland Public Service Commission	Chesapeake Utilities Corporation Sandpiper Energy, Inc. Elkton Gas Company	9721	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Pennsylvania Public Utility Commission	Duquesne Light Company	R-2024-3046523	Cost of capital, depreciation rates, net salvage	Pennsylvania Office of Consumer Advocate

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utility Commission of Texas	CenterPoint Energy Houston Electric	PUC 56211	Depreciation rates, service lives, net salvage	Texas Coast Utilities Coalition
Washington Utilities & Transportation Commission	Avista Corporation	UE-240006 UG-240007	Cost of capital, awarded rate of return, capital structure	Washington Office of Attorney General
Public Utility Commission of Texas	AEP Texas Inc.	PUC 56165	Depreciation rates, service lives, net salvage	Cities Served by AEP Texas
Public Utilities Commission of Nevada	Southwest Gas Corporation	23-09012	Depreciation rates, service lives, net salvage	Bureau of Consumer Protection
Public Utilities Commission of the State of California	Southern California Edison	A.23-05-010	Depreciation rates, service lives, net salvage	The Utility Reform Network
Pennsylvania Public Utility Commission	Pennsylvania-American Water Company	R-2023-3043189 R-2023-3043190	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45967	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Massachusetts Department of Public Utilities	Massachusetts Electric Company and Nantucket Electric Company D/B/A National Grid	D.P.U. 23-150	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Iowa Utilities Board	Interstate Power and Light Company	RPU-2023-0002	Depreciation rates, service lives, net salvage	Office of Consumer Advocate
Public Service Commission of South Carolina	Duke Energy Carolinas	2023-388-E 2023-403-E	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Indiana Utility Regulatory Commission	Citizens Energy Group	45988	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Railroad Commission of Texas	CenterPoint Energy Resources Corp.	OS-23-00015513	Depreciation rates, service lives, net salvage	Alliance of CenterPoint Municipalities
Indiana Utility Regulatory Commission	CenterPoint Energy Indiana South	45990	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Delaware Public Service Commission	Artesian Water Company, Inc.	23-0601	Cost of capital, depreciation rates, net salvage	Division of the Public Advocate

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Maryland Public Service Commission	Washington Gas Light Company	9704	Cost of capital, awarded rate of return, capital structure	Maryland Office of People's Counsel
Delaware Public Service Commission	Veolia Water Delaware Inc.	23-0598	Cost of capital, awarded rate of return, capital structure	Division of the Public Advocate
Connecticut Public Utilities Regulatory Authority	United Illuminating Company	22-08-08	Depreciation rates, service lives, net salvage	PURA Staff
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 54634	Depreciation rates, service lives, net salvage	Alliance of Xcel Municipalities
Railroad Commission of Texas	SiEnergy, LP	OS-23-00013504	Depreciation rates, service lives, net salvage	Texas municipal intervenor group
Pennsylvania Public Utility Commission	Aqua Pennsylvania, Inc.	A-2022-3034143	Fair market value review	Pennsylvania Office of Consumer Advocate
Wyoming Public Service Commission	Rocky Mountain Power	20000-633-ER-23	Cost of capital and authorized rate of return	Wyoming Industrial Energy Consumers
Maryland Public Service Commission	Potomac Electric Power Company	9702	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Public Utilities Commission of Nevada	Nevada Power Company d/b/a NV Energy	23-06007 23-06008	Depreciation rates, service lives, net salvage	Bureau of Consumer Protection
Public Utilities Commission of Ohio	Northeast Ohio Natural Gas Corp.	23-0154-GA-AIR	Cost of capital, awarded rate of return, capital structure	Office of the Ohio Consumers' Counsel
New York State Public Service Commission	The Brooklyn Union Gas Company and Keyspan Gas East Corporation d/b/a Nation Grid	23-G-0225 23-G-0226	Depreciation rates, service lives, net salvage, depreciation reserve	The City of New York
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-23-11	Cost of capital, awarded rate of return, capital structure	Micron Technology, Inc.
Indiana Utility Regulatory Commission	Indiana Michigan Power Company	45933	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Massachusetts Department of Public Utilities	Fitchburg Gas and Electric Company d/b/a Unitil	D.P.U. 23-80; D.P.U. 23-81	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Kansas Corporation Commission	Evergy Kansas Central, Evergy Kansas South, and Evergy Metro	23-EKCE-775-RTS	Depreciation rates, service lives, net salvage	The Citizens' Utility Ratepayer Board
Delaware Public Service Commission	Delmarva Power & Light Company	22-0897	Cost of capital, awarded rate of return, capital structure	Division of the Public Advocate
Connecticut Public Utilities Regulatory Authority	Connecticut Water Company	23-08-32	Depreciation rates, service lives, net salvage	PURA Staff
Connecticut Public Utilities Regulatory Authority	Connecticut Natural Gas Corporation and The Southern Connecticut Gas Company	23-11-02	Depreciation rates, service lives, net salvage	PURA Staff
Railroad Commission of Texas	Atmos Pipeline – Texas	OS-23-00013758	Depreciation rates, service lives, net salvage	Atmos Texas Municipalities
Wyoming Public Service Commission	Black Hills Wyoming Gas	30026-78-GR-23	Depreciation rates, service lives, net salvage	Wyoming Office of Consumer Advocate
Indiana Utility Regulatory Commission	Indianapolis Power & Light Company d/b/a AES Indiana	45911	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
New Mexico Public Regulation Commission	Southwestern Public Service Company	22-00286-UT	Cost of capital, depreciation rates, net salvage	The New Mexico Large Customer Group; Occidental Permian
Public Utilities Commission of the State of California	Southern California Gas Company San Diego Gas & Electric Company	A.22-05-015 A.22-05-016	Depreciation rates, service lives, net salvage	The Utility Reform Network
Public Utilities Commission of the State of Colorado	Public Service Company of Colorado	22AL-0530E 22AL-0478E	Cost of capital, awarded rate of return, capital structure	Colorado Energy Consumers
New Mexico Public Regulatory Commission	Public Service Company of New Mexico	22-00270-UT	Cost of capital, depreciation rates, net salvage	The Albuquerque Bernalillo County Water Utility Authority
Florida Public Service Commission	Peoples Gas System	20230023-GU 20220219-GU 20220212-GU	Cost of capital, depreciation rates, net salvage	Florida Office of Public Counsel
Maryland Public Service Commission	Potomac Edison Company	9695	Cost of capital, depreciation rates, net salvage	Maryland Office of People's Counsel
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	2022.11.099	Depreciation rates, service lives, net salvage	Montana Consumer Counsel and Denbury Onshore

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Indiana Utility Regulatory Commission	Indiana-American Water Company	45870	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Service Commission of South Carolina	Dominion Energy South Carolina	2023-70-G	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Maryland Public Service Commission	Columbia Gas of Maryland	9701	Cost of capital, awarded rate of return, capital structure	Maryland Office of People's Counsel
Pennsylvania Public Utility Commission	Columbia Water Company	R-2023-3040258	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Maryland Public Service Commission	Baltimore Gas and Electric Company	9692	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Arizona Corporation Commission	Arizona Public Service Company	E-01345A-22-0144	Cost of capital, awarded rate of return, capital structure	Residential Utility Consumer Office
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 2022-000093	Cost of capital, depreciation rates, net salvage	Oklahoma Industrial Energy Consumers
Public Service Commission of the State of Montana	NorthWestern Energy	2022.07.078	Cost of capital, depreciation rates, net salvage	Montana Consumer Counsel and Montana Large Customer Group
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45772	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor
Public Service Commission of South Carolina	Duke Energy Progress	2022-254-E	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Wyoming Public Service Commission	Cheyenne Light, Fuel and Power Company D/B/A Black Hills Energy	20003-214-ER-22	Depreciation rates, service lives, net salvage	Wyoming Office of Consumer Advocate
Railroad Commission of Texas	Texas Gas Services Company	OS-22-00009896	Depreciation rates, service lives, net salvage	The City of El Paso
Public Utilities Commission of Nevada	Sierra Pacific Power Company	22-06014	Depreciation rates, service lives, net salvage	Bureau of Consumer Protection
Washington Utilities & Transportation Commission	Puget Sound Energy	UE-220066 UG-220067 UG-210918	Depreciation rates, service lives, net salvage	Washington Office of Attorney General

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utility Commission of Texas	Oncor Electric Delivery Company LLC	PUC 53601	Depreciation rates, service lives, net salvage	Alliance of Oncor Cities
Florida Public Service Commission	Florida Public Utilities Company	20220067-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Public Utility Commission of Texas	Entergy Texas, Inc.	PUC 53719	Depreciation rates, decommissioning costs	Texas Municipal Group
Florida Public Service Commission	Florida City Gas	2020069-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Connecticut Public Utilities Regulatory Authority	Aquarion Water Company of Connecticut	22-07-01	Depreciation rates, service lives, net salvage	PURA Staff
Washington Utilities & Transportation Commission	Avista Corporation	UE-220053 UG-220054 UE-210854	Cost of capital, awarded rate of return, capital structure	Washington Office of Attorney General
Federal Energy Regulatory Commission	ANR Pipeline Company	RP22-501-000	Depreciation rates, service lives, net salvage	Ascent Resources - Utica, LLC
Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania, Inc.	R-2022-3031211	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Public Service Commission of South Carolina	Piedmont Natural Gas Company	2022-89-G	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Pennsylvania Public Utility Commission	UGI Utilities, Inc. - Gas Division	R-2021-3030218	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Public Utilities Commission of the State of California	Pacific Gas & Electric Company	A.21-06-021	Depreciation rates, service lives, net salvage	The Utility Reform Network
Pennsylvania Public Utility Commission	PECO Energy Company - Gas Division	R-2022-3031113	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 202100164	Cost of capital, depreciation rates, net salvage	Oklahoma Industrial Energy Consumers
Massachusetts Department of Public Utilities	NSTAR Electric Company D/B/A Eversource Energy	D.P.U. 22-22	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Michigan Public Service Company	DTE Electric Company	U-20836	Cost of capital, awarded rate of return, capital structure	Michigan Environmental Council and Citizens Utility Board of Michigan
New York State Public Service Commission	Consolidated Edison Company of New York, Inc.	22-E-0064 22-G-0065	Depreciation rates, service lives, net salvage, depreciation reserve	The City of New York
Pennsylvania Public Utility Commission	Aqua Pennsylvania Wastewater / East Whiteland Township	A-2021-3026132	Fair market value estimates for wastewater assets	Pennsylvania Office of Consumer Advocate
Public Service Commission of South Carolina	Kiawah Island Utility, Inc.	2021-324-WS	Cost of capital, awarded rate of return, capital structure	South Carolina Office of Regulatory Staff
Pennsylvania Public Utility Commission	Aqua Pennsylvania Wastewater / Willistown Township	A-2021-3027268	Fair market value estimates for wastewater assets	Pennsylvania Office of Consumer Advocate
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45621	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Arkansas Public Service Commission	Southwestern Electric Power Company	21-070-U	Cost of capital, depreciation rates, net salvage	Western Arkansas Large Energy Consumers
Federal Energy Regulatory Commission	Southern Star Central Gas Pipeline	RP21-778-002	Depreciation rates, service lives, net salvage	Consumer-Owned Shippers
Railroad Commission of Texas	Participating Texas gas utilities in consolidated proceeding	OS-21-00007061	Securitization of extraordinary gas costs arising from winter storms	The City of El Paso
Public Service Commission of South Carolina	Palmetto Wastewater Reclamation, Inc.	2021-153-S	Cost of capital, awarded rate of return, capital structure, ring-fencing	South Carolina Office of Regulatory Staff
Public Utilities Commission of the State of Colorado	Public Service Company of Colorado	21AL-0317E	Cost of capital, depreciation rates, net salvage	Colorado Energy Consumers
Pennsylvania Public Utility Commission	City of Lancaster - Water Department	R-2021-3026682	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 51802	Depreciation rates, service lives, net salvage	The Alliance of Xcel Municipalities
Pennsylvania Public Utility Commission	The Borough of Hanover - Hanover Municipal Waterworks	R-2021-3026116	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Maryland Public Service Commission	Delmarva Power & Light Company	9670	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Oklahoma Corporation Commission	Oklahoma Natural Gas Company	PUD 202100063	Cost of capital, awarded rate of return, capital structure	Oklahoma Industrial Energy Consumers
Indiana Utility Regulatory Commission	Indiana Michigan Power Company	45576	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	El Paso Electric Company	PUC 52195	Depreciation rates, service lives, net salvage	The City of El Paso
Pennsylvania Public Utility Commission	Aqua Pennsylvania	R-2021-3027385	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Public Service Commission of the State of Montana	NorthWestern Energy	D2021.02.022	Cost of capital, awarded rate of return, capital structure	Montana Consumer Counsel
Pennsylvania Public Utility Commission	PECO Energy Company	R-2021-3024601	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
New Mexico Public Regulation Commission	Southwestern Public Service Company	20-00238-UT	Cost of capital and authorized rate of return	The New Mexico Large Customer Group; Occidental Permian
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 202100055	Cost of capital, depreciation rates, net salvage	Oklahoma Industrial Energy Consumers
Pennsylvania Public Utility Commission	Duquesne Light Company	R-2021-3024750	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Maryland Public Service Commission	Columbia Gas of Maryland	9664	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Indiana Utility Regulatory Commission	Southern Indiana Gas Company, d/b/a Vectren Energy Delivery of Indiana, Inc.	45447	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	Southwestern Electric Power Company	PUC 51415	Depreciation rates, service lives, net salvage	Cities Advocating Reasonable Deregulation
New Mexico Public Regulatory Commission	Avangrid, Inc., Avangrid Networks, Inc., NM Green Holdings, Inc., PNM, and PNM Resources	20-00222-UT	Ring fencing and capital structure	The Albuquerque Bernalillo County Water Utility Authority

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Indiana Utility Regulatory Commission	Indiana Gas Company, d/b/a Vectren Energy Delivery of Indiana, Inc.	45468	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utilities Commission of Nevada	Nevada Power Company and Sierra Pacific Power Company, d/b/a NV Energy	20-07023	Construction work in progress	MGM Resorts International, Caesars Enterprise Services, LLC, and the Southern Nevada Water Authority
Massachusetts Department of Public Utilities	Boston Gas Company, d/b/a National Grid	D.P.U. 20-120	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Public Service Commission of the State of Montana	ABACO Energy Services, LLC	D2020.07.082	Cost of capital and authorized rate of return	Montana Consumer Counsel
Maryland Public Service Commission	Washington Gas Light Company	9651	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Florida Public Service Commission	Utilities, Inc. of Florida	20200139-WS	Cost of capital and authorized rate of return	Florida Office of Public Counsel
New Mexico Public Regulatory Commission	El Paso Electric Company	20-00104-UT	Cost of capital, depreciation rates, net salvage	City of Las Cruces and Doña Ana County
Public Utilities Commission of Nevada	Nevada Power Company	20-06003	Cost of capital, awarded rate of return, capital structure, earnings sharing	MGM Resorts International, Caesars Enterprise Services, LLC, Wynn Las Vegas, LLC, Smart Energy Alliance, and Circus Circus Las Vegas, LLC
Wyoming Public Service Commission	Rocky Mountain Power	20000-578-ER-20	Cost of capital and authorized rate of return	Wyoming Industrial Energy Consumers
Florida Public Service Commission	Peoples Gas System	20200051-GU 20200166-GU	Cost of capital, depreciation rates, net salvage	Florida Office of Public Counsel
Wyoming Public Service Commission	Rocky Mountain Power	20000-539-EA-18	Depreciation rates, service lives, net salvage	Wyoming Industrial Energy Consumers
Public Service Commission of South Carolina	Dominion Energy South Carolina	2020-125-E	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Pennsylvania Public Utility Commission	The City of Bethlehem	2020-3020256	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Railroad Commission of Texas	Texas Gas Services Company	GUD 10928	Depreciation rates, service lives, net salvage	Gulf Coast Service Area Steering Committee

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utilities Commission of the State of California	Southern California Edison	A.19-08-013	Depreciation rates, service lives, net salvage	The Utility Reform Network
Massachusetts Department of Public Utilities	NSTAR Gas Company	D.P.U. 19-120	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Georgia Public Service Commission	Liberty Utilities (Peach State Natural Gas)	42959	Depreciation rates, service lives, net salvage	Public Interest Advocacy Staff
Florida Public Service Commission	Florida Public Utilities Company	20190155-El 20190156-El 20190174-El	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Illinois Commerce Commission	Commonwealth Edison Company	20-0393	Depreciation rates, service lives, net salvage	The Office of the Illinois Attorney General
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 49831	Depreciation rates, service lives, net salvage	Alliance of Xcel Municipalities
Public Service Commission of South Carolina	Blue Granite Water Company	2019-290-WS	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Railroad Commission of Texas	CenterPoint Energy Resources	GUD 10920	Depreciation rates and grouping procedure	Alliance of CenterPoint Municipalities
Pennsylvania Public Utility Commission	Aqua Pennsylvania Wastewater / East Norriton Township	A-2019-3009052	Fair market value estimates for wastewater assets	Pennsylvania Office of Consumer Advocate
New Mexico Public Regulation Commission	Southwestern Public Service Company	19-00170-UT	Cost of capital and authorized rate of return	The New Mexico Large Customer Group; Occidental Permian
Indiana Utility Regulatory Commission	Duke Energy Indiana	45253	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor
Maryland Public Service Commission	Columbia Gas of Maryland	9609	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-190334	Cost of capital, awarded rate of return, capital structure	Washington Office of Attorney General
Indiana Utility Regulatory Commission	Indiana Michigan Power Company	45235	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utilities Commission of the State of California	Pacific Gas & Electric Company	18-12-009	Depreciation rates, service lives, net salvage	The Utility Reform Network
Oklahoma Corporation Commission	The Empire District Electric Company	PUD 201800133	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Arkansas Public Service Commission	Southwestern Electric Power Company	19-008-U	Cost of capital, depreciation rates, net salvage	Western Arkansas Large Energy Consumers
Public Utility Commission of Texas	CenterPoint Energy Houston Electric	PUC 49421	Depreciation rates, service lives, net salvage	Texas Coast Utilities Coalition
Massachusetts Department of Public Utilities	Massachusetts Electric Company and Nantucket Electric Company	D.P.U. 18-150	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201800140	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2018.9.60	Depreciation rates, service lives, net salvage	Montana Consumer Counsel and Denbury Onshore
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45159	Depreciation rates, grouping procedure, demolition costs	Indiana Office of Utility Consumer Counselor
Public Service Commission of the State of Montana	NorthWestern Energy	D2018.2.12	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 201800097	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Wal-Mart
Nevada Public Utilities Commission	Southwest Gas Corporation	18-05031	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	Texas-New Mexico Power Company	PUC 48401	Depreciation rates, service lives, net salvage	Alliance of Texas-New Mexico Power Municipalities
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201700496	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Maryland Public Service Commission	Washington Gas Light Company	9481	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Indiana Utility Regulatory Commission	Citizens Energy Group	45039	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	Entergy Texas, Inc.	PUC 48371	Depreciation rates, decommissioning costs	Texas Municipal Group
Washington Utilities & Transportation Commission	Avista Corporation	UE-180167	Depreciation rates, service lives, net salvage	Washington Office of Attorney General
New Mexico Public Regulation Commission	Southwestern Public Service Company	17-00255-UT	Cost of capital and authorized rate of return	HollyFrontier Navajo Refining; Occidental Permian
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 47527	Depreciation rates, plant service lives	Alliance of Xcel Municipalities
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2017.9.79	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Florida Public Service Commission	Florida City Gas	20170179-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-170485	Cost of capital and authorized rate of return	Washington Office of Attorney General
Wyoming Public Service Commission	Powder River Energy Corporation	10014-182-CA-17	Credit analysis, cost of capital	Private customer
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201700151	Depreciation, terminal salvage, risk analysis	Oklahoma Industrial Energy Consumers
Public Utility Commission of Texas	Oncor Electric Delivery Company	PUC 46957	Depreciation rates, simulated analysis	Alliance of Oncor Cities
Nevada Public Utilities Commission	Nevada Power Company	17-06004	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	El Paso Electric Company	PUC 46831	Depreciation rates, interim retirements	City of El Paso
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-24	Accelerated depreciation of North Valmy plant	Micron Technology, Inc.

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-23	Depreciation rates, service lives, net salvage	Micron Technology, Inc.
Public Utility Commission of Texas	Southwestern Electric Power Company	PUC 46449	Depreciation rates, decommissioning costs	Cities Advocating Reasonable Deregulation
Massachusetts Department of Public Utilities	Eversource Energy	D.P.U. 17-05	Cost of capital, capital structure, and rate of return	Sunrun Inc.; Energy Freedom Coalition of America
Railroad Commission of Texas	Atmos Pipeline - Texas	GUD 10580	Depreciation rates, grouping procedure	City of Dallas
Public Utility Commission of Texas	Sharyland Utility Company	PUC 45414	Depreciation rates, simulated analysis	City of Mission
Oklahoma Corporation Commission	Empire District Electric Company	PUD 201600468	Cost of capital, depreciation rates	Oklahoma Industrial Energy Consumers
Railroad Commission of Texas	CenterPoint Energy Texas Gas	GUD 10567	Depreciation rates, simulated plant analysis	Texas Coast Utilities Coalition
Arkansas Public Service Commission	Oklahoma Gas & Electric Company	160-159-GU	Cost of capital, depreciation rates, terminal salvage	Arkansas River Valley Energy Consumers; Wal-Mart
Florida Public Service Commission	Peoples Gas	160-159-GU	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Arizona Corporation Commission	Arizona Public Service Company	E-01345A-16-0036	Cost of capital, depreciation rates, terminal salvage	Energy Freedom Coalition of America
Nevada Public Utilities Commission	Sierra Pacific Power Company	16-06008	Depreciation rates, net salvage, theoretical reserve	Northern Nevada Utility Customers
Oklahoma Corporation Commission	Oklahoma Gas & Electric Co.	PUD 201500273	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201500208	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Oklahoma Natural Gas Company	PUD 201500213	Cost of capital, depreciation rates, net salvage	Public Utility Division

Proxy Group Summary

Attachment DJG-2

Company	Ticker	Market Cap. (\$ millions)	Market Category	Value Line Safety Rank	Financial Strength
Alliant Energy	LNT	17,600	Large Cap	1	A
Ameren Corp.	AEE	28,300	Large Cap	1	A
American Elec Pwr	AEP	65,300	Large Cap	1	A
Black Hills Corp.	BKH	5,200	Mid Cap	2	B++
CenterPoint Energy	CNP	25,900	Large Cap	2	B++
CMS Energy Corp.	CMS	22,600	Large Cap	2	B++
Consolidated Edison	ED	36,100	Large Cap	1	A+
Dominion Energy	D	51,900	Large Cap	2	A
DTE Energy Co.	DTE	28,300	Large Cap	2	B++
Duke Energy Corp.	DUK	99,100	Large Cap	1	A
Entergy Corp.	ETR	42,600	Large Cap	1	A
Evergy Inc.	EVRG	17,700	Large Cap	2	B++
Eversource Energy	ES	27,700	Large Cap	2	A
Exelon Corp.	EXC	48,600	Large Cap	2	B++
NextEra Energy, Inc.	NEE	177,000	Large Cap	2	A+
OGE Energy Corp.	OGE	9,000	Mid Cap	2	B++
Pinnacle West Capital	PNW	10,500	Large Cap	2	B++
Portland General Elec.	POR	5,400	Mid Cap	2	B++
PPL Corp.	PPL	27,700	Large Cap	1	A+
Pub Sv Enterprise Grp.	PEG	41,600	Large Cap	1	A
Sempra	SRE	57,100	Large Cap	2	B++
Southern Company	SO	105,000	Large Cap	1	A
WEC Energy Group	WEC	36,100	Large Cap	1	A
Xcel Energy Inc.	XEL	43,800	Large Cap	2	A

DCF - Stock and Index Prices

Ticker	^GSPC	LNT	AEE	AEP	BKH	CNP	CMS	ED	D	DTE	DUK	ETR	EVRG	ES	EXC	NEE	OGE	PNW	POR	PPL	PEG	SRE	SO	WEC	XEL
30-day Average	6865	65.66	99.84	116.29	70.54	38.27	70.76	98.42	59.07	129.86	117.35	93.21	73.56	66.83	43.99	81.44	42.88	88.36	48.28	34.62	79.89	88.83	86.91	105.87	75.02
Standard Deviation	54.4	1.17	1.89	2.46	1.44	0.59	1.55	1.62	1.11	1.88	2.23	1.37	1.25	0.77	0.95	1.99	0.82	0.99	0.83	0.78	1.27	1.67	1.56	2.11	2.35
01/09/26	6966	65.02	99.91	116.91	70.72	37.89	69.99	99.21	57.98	129.89	116.80	93.52	72.82	67.79	43.30	79.89	42.83	89.07	48.84	34.59	78.68	88.82	87.01	104.65	74.26
01/08/26	6921	65.55	99.54	115.93	71.19	38.00	69.85	100.18	57.80	129.63	117.32	91.19	72.94	67.62	43.45	79.49	42.71	89.32	48.98	34.67	77.43	88.03	87.22	105.23	73.38
01/07/26	6921	64.60	99.07	113.70	71.92	37.75	69.56	99.37	57.08	128.26	116.19	91.31	72.51	65.62	42.99	78.37	42.16	87.40	48.59	34.44	77.58	86.36	86.27	105.04	73.22
01/06/26	6945	65.38	100.61	115.04	69.39	38.24	70.38	99.32	58.72	130.04	117.74	93.32	73.10	67.41	43.84	81.05	42.59	89.25	48.72	34.89	78.60	87.70	87.52	105.95	74.43
01/05/26	6902	64.90	99.60	114.07	69.37	38.10	69.47	98.50	58.69	128.80	116.81	92.55	72.31	67.05	43.54	81.32	42.18	87.70	48.16	34.78	79.34	87.54	86.87	105.41	74.07
01/02/26	6858	65.59	100.86	115.81	69.65	38.73	70.42	99.99	59.24	130.36	117.44	93.86	73.08	68.06	43.92	80.93	42.46	88.14	48.46	35.11	80.99	89.71	87.18	106.47	74.68
12/31/25	6846	65.01	99.86	115.31	69.42	38.34	69.93	99.32	58.59	128.98	117.21	92.43	72.49	67.33	43.59	80.28	42.28	88.70	47.99	35.02	80.30	88.29	87.20	105.46	73.86
12/30/25	6896	65.42	100.74	115.99	69.59	38.61	70.42	99.89	59.06	129.78	117.68	93.37	73.20	67.55	43.92	80.53	42.60	89.26	48.09	35.33	80.91	89.09	87.57	106.09	74.19
12/29/25	6906	65.42	100.26	115.77	69.75	38.42	70.13	99.54	59.25	129.64	117.52	93.13	73.05	67.20	43.63	80.27	42.47	88.87	47.85	35.22	80.69	88.91	87.54	105.73	74.12
12/26/25	6930	65.24	99.81	115.67	69.31	38.29	69.96	99.30	59.20	129.05	117.18	92.85	72.77	67.24	43.56	80.41	42.36	88.40	47.57	35.08	80.39	88.61	87.17	105.50	73.85
12/24/25	6932	65.45	99.84	115.31	69.45	38.20	70.11	99.53	59.01	128.79	117.48	92.67	73.01	67.16	43.52	80.45	42.56	88.36	47.70	34.97	80.72	88.84	87.17	105.55	73.52
12/23/25	6910	65.26	99.35	115.15	69.08	37.97	70.02	98.95	58.14	128.52	116.79	92.33	72.57	66.37	43.46	79.79	42.55	88.03	47.36	34.81	80.43	88.68	86.39	105.02	73.44
12/22/25	6878	65.03	99.46	114.62	68.86	37.80	69.77	98.57	57.22	128.31	116.30	91.99	72.43	66.04	43.55	80.04	42.60	87.69	47.46	34.68	80.72	88.09	85.72	104.87	73.28
12/19/25	6835	64.63	98.48	114.49	67.50	37.60	69.17	98.06	59.43	127.64	115.56	91.50	72.47	67.16	43.66	79.54	42.08	87.30	47.20	34.29	80.01	86.94	85.28	103.94	72.11
12/18/25	6775	65.69	99.20	115.58	68.93	38.24	70.61	99.99	60.10	129.90	117.55	92.21	73.29	67.98	44.28	80.85	42.84	88.55	48.40	34.75	80.66	87.25	87.22	105.25	73.05
12/17/25	6721	65.48	98.53	114.71	70.59	38.31	70.26	100.21	60.11	128.89	117.43	91.83	73.59	67.28	44.22	80.29	42.64	88.91	48.62	34.34	79.91	86.78	87.03	104.76	72.58
12/16/25	6800	65.26	97.99	114.57	70.67	38.05	69.91	98.90	59.34	128.66	115.59	92.81	73.28	67.14	43.76	81.32	42.64	87.82	48.14	33.98	79.93	87.91	85.71	104.48	73.17
12/15/25	6817	65.63	98.87	115.77	72.07	38.20	70.76	99.39	59.84	128.81	116.73	93.75	74.12	67.61	43.87	81.65	42.77	88.37	48.74	34.26	80.60	88.59	86.00	105.26	75.14
12/12/25	6827	65.33	97.27	114.13	72.63	37.84	69.84	97.53	59.33	128.64	115.30	92.35	73.80	67.35	43.57	81.65	42.62	87.81	47.60	33.99	78.89	88.49	84.44	103.88	74.57
12/11/25	6901	64.93	97.25	114.26	71.99	37.33	69.74	95.64	58.17	129.58	114.39	93.32	73.37	66.75	43.09	81.21	42.20	86.75	47.00	33.46	78.96	88.97	84.73	103.48	74.11
12/10/25	6887	64.81	97.77	114.16	71.21	37.48	70.01	95.41	58.06	128.82	114.00	93.33	73.51	66.88	43.28	81.27	42.46	86.55	47.30	33.26	78.69	88.43	84.08	103.66	74.05
12/09/25	6841	64.89	98.34	116.07	70.52	37.93	70.43	95.82	58.46	129.08	115.24	93.23	73.50	67.08	43.76	79.64	42.64	87.00	47.69	33.53	78.70	87.68	85.49	104.64	75.14
12/08/25	6847	64.78	98.61	115.73	70.12	38.11	70.52	95.45	58.44	128.83	115.22	92.90	73.34	65.96	43.33	80.55	42.46	87.32	47.65	33.66	78.12	87.52	85.56	104.76	75.15
12/05/25	6870	65.50	99.15	117.54	69.94	38.43	71.09	96.60	58.49	130.05	116.52	94.22	73.28	66.00	43.81	83.13	42.95	88.17	48.04	33.59	78.94	90.00	86.28	105.71	76.59
12/04/25	6857	65.71	100.13	118.04	70.04	38.54	71.70	96.22	59.17	130.97	117.97	94.46	73.81	66.32	43.91	83.39	43.06	88.08	48.19	33.88	80.13	89.42	87.33	106.28	77.17
12/03/25	6850	66.38	100.74	118.06	71.15	38.38	72.19	96.45	59.36	131.98	118.62	94.24	74.29	65.24	44.54	84.95	43.81	88.62	48.79	34.53	79.90	90.07	87.98	107.29	77.79
12/02/25	6829	66.53	100.78	119.23	71.76	38.35	72.64	96.87	59.68	130.37	119.69	92.97	74.53	65.57	45.00	84.58	43.98	88.54	48.96	34.94	80.04	90.29	89.04	108.09	78.43
12/01/25	6813	67.60	102.26	120.51	72.46	39.13	73.16	97.88	60.12	132.07	120.75	94.59	75.52	65.81	45.69	84.65	44.42	89.32	49.88	35.51	80.92	90.84	89.01	109.34	79.12
11/28/25	6849	69.47	105.59	123.77	73.79	39.98	75.44	100.36	62.07	135.80	123.94	97.52	77.65	66.43	47.12	86.29	45.33	90.86	50.26	36.60	82.86	94.03	91.12	112.07	81.48
11/26/25	6813	69.18	105.26	122.72	72.99	39.95	75.27	100.14	61.84	135.55	123.43	96.55	77.11	65.96	46.57	85.54	45.05	90.59	50.18	36.41	82.59	93.11	90.24	112.24	80.63

All prices are adjusted closing prices reported by Yahoo! Finance, <http://finance.yahoo.com>

DCF - Dividend Yields

Attachment DJG-4

		[1]	[2]	[3]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield
Alliant Energy	LNT	2.03	65.66	3.09%
Ameren Corp.	AEE	2.84	99.84	2.84%
American Elec Pwr	AEP	3.80	116.29	3.27%
Black Hills Corp.	BKH	2.70	70.54	3.83%
CenterPoint Energy	CNP	0.92	38.27	2.40%
CMS Energy Corp.	CMS	2.17	70.76	3.07%
Consolidated Edison	ED	3.40	98.42	3.45%
Dominion Energy	D	2.67	59.07	4.52%
DTE Energy Co.	DTE	4.44	129.86	3.42%
Duke Energy Corp.	DUK	4.26	117.35	3.63%
Entergy Corp.	ETR	2.56	93.21	2.75%
Evergy Inc.	EVRG	2.78	73.56	3.78%
Eversource Energy	ES	3.01	66.83	4.50%
Exelon Corp.	EXC	1.60	43.99	3.64%
NextEra Energy, Inc.	NEE	2.27	81.44	2.79%
OGE Energy Corp.	OGE	1.70	42.88	3.96%
Pinnacle West Capital	PNW	3.64	88.36	4.12%
Portland General Elec.	POR	2.10	48.28	4.35%
PPL Corp.	PPL	1.09	34.62	3.15%
Pub Sv Enterprise Grp.	PEG	2.52	79.89	3.15%
Sempra	SRE	2.58	88.83	2.90%
Southern Company	SO	2.96	86.91	3.41%
WEC Energy Group	WEC	3.81	105.87	3.60%
Xcel Energy Inc.	XEL	2.28	75.02	3.04%
Average		\$2.67	\$78.16	3.44%

[1] Yahoo Finance

[2] Average stock price from Exhibit DJG-3

[3] = [1] / [2]

DCF - Terminal Growth Rate Determinants

Attachment DJG-5

DCF Growth Rate Indicators	Rate	
Nominal GDP	3.7%	[1]
Real GDP	1.6%	[2]
Pepco Annual Load Growth (2015-2024)	-1.7%	[3]
Pepco Annual Customer Growth (2015-2024)	1.7%	[4]
Long-Term Growth Ceiling	3.7%	

[1], [2] CBO, The 2025 Long-Term Budget Outlook, p. 32

[3], [4] See response to OPC DR 9-12 Attach (CAGR 2015-2024)

POTOMAC ELECTRIC POWER COMPANY
MARYLAND CASE NO. 9820
RESPONSE TO OPC DATA REQUEST NO. 9

QUESTION NO. 12

Please provide Pepco's annual figures for the following items over the past 10 years and the source of such information:

- (a) Total load
- (b) Total customers
- (c) Total revenue
- (d) Operating income
- (e) Net income
- (f) Rate base

RESPONSE:

Please refer to MD 9820 OPC DR 9-12 Attachment.

SPONSOR: Robert T. Leming

Attachment DJG-5

Pepco MD 9820
 OPC DR 9-12
 Fully Forecasted Test Year
 Twelve Months Ended December 31, 2024

			Twelve Months Ended December 31, 20XX										
Source	FERC Page	Category	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	
a	FERC Form 1	401a	Total Load (mwh)	24,516,504	23,758,392	24,748,658	24,592,838	23,976,344	26,258,728	26,884,926	25,949,637	26,991,835	28,611,813
b	FERC Form 1	304	Total Customers (Average)	949,732	938,263	927,425	914,279	901,712	889,380	875,876	862,921	848,171	817,447
c	FERC Form 1	114 - 117 / 300	Total Revenue	3,036,214,164	2,836,583,268	2,567,875,280	2,291,755,986	2,156,707,559	2,276,120,789	2,258,277,461	2,175,809,596	2,211,998,915	2,179,028,870
d	FERC Form 1	114 - 117	Operating income	534,878,922	419,415,500	420,689,776	403,378,913	369,946,952	351,006,050	325,102,801	281,668,592	240,428,122	266,248,529
e	FERC Form 1	114 - 117	Net income	389,510,745	306,056,211	304,643,506	295,970,966	266,489,593	242,506,429	204,861,800	204,792,062	42,127,814	187,205,427
f	Quarterly ROR Filings		Rate Base (1)										
			Distribution Rate Base	5,621,869,907	5,035,540,146	4,541,145,941	4,463,003,558	4,418,398,312	4,303,979,338	4,012,017,868	3,636,131,793	3,385,262,869	3,310,761,452
			MD Rate Base	2,606,704,744	2,308,036,674	2,077,783,428	2,035,731,353	2,077,150,154	2,014,675,334	1,925,350,596	1,718,820,855	1,602,393,466	1,596,664,000

1 All figures are amounts "As of December 31, 20XX" unless otherwise noted.
 2022 Rate Base is "As of March 31, 2022" since Pepco was in a rate case that year -- (CN 9702 -- MYP2).
 2020 Rate Base is "As of March 31, 2020" since Pepco was in a rate case that year -- (CN 9655 -- MYP1).
 2018 Rate Base is "As of January 31, 2019" since Pepco was in a rate case that Year -- (CN 9602)
 2017 Rate Base is "As of December 31, 2017" since Pepco was in a rate case that Year -- (CN 9472)
 2015 Rate Base is "As of December 31, 2015" since Pepco was in a rate case that Year -- (CN 9418)

DCF - Final Result

Attachment DJG-6

		[1]	[2]	[3]	[4]	[5]
Company	Ticker	Dividend Yield	Analyst Growth	Sustainable Growth	DCF Result (Analyst Growth)	DCF Result (Sustainable Growth)
Alliant Energy	LNT	3.1%	6.0%	3.7%	9.3%	6.9%
Ameren Corp.	AEE	2.8%	6.5%	3.7%	9.5%	6.6%
American Elec Pwr	AEP	3.3%	5.5%	3.7%	8.9%	7.1%
Black Hills Corp.	BKH	3.8%	3.5%	3.7%	7.5%	7.7%
CenterPoint Energy	CNP	2.4%	5.5%	3.7%	8.0%	6.2%
CMS Energy Corp.	CMS	3.1%	7.5%	3.7%	10.8%	6.9%
Consolidated Edison	ED	3.5%	4.5%	3.7%	8.1%	7.3%
Dominion Energy	D	4.5%	6.0%	* 3.7%	10.8%	8.4%
DTE Energy Co.	DTE	3.4%	3.0%	3.7%	6.5%	7.2%
Duke Energy Corp.	DUK	3.6%	3.5%	3.7%	7.3%	7.5%
Energy Corp.	ETR	2.7%	5.5%	3.7%	8.4%	6.5%
Evergy Inc.	EVRG	3.8%	7.0%	3.7%	11.0%	7.6%
Eversource Energy	ES	4.5%	5.5%	3.7%	10.3%	8.4%
Exelon Corp.	EXC	3.6%	5.0%	3.7%	8.8%	7.5%
NextEra Energy, Inc.	NEE	2.8%	9.5%	3.7%	12.6%	6.6%
OGE Energy Corp.	OGE	4.0%	3.0%	3.7%	7.1%	7.8%
Pinnacle West Capital	PNW	4.1%	1.5%	3.7%	5.7%	8.0%
Portland General Elec.	POR	4.3%	5.5%	3.7%	10.1%	8.2%
PPL Corp.	PPL	3.1%	6.5%	3.7%	9.9%	7.0%
Pub Sv Enterprise Grp.	PEG	3.2%	6.0%	3.7%	9.3%	7.0%
Sempra	SRE	2.9%	6.0%	3.7%	9.1%	6.7%
Southern Company	SO	3.4%	3.5%	3.7%	7.0%	7.2%
WEC Energy Group	WEC	3.6%	7.0%	3.7%	10.9%	7.4%
Xcel Energy Inc.	XEL	3.0%	6.5%	3.7%	9.7%	6.9%
Average		3.4%	5.4%	3.7%	9.0%	7.3%

[1] Dividend Yield from Exhibit DJG-4

[2] Forecasted dividend growth rates - Value Line (*Projected earnings growth used when projected dividend growth not reported or negative)

[3] Sustainable growth rate from Exhibit DJG-5

[4] Annual Compounding DCF = $D_0 (1 + g) / P_0 + g$ (using analyst growth rate)

[5] Annual Compounding DCF = $D_0 (1 + g) / P_0 + g$ (using sustainable growth rate)

CAPM - Risk-Free Rate Estimate

Attachment DJG-7

<u>Date</u>	<u>Rate</u>
01/09/26	4.82%
01/08/26	4.85%
01/07/26	4.82%
01/06/26	4.86%
01/05/26	4.85%
01/02/26	4.86%
12/31/25	4.84%
12/30/25	4.81%
12/29/25	4.80%
12/26/25	4.81%
12/24/25	4.79%
12/23/25	4.83%
12/22/25	4.84%
12/19/25	4.82%
12/18/25	4.80%
12/17/25	4.83%
12/16/25	4.82%
12/15/25	4.84%
12/12/25	4.85%
12/11/25	4.79%
12/10/25	4.78%
12/09/25	4.80%
12/08/25	4.81%
12/05/25	4.79%
12/04/25	4.76%
12/03/25	4.73%
12/02/25	4.74%
12/01/25	4.74%
11/28/25	4.67%
11/26/25	4.64%
Average	4.80%

*Daily Treasury Yield Curve Rates on 30-year T-bonds,
<http://www.treasury.gov/resources-center/data-chart-center/interest-rates/>

CAPM - Beta Coefficients

Company	Ticker	Value Line Beta	Yahoo Beta	Average Beta
Alliant Energy	LNT	0.80	0.67	0.74
Ameren Corp.	AEE	0.80	0.59	0.70
American Elec Pwr	AEP	0.70	0.62	0.66
Black Hills Corp.	BKH	0.90	0.74	0.82
CenterPoint Energy	CNP	0.80	0.58	0.69
CMS Energy Corp.	CMS	0.70	0.48	0.59
Consolidated Edison	ED	0.65	0.38	0.52
Dominion Energy	D	0.80	0.70	0.75
DTE Energy Co.	DTE	0.80	0.48	0.64
Duke Energy Corp.	DUK	0.65	0.49	0.57
Entergy Corp.	ETR	0.75	0.65	0.70
Evergy Inc.	EVRG	0.75	0.65	0.70
Eversource Energy	ES	0.85	0.77	0.81
Exelon Corp.	EXC	0.75	0.56	0.66
NextEra Energy, Inc.	NEE	0.90	0.73	0.82
OGE Energy Corp.	OGE	0.85	0.62	0.74
Pinnacle West Capital	PNW	0.75	0.54	0.65
Portland General Elec.	POR	0.75	0.69	0.72
PPL Corp.	PPL	0.80	0.72	0.76
Pub Sv Enterprise Grp.	PEG	0.85	0.61	0.73
Sempra	SRE	0.90	0.75	0.83
Southern Company	SO	0.65	0.45	0.55
WEC Energy Group	WEC	0.65	0.57	0.61
Xcel Energy Inc.	XEL	0.70	0.47	0.59
Average				0.69

CAPM - Implied Equity Risk Premium Estimate

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Market Value	Operating Earnings	Dividends	Buybacks	Earnings Yield	Dividend Yield	Buyback Yield	Gross Cash Yield
2014	18,245	1,004	350	553	5.50%	1.92%	3.03%	4.95%
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%
2018	21,027	1,282	456	806	6.10%	2.17%	3.84%	6.01%
2019	26,760	1,305	485	729	4.88%	1.81%	2.72%	4.54%
2020	31,659	1,019	480	520	3.22%	1.52%	1.64%	3.16%
2021	40,356	1,739	511	882	4.31%	1.27%	2.18%	3.45%
2022	32,133	1,656	565	923	5.15%	1.76%	2.87%	4.63%
2023	36,870	1,790	588	795	4.85%	1.60%	2.16%	3.75%
2024	49,805	1,968	630	943	3.95%	1.26%	1.89%	3.16%

Cash Yield	4.36%	[9]
Growth Rate	6.96%	[10]
Risk-free Rate	4.80%	[11]
Current Index Value	6,865	[12]

	[13]	[14]	[15]	[16]	[17]
Year	1	2	3	4	5
Expected Dividends	320	342	366	392	419
Expected Terminal Value					8754
Present Value	291	284	276	269	5744
Intrinsic Index Value	6865	[18]			
Required Return on Market	9.8%	[19]			
Implied Equity Risk Premium	5.0%	[20]			

[1-4] S&P Quarterly Press Releases, data found at <https://us.spindices.com/indices/equity/sp-500> (additional info tab) (all dollar figures are in \$ billions)

[1] Market value of S&P 500

[5] = [2] / [1]

[6] = [3] / [1]

[7] = [4] / [1]

[8] = [6] + [7]

[9] = Average of [8]

[10] = Compound annual growth rate of [2] = $(\text{end value} / \text{beginning value})^{1/10} - 1$

[11] Risk-free rate from DJG risk-free rate exhibit

[12] 30-day average of closing index prices from DJG stock price exhibit

[13-16] Expected dividends = $[9] * [12] * (1 + [10])^0$; Present value = $\text{expected dividend} / (1 + [11] + [19])^0$

[17] Expected terminal value = $\text{expected dividend} * (1 + [11]) / [19]$; Present value = $(\text{expected dividend} + \text{expected terminal value}) / (1 + [11] + [19])^0$

[18] = Sum([13-17]) present values.

[19] = [20] + [11]

[20] Internal rate of return calculation setting [18] equal to [12] and solving for the discount rate

CAPM - Equity Risk Premium Results

Attachment DJG-10

Source	ERP Estimate	
IESE Business School Survey	5.5%	[1]
Kroll (Duff & Phelps) Report	5.0%	[2]
Damodaran (average)	4.4%	[3]
Garrett	5.0%	[4]
Average	5.0%	

CAPM - Final Results

Attachment DJG-11

		[1]	[2]
Company	Ticker	Beta	CAPM Result
Alliant Energy	LNT	0.74	8.5%
Ameren Corp.	AEE	0.70	8.3%
American Elec Pwr	AEP	0.66	8.1%
Black Hills Corp.	BKH	0.82	8.9%
CenterPoint Energy	CNP	0.69	8.2%
CMS Energy Corp.	CMS	0.59	7.7%
Consolidated Edison	ED	0.52	7.4%
Dominion Energy	D	0.75	8.5%
DTE Energy Co.	DTE	0.64	8.0%
Duke Energy Corp.	DUK	0.57	7.6%
Entergy Corp.	ETR	0.70	8.3%
Energy Inc.	EVRG	0.70	8.3%
Eversource Energy	ES	0.81	8.8%
Exelon Corp.	EXC	0.66	8.1%
NextEra Energy, Inc.	NEE	0.82	8.9%
OGE Energy Corp.	OGE	0.74	8.5%
Pinnacle West Capital	PNW	0.65	8.0%
Portland General Elec.	POR	0.72	8.4%
PPL Corp.	PPL	0.76	8.6%
Pub Sv Enterprise Grp.	PEG	0.73	8.4%
Sempra	SRE	0.83	8.9%
Southern Company	SO	0.55	7.5%
WEC Energy Group	WEC	0.61	7.8%
Xcel Energy Inc.	XEL	0.59	7.7%
Average			8.2%
Risk-free Rate	[3]	4.8%	
Equity Risk Premium	[4]	5.0%	

[1] From Exhibit DJG-8

[2] = [3] + [1] * [4]

[3] From Exhibit DJG-7

[4] From Exhibit DJG-10

Cost of Equity Summary

Attachment DJG-12

Model	Cost of Equity
Double Leverage ROE (Parent WACC)	5.7%
CAPM (at Proxy Debt Ratio)	8.2%
Hamada CAPM (at Company-Proposed Debt Ratio)	7.7%
DCF Model (Sustainable Growth)	7.3%
Model Average	7.2%
Recommended ROE	7.7%

Proxy Company Debt Ratios

Attachment DJG-13

Company	Ticker	Debt Ratio
Alliant Energy	LNT	56%
Ameren Corp.	AEE	53%
American Elec Pwr	AEP	58%
Black Hills Corp.	BKH	56%
CenterPoint Energy	CNP	63%
CMS Energy Corp.	CMS	65%
Consolidated Edison	ED	51%
Dominion Energy	D	59%
DTE Energy Co.	DTE	62%
Duke Energy Corp.	DUK	61%
Entergy Corp.	ETR	64%
Evergy Inc.	EVRG	52%
Eversource Energy	ES	62%
Exelon Corp.	EXC	61%
NextEra Energy, Inc.	NEE	60%
OGE Energy Corp.	OGE	52%
Pinnacle West Capital	PNW	56%
Portland General Elec.	POR	56%
PPL Corp.	PPL	51%
Pub Sv Enterprise Grp.	PEG	55%
Sempra	SRE	48%
Southern Company	SO	64%
WEC Energy Group	WEC	55%
Xcel Energy Inc.	XEL	60%
Average		57%

Debt ratios from Value Line Investment Survey - 2025

Competitive Industry Debt Ratios

Attachment DJG-14

Industry	# Firms	Debt Ratio
Financial Svcs. (Non-bank & Insurance)	166	92%
Hotel/Gaming	65	86%
Brokerage & Investment Banking	30	80%
Retail (Automotive)	29	80%
Hospitals/Healthcare Facilities	33	76%
Air Transport	24	76%
Bank (Money Center)	15	71%
Rubber& Tires	3	67%
Recreation	50	66%
Food Wholesalers	14	66%
Transportation	21	66%
Computers/Peripherals	35	65%
Cable TV	9	65%
Advertising	54	64%
Retail (Grocery and Food)	17	64%
Retail (Special Lines)	98	64%
Telecom (Wireless)	11	63%
Power	48	62%
R.E.I.T.	192	62%
Oil/Gas Distribution	24	62%
Transportation (Railroads)	4	62%
Telecom. Services	32	62%
Chemical (Diversified)	4	61%
Auto & Truck	34	61%
Aerospace/Defense	67	60%
Broadcasting	22	60%
Packaging & Container	22	60%
Apparel	37	59%
Beverage (Soft)	29	59%
Utility (General)	14	59%
Retail (Distributors)	66	58%
Farming/Agriculture	35	57%
Green & Renewable Energy	18	57%
Information Services	16	57%
Office Equipment & Services	14	56%
Environmental & Waste Services	50	56%
Utility (Water)	15	55%
Real Estate (Development)	15	55%
Computer Services	63	54%
Household Products	101	52%
Retail (REITs)	28	52%
Drugs (Biotechnology)	535	50%
Software (Internet)	29	50%
Furn/Home Furnishings	28	50%
Total / Average	2,216	63%

Unlevering Beta

Proxy Debt Ratio	57%	[1]
Proxy Equity Ratio	43%	[2]
Proxy Debt / Equity Ratio	1.3	[3]
Tax Rate	21%	[4]
Equity Risk Premium	5.0%	[5]
Risk-free Rate	4.8%	[6]
Proxy Group Beta	0.69	[7]
Unlevered Beta	0.34	[8]

[9] [10] [11] [12]

Relevered Betas and Cost of Equity Estimates

Debt Ratio	D/E Ratio	Levered Beta	Cost of Equity
0%	0.0	0.34	6.5%
20%	0.3	0.40	6.8%
25%	0.3	0.42	6.9%
30%	0.4	0.45	7.0%
49%	1.0	0.59	7.7%
57%	1.3	0.69	8.2%
60%	1.5	0.73	8.5%

- [1] Proxy group average debt ratio
- [2] Proxy group average equity ratio
- [3] = [1] / [2]
- [4] Company assumed tax rate
- [5] Equity risk premium from Exhibit DJG-11
- [6] Risk-free rate from Exhibit DJG-11
- [7] Average proxy beta from Exhibit DJG-11
- [8] = [7] / (1 + (1 - [4]) * [3])
- [9] Various debt ratios (Garrett proposed highlighted)
- [10] = [9] / (1 - [9])
- [11] = [8] * (1 + (1 - [4]) * [10])
- [12] = [6] + [11] * [5]

Weighted Average Cost of Capital
Exelon Corp (EXC)

<u>Capital Component</u>	<u>Proposed Ratio</u>	<u>Est Cost</u>	<u>Weighted Cost</u>
Long-Term Debt	61.0%	4.10%	2.50%
Common Equity	<u>39.0%</u>	8.07%	<u>3.15%</u>
Total	100.0%		5.65%

Final Rate of Return Recommendation

Attachment DJG-17

<u>Capital Component</u>	<u>Proposed Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	57.0%	5.10%	2.91%
Common Equity	<u>43.0%</u>	7.70%	<u>3.31%</u>
Total	100.0%		6.22%

APPENDIX A:

DISCOUNTED CASH FLOW MODEL THEORY

The Discounted Cash Flow (“DCF”) Model is based on a fundamental financial model called the “dividend discount model,” which maintains that the value of a security is equal to the present value of the future cash flows it generates. Cash flows from common stock are paid to investors in the form of dividends. There are several variations of the DCF Model. In its most general form, the DCF Model is expressed as follows:¹

**Equation 1:
General Discounted Cash Flow Model**

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

where: P_0 = current stock price
 $D_1 \dots D_n$ = expected future dividends
 k = discount rate / required return

The General DCF Model would require an estimation of an infinite stream of dividends. Since this would be impractical, analysts use more feasible variations of the General DCF Model, which are discussed further below.

The DCF Models rely on the following four assumptions:

1. Investors evaluate common stocks in the classical valuation framework; that is, they trade securities rationally at prices reflecting their perceptions of value;
2. Investors discount the expected cash flows at the same rate (K) in every future period;

¹ See Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 410 (9th ed., McGraw-Hill/Irwin 2013).

3. The K obtained from the DCF equation corresponds to that specific stream of future cash flows alone; and
4. Dividends, rather than earnings, constitute the source of value.

The General DCF can be rearranged to make it more practical for estimating the cost of equity. Regulators typically rely on some variation of the Constant Growth DCF Model, which is expressed as follows:

**Equation 2:
Constant Growth Discounted Cash Flow Model**

$$K = \frac{D_1}{P_0} + g$$

where:

<i>K</i>	=	<i>discount rate / required return on equity</i>
<i>D₁</i>	=	<i>expected dividend per share one year from now</i>
<i>P₀</i>	=	<i>current stock price</i>
<i>g</i>	=	<i>expected growth rate of future dividends</i>

Unlike the General DCF Model, the Constant Growth DCF Model solves directly for the required return (K). In addition, by assuming that dividends grow at a constant rate, the dividend stream from the General DCF Model may be essentially substituted with a term representing the expected constant growth rate of future dividends (g). The Constant Growth DCF Model may be considered in two parts. The first part is the dividend yield (D_1/P_0), and the second part is the growth rate (g). In other words, the required return in the DCF Model is equivalent to the dividend yield plus the growth rate.

In addition to the four assumptions listed above, the Constant Growth DCF Model relies on four additional assumptions as follows:²

² *Id.* at 254-56.

1. The discount rate (K) must exceed the growth rate (g);
2. The dividend growth rate (g) is constant in every year to infinity;
3. Investors require the same return (K) in every year; and
4. There is no external financing; that is, growth is provided only by the retention of earnings.

Because the growth rate in this model is assumed to be constant, it is important not to use growth rates that are unreasonably high. In fact, the constant growth rate estimate for a regulated utility with a defined service territory should not exceed the growth rate for the economy in which it operates.

APPENDIX B:

CAPITAL ASSET PRICING MODEL THEORY

The Capital Asset Pricing Model (“CAPM”) is a market-based model founded on the principle that investors demand higher returns for incurring additional risk.¹ The CAPM estimates this required return. The CAPM relies on the following assumptions:

1. Investors are rational, risk-averse, and strive to maximize profit and terminal wealth;
2. Investors make choices based on risk and return. Return is measured by the mean returns expected from a portfolio of assets; risk is measured by the variance of these portfolio returns;
3. Investors have homogenous expectations of risk and return;
4. Investors have identical time horizons;
5. Information is freely and simultaneously available to investors.
6. There is a risk-free asset, and investors can borrow and lend unlimited amounts at the risk-free rate;
7. There are no taxes, transaction costs, restrictions on selling short, or other market imperfections; and,
8. Total asset quality is fixed, and all assets are marketable and divisible.²

¹ William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963); *see also* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 208 (3rd ed., South Western Cengage Learning 2010).

² *Id.*

While some of these assumptions may appear to be restrictive, they do not outweigh the inherent value of the model. The CAPM has been widely used by firms, analysts, and regulators for decades to estimate the cost of equity capital.

The basic CAPM equation is expressed as follows:

**Equation 1:
Capital Asset Pricing Model**

$$K = R_F + \beta_i(R_M - R_F)$$

where:

K	=	required return
R_F	=	risk-free rate
β	=	beta coefficient of asset i
R_M	=	required return on the overall market

There are essentially three terms within the CAPM equation that are required to calculate the required return (K): (1) the risk-free rate (R_F); (2) the beta coefficient (β); and (3) the equity risk premium ($R_M - R_F$), which is the required return on the overall market less the risk-free rate.

Raw Beta Calculations and Adjustments

A stock's beta equals the covariance of the asset's returns with the returns on a market portfolio, divided by the portfolio's variance, as expressed in the following formula:³

**Equation 2:
Beta**

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

where:

β_i	=	beta of asset i
σ_{im}	=	covariance of asset i returns with market portfolio returns
σ_m^2	=	variance of market portfolio

³ John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180-81 (3rd ed., South Western Cengage Learning 2010).

Betas that are published by various research firms are typically calculated through a regression analysis that considers the movements in price of an individual stock and movements in the price of the overall market portfolio. The betas produced by this regression analysis are considered “raw” betas. There is empirical evidence that raw betas should be adjusted to account for beta’s natural tendency to revert to an underlying mean.⁴ Some analysts use an adjustment method proposed by Blume, which adjusts raw betas toward the market mean of one.⁵ While the Blume adjustment method is popular due to its simplicity, it is arguably arbitrary, and some would say not useful at all. According to Dr. Damodaran: “While we agree with the notion that betas move toward 1.0 over time, the [Blume adjustment] strikes us as arbitrary and not particularly useful.”⁶ The Blume adjustment method is especially arbitrary when applied to industries with consistently low betas, such as the utility industry. For industries with consistently low betas, it is better to employ an adjustment method that adjusts raw betas toward an industry average, rather than the market average. Vasicek proposed such a method, which is preferable to the Blume adjustment method because it allows raw betas to be adjusted toward an industry average, and also accounts for the statistical accuracy of the raw beta calculation.⁷ In other words, “[t]he Vasicek adjustment seeks to overcome one weakness of the Blume model by not applying the same adjustment to every security; rather, a security-specific adjustment is made depending on the

⁴ See Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 84-92 (Financial Management Autumn 1990).

⁵ See Marshall Blume, *On the Assessment of Risk*, Vol. 26, No. 1, The Journal of Finance 1 (1971).

⁶ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 187 (3rd ed., John Wiley & Sons, Inc. 2012).

⁷ Oldrich A. Vasicek, *A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas* 1233-1239 (Journal of Finance, Vol. 28, No. 5, December 1973).

statistical quality of the regression.”⁸ The Vasicek beta adjustment equation is expressed as follows:

**Equation 3:
Vasicek Beta Adjustment**

$$\beta_{i1} = \frac{\sigma_{\beta_{i0}}^2}{\sigma_{\beta_0}^2 + \sigma_{\beta_{i0}}^2} \beta_0 + \frac{\sigma_{\beta_0}^2}{\sigma_{\beta_0}^2 + \sigma_{\beta_{i0}}^2} \beta_{i0}$$

where:

β_{i1}	=	<i>Vasicek adjusted beta for security i</i>
β_{i0}	=	<i>historical beta for security i</i>
β_0	=	<i>beta of industry or proxy group</i>
$\sigma_{\beta_0}^2$	=	<i>variance of betas in the industry or proxy group</i>
$\sigma_{\beta_{i0}}^2$	=	<i>square of standard error of the historical beta for security i</i>

The Vasicek beta adjustment is an improvement on the Blume model because the Vasicek model does not apply the same adjustment to every security. A higher standard error produced by the regression analysis indicates a lower statistical significance of the beta estimate. Thus, a beta with a high standard error should receive a greater adjustment than a beta with a low standard error. As stated in Ibbotson:

While the Vasicek formula looks intimidating, it is really quite simple. The adjusted beta for a company is a weighted average of the company’s historical beta and the beta of the market, industry, or peer group. How much weight is given to the company and historical beta depends on the statistical significance of the company beta statistic. If a company beta has a low standard error, then it will have a higher weighting in the Vasicek formula. If a company beta has a high standard error, then it will have lower weighting in the Vasicek formula. An advantage of this adjustment methodology is that it does not force an adjustment to the market as a whole. Instead, the adjustment can be toward an industry or some other peer group. *This is most useful in looking at companies in industries that on average have high or low betas.*⁹

⁸ 2012 Ibbotson Stocks, Bonds, Bills, and Inflation Valuation Yearbook 77-78 (Morningstar 2012).

⁹ *Id.* at 78 (emphasis added).

Thus, the Vasicek adjustment method is statistically more accurate, and is the preferred method to use when analyzing companies in an industry that has inherently low betas, such as the utility industry. The Vasicek method was also confirmed by Gombola, who conducted a study specifically related to utility companies. Gombola concluded that “[t]he strong evidence of autoregressive tendencies in *utility* betas lends support to the application of adjustment procedures such as the . . . adjustment procedure presented by Vasicek.”¹⁰ Gombola also concluded that adjusting raw betas toward the market mean of 1.0 is *too high*, and that “[i]nstead, they should be adjusted toward a value that is less than one.”¹¹ In conducting the Vasicek adjustment on betas in previous cases, it reveals that utility betas are even lower than those published by Value Line.¹² Gombola’s findings are particularly important here, because his study was conducted specifically on utility companies. This evidence indicates that using Value Line’s betas in a CAPM cost of equity estimate for a utility company may lead to overestimated results. Regardless, adjusting betas to a level that is *higher* than Value Line’s betas is not reasonable, and it would produce CAPM cost of equity results that are too high.

¹⁰ Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 92 (Financial Management Autumn 1990) (emphasis added).

¹¹ *Id.* at 91-92.

¹² See e.g. Responsive Testimony of David J. Garrett, filed March 21, 2016 in Cause No. PUD 201500273 before the Corporation Commission of Oklahoma (the Company’s 2015 rate case), at pp. 56 – 59.