DELMARVA POWER & LIGHT COMPANY

TESTIMONY OF FRANK J. HANLEY

BEFORE THE DELAWARE PUBLIC SERVICE COMMISSION

CONCERNING AN INCREASE IN GAS BASE RATES

DOCKET NO. 10-

I. INTRODUCTION

1. Q: Please state your name, occupation and business address.

A: My name is Frank J. Hanley and I am a Principal and Director of AUS Consultants, Inc. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

2. Q: Please summarize your educational background and professional experience.

A: I have testified as an expert witness on rate of return and related financial issues before 33 state public utility commissions including the Delaware Public Service Commission (the Commission), the District of Columbia Public Service Commission, the Public Services Commission of the Territory of the U.S. Virgin Islands, and the Federal Energy Regulatory Commission. I have also testified before local and county regulatory bodies, an arbitration panel, a U.S. Bankruptcy Court, the U.S. Tax Court and a state district court. I have appeared on behalf of investor-owned companies, municipalities, and state public utility commissions. The details of these appearances, as well as my educational background, are shown in Appendix A supplementing this testimony.

3. Q: What is the purpose of your testimony?

A: The purpose of my testimony is to provide evidence on behalf of Delmarva Power & Light Company (Delmarva or the Company) in the form of a study of the fair rate of return which it should be afforded an opportunity to earn on the common equity financed portion of its jurisdictional gas rate base.

4. Q: <u>What is your recommended fair rate of return?</u>

A: It is 8.10% based upon a pro forma capital structure at March 31, 2010 consisting of 51.20% long-term debt at a cost rate of 5.33% and a 48.80% common equity ratio at a cost rate of 11.00%.

5. Q: <u>Have you prepared schedules which support your recommended common equity cost rate?</u>

A: Yes, the Schedules included in my testimony are:

Schedule FJH-1: Summary of Overall Cost of Capital and Fair Rate of Return and Brief Summary of Common Equity Cost Rate if the Requested Modified Fixed Variable Rate Design is Approved

Schedule FJH-2: Standard & Poor's Public Utility Rating Method Criteria and Business Risk / Financial Risk Matrix

Schedule FJH-3: Financial Profile of Proxy Group of Seven Natural Gas Distribution Companies

Schedule FJH-4: Financial Profile of Proxy Group of 11 Combination Gas and Electric Companies

Schedule FJH-5: Analysis of the Extent to Which the Proxy Gas and Combination Gas and Electric Proxy Companies Utilize Tariff Decoupling Mechanisms

Schedule FJH-6: Delmarva Power & Light Company Capital Structure, Actual and Pro Forma at March 31, 2010

Schedule FJH-7: Details of Delmarva Power & Light Company Embedded Cost Rate(s) of Long-Term Debt

Schedule FJH-8: Hypothetical Example of Inadequacy of a DCF Return Related to Book Value

Schedule FJH-9: Indicated Common Equity Cost Rate Using the Single-Stage Discounted Cash Flow Model (DCF)

Schedule FJH-10: Derivation of Dividend Yields for Use in the DCF Model

Schedule FJH-11: Current Institutional and Individual Holdings

Schedule FJH-12: Projected Growth for Use in the DCF Model

Schedule FJH-13: Indicated Common Equity Cost Rate Using the Risk Premium Model (RPM)

Schedule FJH-14: Estimated Equity Risk Premia Based Upon Regression Analysis of 622 Fully Litigated Gas and Electric ROEs from January 1, 1989 through May 17, 2010

Schedule FJH-15: Excerpt from Ibbotson SBBI Stocks, Bonds, Bills, and Inflation: Valuation Edition 2010 Yearbook

Schedule FJH-16: Indicated Common Equity Cost Rate Using the Capital Asset Pricing Model (CAPM) and Empirical CAPM (ECAPM)

Schedule FJH-17: Basis for Selection of Comparable Risk Domestic, Non-Price Regulated Companies

Schedule FJH-18: Summary of Market-Based Common Equity Cost Rates for the Domestic, Non-Price Regulated Companies Comparable in Total Risk to the Utility Proxy Groups

Schedule FJH-19: Derivation of Flotation Cost Adjustments

Schedule FJH-20: Derivation of Risk Adjustment Attributable to Delmarva's Smaller Size

II. SUMMARY

6. Q: Please summarize your testimony.

A: The Company is a subsidiary of Conectiv, which in turn is a subsidiary of Pepco Holdings, Inc. (PHI). Consequently, Delmarva's common stock is not traded. The fair rate of return determined in this proceeding can only be applied to the Company's gas rate base. Financial theory mandates that the risk to capital depends upon where the capital is invested. The capital in question in this proceeding is invested in the Company's gas rate base. Financial theory also holds that the source of capital invested is irrelevant and risk relates to where capital is put, or invested. In the instant matter, the capital is invested in Delmarva's gas rate base. Thus, it is important to look at a proxy group of similar risk gas distribution companies. Because Delmarva is a combination gas and electric utility, I believe it is essential to also evaluate the market data of a proxy group of similar risk combination gas and electric companies. It is also necessary to adjust the common equity cost rates derived from such proxy groups for risk differentials between them and the Company.

The use of other firms of comparable risk as proxies is consistent with the principles of fair rate of return established in the Hope[1] and Bluefield[2] cases and adds reliability to the exercise of informed expert judgment in arriving at a recommended common equity cost rate.

In my analysis, I selected two proxy groups of companies namely, proxy groups of seven natural gas distribution and eleven combination gas and electric companies. The bases of selection of the companies in the proxy groups are described *infra*. The proxy groups are comparable to the company but they are not identical. Accordingly, it is necessary to adjust common equity cost rates derived from each proxy group in order to reflect the Company's risks relative to each proxy group. As will be discussed *infra*, adjustments are necessary to take into account financial risk differences attributable to differences in bond rating and size differential. I also believe it is necessary to include a provision for

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

[2] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

flotation costs which will be discussed *infra*. The primary recommendation that I formulate in this testimony is based upon the presumption of approval of the Company's requested Modified Fixed Variable Rate Design (MFV). In the event that the requested MFV rate design is not approved, my recommended common equity cost rate of 11.00% will need to be adjusted upward by 25 basis points, or 0.25% to 11.25%.

My recommended common equity cost rate is applicable to a pro forma capital structure at March 31, 2010 which includes a common equity ratio of 48.80%. I will show that a common equity ratio of 48.80% is reasonable and should be used in the cost of capital determination. I also show that the Company's embedded cost of long-term debt capital is 5.33% relative to a long-term debt ratio of 51.20%.

In arriving at my primary recommendation of an 11.00% common equity cost rate, I applied three well-tested market-based cost of common equity models to data for each proxy group of utilities, namely the Discounted Cash Flow Model (DCF), the Risk Premium Model (RPM) and the Capital Asset Pricing Model (CAPM). I believe that it is entirely appropriate and consistent with the Efficient Market Hypothesis (EMH) to rely upon multiple models. I also will describe the basis of selecting comparable risk, domestic, non-price regulated companies to which I also apply the same three market-based models. The use of similar risk, non-price regulated companies is consistent with the literature on regulation and my proxy groups are comparable in total risk to the proxy groups of utilities.

As a result of applying the various market-based cost of equity models, I arrive at a range of common equity cost rate between 10.43% and 10.78%. Because of bond rating differentials, an incremental cost rate of 0.12% is necessary to be added to the cost rate derived from the proxy group of seven gas distribution companies while an increment of 0.06% is necessary to be added to the cost rate indicated based upon the proxy group of eleven combination gas and electric companies. Also, I believe it is necessary to add adjustments for flotation costs of 0.21% and 0.25% to each proxy group, respectively. Flotation costs are costs associated with the sale of new issuances of common stock and, as discussed *infra*, have no other means of recovery in the ratemaking paradigm. Yet, those costs are just as real as any other costs recoverable in rates. Fair regulatory treatment should permit their recovery.

I also made an upward adjustment in recognition of the Company's greater risk attributable to its much smaller size relative to the proxy group of combination gas and electric companies. That adjustment is 0.44%. Despite the similar bond ratings of the proxy groups compared to Delmarva's bond rating, I will demonstrate and explain *infra* why Delmarva's smaller size vis-à-vis the proxy group of combination gas and electric companies requires an upward adjustment for the added risk to equity ownership vis-à-vis the proxy group of combination companies.

I also show downward adjustments to common equity cost rate based upon approval of the MFV rate design. The adjustments that I make reflect pro rata reductions in risk embedded in the market-based common equity cost rates to the extent that the companies in each proxy group utilize decoupling tariff mechanisms.

As a result of the foregoing, my range of adjusted common equity cost rate, assuming approval of the MFV rate design, is from 10.73% -11.34%. The midpoint of the range is 11.04% which I round down to my recommended common equity cost rate of 11.00%. If the requested MFV rate design is not approved, my recommended common equity cost rate is 11.25%.

7. Q: <u>Have you summarized your recommended overall fair rate of return and the bases of your recommended common equity cost rate of 11.00% assuming the Company's requested MFV rate design is approved?</u>

A: Yes, I have. That information is shown on Schedule FJH-1, which consists of two pages. Page 1 shows that the overall cost of capital is 8.10%. For convenience, it is also shown below:

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	51.20%	5.33%	2.73%
Common Equity	48.80	11.00	5.37
Total	100.00%		8.10%

The basis of my recommended common equity cost rate is summarized on Page 2 of Schedule FJH-1.

III. GENERAL PRINCIPLES

8. Q: What general principles have you considered in arriving at your recommended common equity cost rate?

A: In unregulated industries, where the total price of a delivered product or service is not regulated, competition is a principal determinant in establishing the price. Traditionally, in the case of public utilities, regulation acts as a substitute for the competition of the marketplace. Analyses based on companies whose securities are actively traded are imperative when estimating common equity cost rate. The common equity cost rate determined should be sufficient enough to fulfill investors' requirements and assure that the utility will be able to fulfill its obligations to its customers. A utility's obligation to serve requires a level of earnings sufficient to maintain the integrity of presently invested capital and permit the attraction of needed new capital at a reasonable cost in competition with all other comparable-risk seekers of capital. These standards for a fair rate of return have been established by the U.S. Supreme Court in the Hope and Bluefield cases cited *supra*.

IV. BUSINESS RISK

9. Q: Please define business risk and explain why it is important to the determination of a fair rate of return.

A: Business risk is a collective term encompassing all of the diversifiable risks of an enterprise except financial risk. Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return demanded by investors consistent with the basic financial precept of risk and return.

V. FINANCIAL RISK

10. Q: Please define financial risk and explain why it is important to the determination of a fair rate of return.

A: Financial risk is the additional risk created by the introduction of debt into the capital structure. Standard & Poor's (S&P) corporate bond rating criteria is contained in Schedule FJH-2, which consists of 15 pages. Pages 10 through 15 contain S&P's matrix for rating U.S. Utilities. S&P's approach reflects the inclusion of utility ratings into a framework shared across all corporate sectors. The Business Risk/Financial Risk matrix is shown in Table 1 on Page 11 of Schedule FJH-2. In Table 2, shown on Page 13 of Schedule FJH-2, S&P shows its financial metrics. Notwithstanding the table of financial metrics, S&P states on Page 13 of Schedule 2:

> The rating matrix indicative outcomes are what we typically observe – but are not meant to be precise indications or guarantees of future rating opinions. Positive and negative nuances in our analysis may lead to a notch higher or lower than the outcomes indicated in the various cells of the matrix …. Still, it is essential to realize that the financial benchmarks are guidelines, neither gospel nor guarantees. They can vary in nonstandard cases: For example, if a company's financial measures exhibit very little volatility, benchmarks may be somewhat more relaxed.

11. Q: Nevertheless, are bond ratings a good measure of investment risk?

A: Yes. Similar bond ratings reflect similar, but not identical, combined business and financial risks to bondholders. Bond ratings are an indication on a relative scale of the extent of safety for owners/prospective owners of the rated bonds. While bond ratings are often used to select proxy companies used to estimate common equity cost rate (although not the case in this testimony), it must be kept in mind that any unique risk, even if reflected in the bond rating is reflected in a higher interest rate for the protection of the bondholders.

Although specific business or financial risks may differ between companies, the same bond rating indicates that the combined risks faced by bondholders, are similar because the bond rating reflects a company's diversifiable business and financial risks. Risk distinctions within a bond rating category are recognized by a plus or minus. For example, within the A category, an S&P rating can be A+, A, or A-. Similarly, Moody's ratings within the A category are distinguished by rating gradations of A1, A2 and A3. Thus, for example, a bond rating of A3, which is Delmarva's Moody's rating, signifies greater risk than a rating of A2, etc. Moreover, additional risk distinction is reflected by S&P in the assignment of one of six business risk profiles, as shown in Table 1 on Schedule FJH-2, Page 11. S&P expressly states that the bond rating process encompasses a qualitative analysis of business and financial risks (see Pages 3 through 9 of Schedule 2).

VI. UTILITY PROXY GROUPS

A. Proxy Group of Seven Natural Gas Distribution Companies

12. Q: Please explain how you selected the proxy group of seven gas distribution companies.

A: Since this is a case setting gas distribution rates, I concluded that it is necessary to consider gas distribution companies. Accordingly, I selected a proxy group of gas distribution companies based upon the following criteria:

1. Are included in Value Line's Standard Edition Natural Gas Utility Group;
2. Have five years of historical financial data ending with the year 2009;
3. Have positive Value Line five-year projections of growth in dividends per share (DPS);
4. Have positive five-year Value Line projected growth rates in earnings per share (EPS) and/or positive projected growth rates in EPS from Reuters or Zack's;
5. Have a Value Line beta;
6. Have not cut or omitted their cash common stock dividend during the five calendar years ending 2009 and up to the time of preparation of this testimony;
7. Derived 70% or more of their net operating income and assets from regulated gas operations; and
8. At the time of the preparation of this testimony had not publicly announced any merger or acquisition activity.

Seven companies met all of the foregoing criteria. The capitalization and financial statistics for this group are summarized on Page 1 of Schedule FJH-3. The identities of the companies in the group are shown on Page 2 of Schedule FJH-3 along with the permanent capital structure ratios by company and year as well as for the five-year average ending 2009.

B. Eleven Combination Gas and Electric Companies

13. Q: You have indicated that because Delmarva is a combination gas and electric company, that you also believe it important to review data for a proxy group of combination gas and electric companies. How did you select such a group?

A: I applied the same criteria specified *supra* with regard to the gas distribution companies with the exception of the first screening criterion which was that they must be in Value Line Standard Edition, but are included as combination companies in Value Line's electric utility east, central or west. Eleven companies met all of the criteria and their capitalization and financial statistics are summarized on Page 1 of Schedule FJH-4. Page 2 of Schedule FJH-4 contains their identities as well as their permanent capital structure ratios by company and year as well as for the five-year average ending 2009.

VII. DECOUPLING MECHANISMS

14. Q: Since the Company has requested approval of the MFV tariff mechanism in this proceeding, have you examined the companies in the two proxy groups which you have selected in order to determine whether or to what extent those companies have been authorized to utilize decoupling mechanisms?

A: Yes, I have. That information is contained in Schedule FJH-5, which consists of 19 pages. Page 1 is a summary page. It shows, by company, as well as the average for all the companies in each proxy group, the percentage of customers whose rates are partially or fully decoupled. I have chosen to use customers because in the multi-jurisdictional companies, revenue breakouts in most cases are not available by jurisdiction. While imperfect, I believe that the percentage of customers provides valuable insight into the extent to which these companies have revenues which are partially or fully decoupled. The terminology shown for each company as to the description of the decoupling mechanism is taken from each company's SEC Form 10-K. Weather constitutes the largest single variant in the case of gas distribution companies of changes in gas sales and revenues. Consequently, weather normalization adjustment clauses are partial, albeit substantial, decoupling mechanisms. Pages 2 through 19 contain the information, by company and jurisdiction, as well as descriptions of the various decoupling mechanisms which have been authorized. As shown on Page 1 of Schedule FJH-5, the average percentage of partially or fully decoupled customers for the gas distribution group is 88.81% and for the combination gas and electric companies is 24.38%. On Pages 2 through 19 of Schedule FJH-5, I show the decoupling mechanisms, or where none is applicable, by jurisdiction, based upon the total number of customers or meters depending on the availability of data. I also show the percentage of customers or meters in each jurisdiction to the total as well as the percentage whose rates are partially or fully decoupled. The 24.38% with partially or fully decoupled rates for the combination proxy group reflects the present actuality for my proxy group of combination companies. Electric utilities (and the combination companies consist largely of electric operations) have lagged gas distribution companies in seeking approval of decoupling mechanisms because gas companies have for many years been experiencing declining usage per customer. However, due to the evolution in state policies promoting conservation, a number of electric operations/companies that are not in my proxy group have received approval of decoupling mechanisms. For example, the Institute for Electric Efficiency (IEE), in a January 2010 report entitled "State Energy Efficiency Regulatory Frameworks", reported on additions to "a growing list of jurisdictions that have adopted revenue decoupling for the electric sector." They showed twelve states which had approved fixed cost recovery decoupling mechanisms and seven more which were pending. Also, IEE reported that 21 states had conservation incentives in place, ten of which were approved in the last two years. In addition, IEE indicated that another eight states were considering some form of performance incentives for efficiency.

15. Q: <u>Why is it important to gain insight of the extent to which decoupling mechanisms are utilized by companies in the proxy groups?</u>

A: As will be discussed *infra*, investors take all such knowledge into account. To the extent that such tariff mechanisms reduce risk, they have an impact on common equity cost rate. Consequently, to the extent that such mechanisms are utilized by the proxy companies, there is a reduction of risk already reflected in the market prices used in establishing the market-based costs of equity for those companies. Such reduction needs to be considered when utilizing their market data to determine a common equity cost rate for the Company, which is requesting the MFV tariff mechanism in this proceeding.

VIII. CAPITAL STRUCTURE

16. Q: What capital structure do you recommend for use in determining the overall cost of capital and fair rate of return?

A: I recommend the use of the Company's pro forma capital structure at March 31, 2010 because it is based upon the latest published actual financial data. It has been adjusted to reflect the actual issuance of $78.4 million of tax-exempt debt at a coupon rate of 5.40% on April 1, 2010. This known and measurable issuance should be reflected. I have shown the actual capital structure at March 31, 2010, the pro forma adjustments related to the issuance of the $78.4 million tax-exempt debt, as well as the pro forma capital structure on Schedule FJH-6. The pro forma capital structure ratios consist of 51.20% long-term debt and 48.80% common equity capital.

17. Q: Are those capital structure ratios reasonable for use in order to determine the overall cost of capital and fair rate of return applicable to the Company?

A: Yes, I believe that they are. As shown on Page 2 of Schedule FJH-3, the proxy group of seven gas distribution companies had a five-year average capital structure ending 2009 consisting of 46.39% long-term debt, 0.27% preferred stock and 53.34% common equity capital. The proxy group of eleven combination gas and electric companies, as shown on Page 2 of Schedule FJH-4, maintained a five-year average capital structure consisting of 49.92% long-term debt, 1.17% preferred stock and 48.91% common equity capital. I believe that in view of the ratios maintained by these similar, albeit not identical, risk proxy groups that the pro forma capital structure consisting of 51.20% long-term debt and 48.80% common equity capital is reasonable and should be used in the determination of an overall cost of capital and fair rate of return.

IX. LONG-TERM DEBT COST RATE

18. Q: What is the embedded cost rate of long-term debt capital which relates to the 51.20% long-term debt ratio discussed *supra*?

A: It is 5.33%. The effective composite cost rate of 5.33% is shown on Schedule FJH-7, Page 1. The effective cost rate, or yield to maturity, is shown by issue on Page 2 of Schedule FJH-7.

X. COMMON EQUITY COST RATE MODELS

A. The EMH Analysis and its Components

19. Q: Are the models you use to estimate common equity cost rate market-based?

A: Yes. The models relied upon in this testimony are market-based. The DCF, RPM and CAPM are based upon the EMH, which is the market-based cornerstone of modern investment theory.

The DCF model is market-based as current market prices are employed.

The RPM is market-based as the current and expected bond ratings and yields reflect the market's assessment of bond investment risk. To the extent betas are used to determine equity risk premia, the market's assessment is reflected because betas are derived from regression analyses of market prices which reflect the total perceived risks of each company. In addition, actual market equity risk premia are employed in my application of the RPM.

The CAPM model is market-based for much the same reason as the RPM, except that the yield on U.S. Government Treasury Notes is used in lieu of company-specific bond yields and betas are market-based as discussed *supra*. All of the models are, therefore, based upon the EMH.

20. Q. Please describe the conceptual basis of the EMH.

A: The EMH is the cornerstone of modern investment theory. It was pioneered by Eugene F. Fama[3] in 1970. An efficient market is one in which security prices at all times reflect all the relevant information at that time. An efficient market implies that prices adjust instantaneously to the arrival of new information and that the prices therefore reflect the intrinsic fundamental economic value of a security.[4]

The essential components of the EMH are:

1) Investors are rational and will invest in assets which provide the highest expected return for a particular level of risk;

2) Current market prices reflect all publicly available information;

3) Returns are independent in that today's market returns are unrelated to yesterday's returns as that information has already been processed; and

4) The markets follow a random walk, i.e., the probability distribution of expected returns approximates the normal bell curve.

Brealey and Myers[5] state:

> When economists say that the security market is "efficient,"

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[3] Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work," Journal of Finance, May 1970, pp. 383-417.

[4] Morin, Roger A., "New Regulatory Finance," Public Utilities Reports, Inc., 2006, pp. 279-281.

[5] Brealey, R.A. and Myers, S.C., "Principles of Corporate Finance." McGraw-Hill Publications, Inc., 1996, pp. 323-324.

> they are not talking about whether the filing is up to date or whether desktops are tidy. They mean that information is widely and cheaply available to investors and that all relevant and ascertainable information is already reflected in security prices.

There are three forms of the EMH, namely:

1) The "weak" form asserts that all past market prices and data are fully reflected in securities prices. In other words, technical analysis cannot enable an investor to "outperform the market."

2) The "semistrong" form asserts that all publicly available information is fully reflected in securities prices. In other words, fundamental analysis cannot enable an investor to "outperform the market."

3) The "strong" form asserts that all information, both public and private, is fully reflected in securities prices. In other words, even insider information cannot enable an investor to "outperform the market."

The "semistrong" form is generally considered the most realistic because the illegal use of insider information can enable an investor to "beat the market" and earn excessive returns, thereby disproving the "strong" form.

21. Q. <u>Please explain the applicability of the EMH to your determination of common equity cost rate.</u>

A: Common sense affirms the conceptual basis of the EMH as described above. In practical terms, this means that market prices paid for securities reflect all relevant information available to investors and that no degree of sophistication and/or analysis can enable investors to consistently outperform the market. Consequently, it confirms that all perceived risks are taken into account by investors in the prices they pay which reflect information inexpensively or freely available such as bond ratings, analyses of the rating agencies and financial analysts, and the various methods employed to determine common equity cost rate as discussed in the academic and financial literature. Thus, in an attempt to emulate investors' actions, it is necessary to take into account the results of multiple cost of common equity models.

22. Q. <u>Is there specific support in the academic and financial literature for the need to rely upon multiple cost of common equity models in arriving at a recommended common equity cost rate?</u>

A: Yes. For example, Phillips[6] states:

> Since regulation establishes a level of authorized earnings which, in turn, implicitly influences dividends per share, estimation of the growth rate from such data is an inherently circular process. *For these reasons, the DCF model 'suggests a degree of precision which is in fact not present' and leaves 'wide room for controversy and argument about the level of k'*. (Emphasis added.) (P. 396.)
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> * * *
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> *Despite the difficulty of measuring relative risk, the comparable earnings standard is no harder to apply than is the market-determined standard. The DCF method, to illustrate, requires a subjective determination of the growth rate the market is contemplating. Moreover, as Leventhal has argued: 'Unless the utility is permitted to earn a return comparable to that available elsewhere on similar risk, it will not be able in the long run to attract capital'*. (Emphasis added.) (P. 398.)

Also, Morin[7] states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. *The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company.* Similarly, the inability of the CAPM

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6 Charles F. Phillips, Jr., <u>The Regulation of Public Utilities – Theory and Practice</u>, 1993, Public Utility Reports, Inc., Arlington, VA, pp. 396, 398.

7 <u>Id</u>., at pp. 428, 430-431.

to account for variables that affect security returns other than beta tarnishes its use. (Emphasis added.)

> *No one individual method provides the necessary level of* precision *for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment*. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (Emphasis added.)

* * *

Additional financial literature supports the use of multiple methods. For example:

> Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. These methods are not mutually exclusive – no method dominates the others, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand.[8]

> *Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information.* That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data. (Emphasis added)[9]

> *No single or group test or technique is conclusive*. (Emphasis added)[10]

Thus, the EMH requires the assumption that investors rely upon multiple cost of common equity estimation models.

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8 Michael C. Ehrhardt and Eugene F. Brigham, Corporate Finance: A Focused Approach, Thompson/Southwestern, 2003, pp. 229-230.

9 Stewart C. Myers, "The Application of Finance Theory to Public Utility Rate Cases", Bell Journal of Economics and Management Science, Spring 1972, pp. 58-97.

10 James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, 1988, Public Utilities Reports, Inc., Arlington, VA, p. 317.

B. <u>The DCF Analysis</u>

1. <u>Theoretical Basis</u>

23. Q. <u>What is the theoretical basis of the DCF model?</u>

A: DCF theory is based upon finding the present value of an expected future stream of net cash flows during the investment holding period discounted at the cost of capital, or the capitalization rate. The theory suggests that an investor buys a stock for an expected total return rate to be derived from cash flows in the form of dividends received plus appreciation in market price, i.e., the expected growth rate. Thus, the dividend yield on market price plus a growth rate equals the capitalization rate. The capitalization rate is the total return rate expected by investors.

24. Q. <u>Please comment on the applicability of the DCF model in establishing the cost rate of common equity capital.</u>

A: As discussed *supra*, it is necessary to determine a common equity cost rate applicable to Delmarva which is based upon the cost rates of two proxy groups. The proxy groups' data must be adjusted to reflect risk differentials, keeping in mind similar risk is not identical risk. Although the DCF model is in wide use in the regulatory arena, such is not the case in general.

25. Q: <u>If DCF was indeed the preferred method of investors, would it not be the method most used regardless of industry?</u>

A: Yes. As noted in the text, Intermediate Financial Management by Eugene F. Brigham and Phillip R. Daves[11], the DCF is dwindling in significance compared to the CAPM. The authors state:

> Recent surveys found that the CAPM approach is by far the most widely used method. Although most firms use more than one method, almost 74 percent of respondents in one survey, and 85 percent in the other, used the CAPM. This is in sharp contrast to a 1982 survey which found that only 30 percent of respondents used the CAPM. Approximately 16 percent now use the DCF approach down from 31 percent in 1982.

26. Q: <u>Does the DCF model always produce accurate cost rate results so that it could be relied upon exclusively?</u>

A: No. The DCF model has a tendency to mis-specify investors' required return rate when the market value of common stock differs significantly from its book value, as will be discussed *infra* in detail. Market values and book values of common stocks are seldom at unity. For example, the average market value of the proxy groups have been well in excess of their book values as will be discussed *infra*.

A market-based DCF cost rate will result in a total annual dollar return on book common equity equal to the total annual dollar return expected by investors only when market and book values are equal. A DCF cost rate produces an investor-required return on the market value or price paid. The application of a market value cost rate applied to a lower book value results in a lower dollar return than required by investors. There are many macroeconomic factors which influence market values. Regulatory actions can influence market values but cannot control them according to Bonbright (*infra*), which is affirmed by common sense.

2. Applicability of a Market-Based Common Equity Cost Rate to a Book Value Rate Base

27. Q: Are the market prices of public utilities' stocks influenced by factors beyond the influence of the regulatory process?

A: Yes. For example, Phillips[12] states:

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.'

In addition, Bonbright[13] states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market. In short, market prices are beyond the control, though not beyond the influence of rate regulation.

28. Q: Because market prices are beyond the control of rate regulation, does a DCF cost rate reflect investors' required rate of return when applied to a book value which differs from its market value?

A: No. Under the DCF model, the rate of return investors require is related to the price paid for a stock. Thus, market price is the basis upon which investors formulate their required rate of return. A regulated utility (under the traditional rate base/rate of return paradigm) is limited to earning on its net book value

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[11] Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, Ninth Edition, Thomson/South-Western, 2007, pp. 332-333.

[12] Id., p. 395.

(depreciated original cost) rate base. Market values diverge from book values for many reasons unrelated to the allowed and/or achieved rates of earnings on book common equity (ROEs). Thus, when market values depart from book values, a market-based DCF cost rate applied to the book value of common equity will not reflect investors' expected common equity cost rate based on market prices. This is true because there are many macroeconomic factors which influence the demand for, and hence the market prices of, common stocks in addition to company-specific EPS and DPS. Consequently, a market-based DCF cost rate applied to the book value per share will either overstate investors' required common equity cost rate when market value is less than book value or understate investors' required common equity cost rate when market value is above book value. In the late 1970's and early 1980's, when interest rates were extraordinarily high and the market-to-book ratios of the utility industry were below one, or 100 percent, the DCF model overstated investors' required common equity cost rate.

Some regulatory commissions have recognized the tendency of DCF cost rates to understate investors' required return rates in a volatile stock market and when the market-to-book ratio is in excess of one (see cites *infra*). In recent years, as well as currently, with relatively low interest rates and utility industry market-to-book ratios averaging above one, the DCF model often understates investors' required common equity cost rate. Those conditions emphasize the

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[13] Id., p. 334.

need to rely upon multiple cost of common equity models consistent with the EMH as discussed *supra*.

29. Q: <u>Please explain how a market-based DCF cost rate either understates or overstates investors' required rate of return.</u>

A: The problem of understatement or overstatement of cost rate arises when a market-based DCF cost rate is applied to a book value per share of common equity which is greater or less than the market value, respectively. The hypothetical examples on Schedule FJH-8 show how a significantly different book value results in either an understatement or overstatement of investors' required return rate which is based on market price, i.e., the investment upon which they expect to earn their required rate of return.

The hypothetical examples on Schedule FJH-8 demonstrate that the expected market-based rate of return is either under-achieved or over-achieved. In the first hypothetical example (refer to columns 1 and 2 of Schedule FJH-8), market price is 80% in excess of its book value and investors expect a total return rate of 10.00% on market price, based on a growth rate of 6.50% and a dividend yield of 3.50%. It is shown that when the 10.00% return rate is applied to the book value, which is only 55.54% of the market value, or $13.33, the opportunity for total annual return is only $1.333 on book value (10.00% x $13.33) and not $2.40 (10.00% return on $24 market value, i.e., the investment upon which the required rate of return is expected to be earned). With an annual dividend of $0.84, there is an opportunity to earn only $0.493 in growth which is just 2.05% on the $24.00 market price in contrast to the 6.50% growth rate expected by investors and subsumed in the market price paid. Conversely, if market value is less than book value (refer to columns 1 and 3 of Schedule FJH-8), a market-based DCF cost rate when applied to a greater book value will result in an overstatement of investors' required rate of return on market price. Under that scenario, a 10.00% return on the $30.00 book value will result in an opportunity return of $3.00. After a dividend of $0.84, growth of $2.16 equates to 9.00% or more than the 6.50% required on the market price investment of $24.00.

Some state regulatory commissions have expressly addressed this problem. Two examples are as follows:

1. The Indiana Utility Regulatory Commission (IURC) has recognized the tendency of the DCF model to understate the cost of equity when market value exceeds book value[14] when it stated:

> In determining a common equity cost rate, we must again recognize the tendency of the traditional DCF model, . . . to understate the cost of common equity. As the Commission stated in Indiana-Mich. Power Co. (BPU 8/24/90), Cause No. 38728, 116 PUR 4th 1, 17-18, *"the unadjusted DCF result is almost always well below what any informed financial analyst would regard as defensible, and therefore, requires an upward adjustment based largely on the expert witness's judgement."* (Emphasis added.)

2. The Iowa Utilities Board, in its Order in <u>Re U.S. West Communications</u> stated:[15]

> While the Board has relied in the past on the DCF model, in *Iowa Electric Light and Power Company*, Docket No. RPU-89-9, 'Final Decision and Order' (October 15,

[14] <u>Re: Indiana-American Water Company, Inc.,</u> Cause No. 39595, 150 PUR4th at 167-168.

[15] <u>Re: U.S. West Communications, Inc.,</u> Docket No. RPU-93-9, 152 PUR4th at 459.

> 1990), the Board stated: '*[T]he DCF model may understate the return on equity in some circumstances. This is particularly true when the market is relatively volatile and the company in question has a market-to-book ratio in excess of one.'* Those conditions exist in this case and the Board will not rely on the DCF return. (Consumer Advocate Ex. 367, See Tr. 2208, 2250, 2277, 2283-2284). *The DCF approach underestimates the cost of equity needed to assure capital attraction during this time of market uncertainty and volatility*. (Emphasis added.)

3. <u>Application of the DCF Model</u>

a. Dividend Yield

30. Q: <u>What cost rates are indicated as a result of your application of the DCF model?</u>

A: As shown on Schedule FJH-9, the median DCF cost rates are 9.67% for the proxy group of seven gas distribution companies and 11.10% for the proxy group of combination companies.

31. Q: <u>What are the bases for the unadjusted dividend yields shown in column 1 of Schedule FJH-9?</u>

A: The recent volatility of the stock market confirms that spot prices should not be relied on exclusively. Conversely, reliance on too long a historical period would not be representative of the future due to an increasingly competitive environment in the natural gas and electric industries as well as a volatile stock market. Consequently, I rely on an average of recent spot dividend yield at June 4, 2010, and an average of dividend yields for April and May 2010 as shown on Schedule FJH-10.

b. Discrete Adjustment of Dividend Yield

32. Q: <u>Please explain the adjustments for discrete growth in dividends as shown in column 2 of Schedule FJH-9.</u>

A: Due to the fact that dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment must be made. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

Since companies tend to increase their quarterly dividend at different times of the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the D_1 expression, or $D_{1/2}$. This is a conservative approach so as not to overstate the dividend yield, which should be representative of the next 12-month period. Therefore, the actual average dividend yields in Column 1 on Schedule FJH-9 have been adjusted upward to reflect one-half the growth rates in Column 4 on Schedule FJH-9. The resultant average adjusted dividend yields for the proxy group are shown in Column 3 of Schedule FJH-9.

c. DCF Growth Rates

33. Q: <u>Please explain the basis of the growth rates which you use in your application of the DCF model, as shown in column 4 of Schedule FJH-9.</u>

A: It is shown on Schedule FJH-11 that individuals own approximately 43% of the common shares of the companies in the gas distribution proxy group and about 45% for the proxy group of combination companies. I believe that individual investors are much more likely to rely on information provided by securities analysts than more sophisticated institutional investors. They recognize that analysts' forecasts provide greater insight into prospective growth in per share value than historical accounting measures of growth. Analysts' forecasts, which incorporate historical information, are readily available from Value Line and other sources such as Reuters and Zack's. The Reuters and Zack's estimates are readily available on the internet. In many instances, the Reuters and Zack's estimate is the mean of a number of estimates. While investors are influenced by short-term earnings growth such as forecasts for the next 12 months, I believe that they are much more influenced by longer term five-year forecasts. The use of five-year forecasts, the longest timeframe available, is more consistent with the long-term investment horizon implicit in common stocks than single 12 month growth rates. EPS growth rate expectations, although they do not fully account for changes in market value, are the most significant of all accounting measures of value. It should be clear, even to the casual market observer, that the market reacts favorably when EPS expectations are met or exceeded and unfavorably when they are not.

In view of the foregoing, I rely upon the average projected long-term growth rate in EPS from Value Line and/or Reuters and Zack's as shown on Page 1 of Schedule FJH-12 by company, excluding any negative growth rates. The average growth rates are shown in Column 4 on Schedule FJH-12, Page 1. Pages 2 through 19 of Schedule FJH-12 contain the most recent Value Line Investment Survey for the companies in both proxy groups.

4. Conclusion of DCF Cost Rate

34. Q: Please summarize your conclusion of DCF cost rate applicable to the proxy group.

A: As shown in column 5 on Schedule FJH-9, the median DCF cost rates are 9.67% for the proxy group of gas distribution companies and 11.10% for the proxy group of combination companies. I rely upon the median as the measure of central tendency.

C. The RPM Analysis

1. Theoretical Basis

35. Q: Please describe the theoretical basis of the RPM.

A: The RPM is based upon the theory that the cost of common equity capital is greater than the prospective company-specific cost rate for long-term debt capital. In other words, it is the expected cost rate for long-term debt capital plus a premium to compensate common shareholders for the added risk of being unsecured and last-in-line in any claim on the corporation's assets and earnings. As indicated *supra*, the financial literature recognizes the RPM as a significant cost of equity model and is one of the three recommended, namely the same three that I applied.

36. Q: Please describe your RPM analysis.

A: It is shown in Schedule FJH-13, which consists of nine pages. As can be gleaned from Page 1, I have estimated the prospective bond yield on Moody's A rated utility bonds to be 5.98%. No adjustment is necessary for the gas distribution proxy group as its average Moody's bond rating is A2 as shown on

Page 2 of Schedule FJH-13. As the average bond rating for the proxy group of combination companies is Moody's A2/A3, an adjustment is required to be made to the 5.98% in order to project the yield on a Moody's A2/A3 rated bond. After that adjustment, a prospective yield on a bond rated A2/A3 by Moody's is 6.04%, to which an equity risk premium must be added. The sum of the prospective bond yield and equity risk premium equals the RPM-derived common equity cost rate.

2. Bond Yields

37. Q: Please explain the basis of the expected bond yields of 5.98% and 6.04% applicable to the proxy groups.

A: Because the cost of common equity is prospective, as is the ratemaking process, the use of prospective yield on similarly-rated long-term debt is most appropriate in the application of the bond yield plus equity risk premium, or RPM model. The Moody's and S&P bond ratings for Delmarva and the companies in both proxy groups, as well as the groups' average ratings are shown on Schedule FJH-13, Page 2. I relied upon the consensus forecasts of approximately 50 economists of the expected yields on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the third calendar quarter of 2011 as derived from the June 1, 2010, Blue Chip Financial Forecasts (shown on Page 7 of Schedule FJH-13).

As shown on Line 1, Page 1 of Schedule FJH-13, the average expected yield on Moody's Aaa rated corporate bonds is 5.43%. It is necessary to adjust that average yield upward in order to be equivalent to the yield on a Moody's A2 bond rating, which occurs on Line 2 of Schedule FJH-13, Page 1, and explained in Note 2 on the same page. Accordingly, the average prospective yield on a Moody's public utility bond rated A2 is 5.98%. Thus, because the average Moody's bond rating of the proxy group of gas distribution companies is A2, no further adjustment is needed for that group. However, an additional adjustment is required to reflect the yield on a Moody's bond of A2/A3 for the proxy group of combination companies. The rating levels such as A1, A2 and A3, etc. reflect different levels of risk within each rating category. Thus, a bond rated A3 has more risk than a bond rated A2 and, consistent with the risk/return principle, requires a higher yield, or income return. Accordingly, as explained in Note 4 on Page 1 of Schedule FJH-13, an upward adjustment of 0.06% (or 6 basis points) is required in order to project the yield on a Moody's bond with an average rating of A2/A3 which results in a 6.04% yield as shown on Line 5, Page 1, on Schedule FJH-13.

3. Estimation of the Equity Risk Premium

38. Q: Please explain the basis of the equity risk premia of 4.42% and 4.41% which you have determined to be applicable to the proxy groups as shown on Line 6, Page 1 on Schedule FJH-13.

A: I evaluated the results of three different historical equity risk premium studies. I also evaluated Value Line's forecasted total annual return on the market over the prospective yield on Aaa rated corporate bonds. The results of those analyses are summarized on Page 5 of Schedule FJH-13. As shown on Line 4 of Page 5, the average equity risk premia based on those studies are 4.42% applicable to the proxy group of distribution companies and 4.41% applicable to the proxy group of combination companies. The 4.66% shown on Line 1, Page 5 of Schedule FJH-13 is the arithmetic mean of the historical and the projected market equity risk premia of 5.70% and 8.63%, or 7.17% allocated to the proxy groups through the use of their median beta of 0.65 (7.17% x .65 = 4.66%) as shown on Page 6, Schedule FJH-13, Lines 7 through 9.

The equity risk premium of 4.15%, shown on Line 2, Page 5 of Schedule FJH-13 is applicable to Moody's utility bonds rated A2 as it is based upon the mean of holding period returns of the S&P Utility Index for the period 1928 through 2008 over the mean yield on Moody's A2 rated public utility bond over the same period.

The equity risk premia of 4.45% and 4.43% shown on Line 3, Page 5 of Schedule FJH-13 are the results of a regression analysis based upon regulatory awarded ROEs related to the yields on A rated public utility bonds. That analysis is shown in Schedule FJH-14, which consists of seven pages. Page 1 contains the graphical results of a regression analysis of 622 major rate cases for gas and electric companies which were fully litigated during the period from January 1, 1989 through May 17, 2010. It shows the implicit equity risk premia relative to the yields on A rated public utility bonds immediately prior to the issuance of each regulatory decision. The information shown on Pages 2 through 7 contain case-by-case information, including the allowed return on equity, the current yield on Moody's A rated utility bonds immediately prior to the issuance of each order and the implied equity risk premium in each case. The details of all 622 cases are arrayed from the lowest yield on Moody's A rated public utility bonds to the highest, consistent with the presentation of the regression analysis shown on Page 1. It is readily discernible that there is an inverse relationship between the yield on A rated public utility bonds and equity risk premium. In other words, as interest rates decline, the equity risk premium rises and vice versa, a result consistent with regulatory financial literature on the subject. I used the regression results to estimate the equity risk premia applicable to the yields on Moody's A2 and A2/A3 rated public utility bonds. Those results are 4.45% and 4.43% applicable to the gas distribution and combination company proxy groups, respectively, as shown on Line 3, Page 5 of Schedule FJH-13.

39. Q: <u>Please explain the basis of the equity risk premium of 4.66% applicable to each proxy group as shown on Line 1, Page 5, Schedule FJH-13.</u>

A: Equity risk premia determined through the application of beta are meaningful because the betas were derived from regression analyses of the market prices of common stocks. The market prices of those common stocks reflect investors' expectations over a long-term future investment horizon. Consequently, beta is a meaningful measure of prospective risk relative to the market as a whole and is thus a logical means by which to allocate a relative share of total market equity risk premium to a specific company or proxy group.

The average total market equity risk premium used was 7.17%, as shown on Page 6, Line 7 of Schedule FJH-13. It is based upon an equal weighting of the long-term average historical equity risk premium of 5.70% and the forecasted market equity risk premium of 8.63%, as shown on Page 6, Lines 3 and 6, respectively, of Schedule FJH-13.

To derive the historical market equity risk premium of 5.70%, I used the most recent Morningstar data on holding period returns for the S&P 500 Composite Index and the average historical yield on Moody's Aaa and Aa corporate bonds covering the period 1926-2009. The use of holding period returns over a very long period of time is useful in the application of the beta approach. Morningstar, in its Valuation Edition – 2010 Yearbook provides sound reasoning why the use of a long-term historical time period is appropriate to estimate the expected equity risk premium as shown at Pages 3 through 6 of Schedule FJH-15. Morningstar explains therein tests of serial correlation prove that equity risk premia are random.

Morningstar also explains why the arbitrary use of shorter time periods distorts the results of estimated long-term average market equity risk premia. Moreover, the arbitrary use of shorter time periods is contrary to the long-term randomness of equity risk premia. Consequently, the use of the long-term average equity risk premium provides stability in contrast to the volatility associated with the arbitrary use of shorter historical time periods. Moreover, the use of a long-term average is consistent with the long-term investment horizon implicit in the cost of common equity capital, as exemplified by the premise of infinity in the standard single-stage growth DCF model used in rate regulation.

In view of the foregoing and Morningstar's comments contained in Schedule FJH-15, it is clear that the arbitrary selection of shorter historical periods would be highly suspect. Such periods would likely contain the 1987 stock market crash, the collapse of the Soviet Union, the two wars with Iraq, the ongoing war in Afghanistan, extraordinary inflation rates and other significant events such as the recent global financial crisis. Therefore, the use of shorter historical time periods is unlikely to be representative of the amount of change which could occur over a long period of time in the future such as the presumed long-term holding period for common stocks. Indeed, in the standard DCF model, the holding period is assumed to be infinite. Thus, the use of a very long past period to estimate the equity risk premium is consistent with the long-term investment horizon for utilities' common stocks. Consequently, the use of the long-term past to estimate equity risk premia is a critical input in estimating the long-term future average equity risk premium.

The arithmetic mean of the long-term annual historical total return rates on the market as a whole is the appropriate mean for use in estimating the cost of capital because it provides essential insight into the potential variance of expected returns. A full explanation by Morningstar as to why the arithmetic mean must be used when discounting future cash flows for estimating the cost of capital is contained in Pages 2 and 3 of Schedule FJH-15.

Historical total returns and equity risk premium spreads differ in size and direction over time as confirmed by the regression analysis mentioned *supra* and which will be discussed further, *infra*. It is precisely because equity risk premia are not constant and vary over time that the use of the arithmetic mean is important. The arithmetic mean is important to use when estimating the cost of capital because it provides insight into the variance and standard deviation of returns. The potential for variance of returns provides the insight required by investors to evaluate the level of risk when contemplating making an investment. Insight into the variance can only be obtained by the use of the arithmetic mean of historical returns. Absent valuable insight into the potential variance of returns, there can be no meaningful evaluation of prospective risk. If investors relied upon the geometric, or compound, mean of historical returns they would be unable to gain essential insight into the potential variance of future returns in order to properly evaluate the level of risk and hence the required return before committing their capital. Investors would lack the essential insight into variance because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year variance, critical to risk analysis.

The basis of the historical market equity risk premium of 5.70% is detailed in Lines 1 through 3, Page 6, Schedule FJH-13.

40. Q: <u>Why do you also consider giving equal weight to a forecasted equity risk premium?</u>

A: The long-term historical arithmetic average market equity risk premium is the most likely to be experienced over a long-term prospective period. Also, a prospective element is contained in the use of beta because beta is derived from market prices which reflect expectations of the future. Consequently, it is also appropriate to view the potential for market price appreciation in the current market environment. Such forecasted market appreciation is surely taken into account by investors, about 43%-45% of whom are individuals who invest in the proxy groups as discussed *supra*. The potential for growth in the DCF model comes from market price appreciation. Thus, when estimating the equity risk premium for use in the RPM, it is appropriate to also take the potential for market price appreciation into account.

41. Q: <u>Please describe the derivation of the equity risk premium of 4.15% shown on Page 5, Line 2 of Schedule FJH-13.</u>

A: For the reasons described *supra* by Morningstar, I caused to be performed an analysis of the arithmetic mean of long-term historical holding period returns applicable to public utilities, i.e., the S&P Public Utility Index for the period 1928-2009 relative to the arithmetic mean yield on Moody's A rated public utility bonds for the same period. The use of long-term averages provides a good basis for estimating future expectations as all types of events are included, even "unusual" ones. As noted *supra*, the average equity risk premium was 4.15% and is applicable to A2 rated utility bonds. It is shown on Line 3, Page 8 and Line 2, Page 5 of Schedule FJH-13.

42. Q: <u>Please explain the basis of the expected equity risk premia shown on Line 3, Page 5 of Schedule FJH-13.</u>

A: As discussed *supra*, I used the equity risk premia related to the prospective bond yields applicable to each proxy group of 5.98% and 6.04% as shown on Line 5, Page 1 of Schedule FJH-13. The premia were derived from the regression analysis shown on Page 1 of Schedule FJH-14.

The implied equity risk premium relative to the proxy group of gas distribution companies is 4.45%, while that related to the proxy group of combination companies is 4.43%.

43. Q: <u>What are the average equity risk premia which you use in your RPM model?</u>

A: They are the average of the three risk premia studies discussed *supra*. As shown on Page 5, Line 4 of Schedule FJH-13, they are 4.42% and 4.41%, for the gas distribution and combination companies' proxy groups, respectively.

4. <u>Conclusion of RPM Cost Rate</u>

44. Q: <u>What are the resultant RPM cost rates applicable to the proxy groups?</u>

A: They are 10.40% and 10.45% as shown on Schedule FJH-13, Page 1, Line 7 applicable to the gas distribution and combination companies' proxy groups, respectively.

D. <u>The CAPM Analysis</u>

1. <u>Theoretical Basis</u>

45. Q: <u>Is the CAPM widely used and therefore essential to consider when evaluating investors' expectations of common equity cost rate?</u>

A: Yes. As noted *supra*, the financial literature is replete with the need to rely upon multiple methods and those methods include the CAPM. Also discussed *supra* was that Brigham and Daves[16] found that the CAPM is by far the most widely used method to estimate the cost of common equity capital.

46. Q: <u>Please explain the theoretical basis of the CAPM.</u>

A: The CAPM defines risk as the covariability of a security's returns with the market's returns. This covariability is measured by beta ("β"), an index measure of an individual security's variability relative to the market. A beta less than 1.0 indicates lower variability than the market and a beta greater than 1.0 indicates

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[16] <u>Id.</u>

greater variability than the market.

The CAPM assumes that all non-market, or unsystematic, risk can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. The model presumes that investors require compensation for risks that cannot be eliminated through diversification. Systematic risks are caused by socioeconomic events that affect the returns on all assets. In essence, the model is applied by adding a risk-free rate of return to a market risk premium. This market risk premium is adjusted proportionally to reflect the systematic risk of the individual security relative to the market as measured by beta.

The **traditional CAPM** is expressed as:

$$R_S = R_F + \beta(R_M - R_F)$$

Where R_S = Return rate on the common stock

R_F = Risk-free rate of return

R_M = Return rate on the market as a whole

β = Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have confirmed its validity. These tests have measured the extent to which security returns and betas are related as predicted by the CAPM.

The **empirical CAPM (ECAPM)** reflects the reality that the empirical Security Market Line (SML) described by the traditional CAPM is not as steeply sloped as the predicted SML. An empirical study by Morin[17] indicates that the ECAPM should be expressed as:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

The ECAPM in the above form has been used by state commissions such as Alaska and New York. In California, the Department of Ratepayer Advocate witnesses have sponsored this form of the ECAPM. In fact, the New York Public Service Commission Staff has used this form of the ECAPM for nearly two decades.

47. Q. <u>Does the ECAPM double-count the Value Line beta adjustment?</u>

A. No, it does not. Where the Value Line, or Blume adjustment adjusts beta's tendency to revert to the market beta of 1.0, the ECAPM adjusts the scope of the SML to account for the observed flattening of the SML using actual

[17] Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926-1984 was given by:

$$\text{Return} = 0.0829 + 0.0520\ \beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or ¼ of 8%, and that the slope of the relationship is close to ¾ of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x(R_M - R_F) + (1 - x)\beta(R_M - R_F)$$

Where x is a fraction to a be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0..25 and 0.30. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

returns.[18] [19] Both adjustments are necessary to calculate the appropriate cost of common equity capital which is accomplished through the use of the ECAPM in the form shown *supra*.

In summary, the ECAPM is a return adjustment, i.e., a y-axis adjustment and does not increase the adjusted beta, which is an x-axis adjustment that accounts for regression bias.

As a result of the foregoing, I apply both versions of the model (CAPM and ECAPM) which are contained in Schedule FJH-16, consisting of three pages.

2. Risk-Free Rate of Return

48. Q: Please describe your selection of a risk-free rate of return.

A: My applications of the CAPM and the ECAPM reflect a risk-free rate of 4.78% which is based upon the average consensus forecast of the reporting economists in the June 1, 2010, issue of Blue Chip Financial Forecasts for the yields on 30-year U.S. Treasury Notes for the six quarters ending with the third calendar quarter 2011, as shown in Note 3 on Page 3, Schedule FJH-16.

49. Q: Why is the average prospective yield on 30-year U.S. Treasury Notes appropriate for use as the risk-free rate?

A: The yield on 30-year U.S. Treasury Notes is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on public utility bonds and more closely matches the long-term investment horizon inherent in utilities' common stocks. Moreover, it is consistent with the

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18 Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, Ninth Edition, Thomson/South-Western, 2007, pp. 98-99.

19 Zvi Bodie, Alex Kane and Alan Marcus, Investments, 7th Edition, McGraw-Hill Irwin, 2008, pp. 424-426.

long-term investment horizon implicit in the standard DCF model employed in proceedings such as these. In addition, Morningstar[20] states:

> A common choice for the nominal riskless rate is the yield on a U.S. Treasury Security. The ability of the U.S. government to create money to fulfill its debt obligations under virtually any scenario makes U.S. Treasury securities practically default-free. While interest rate changes cause government obligations to fluctuate in price, investors face essentially no default risk as to either coupon payment or return of principal.
>
> * * *
>
> The horizon of the chosen Treasury security should match the horizon of whatever is being valued. *When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond*. Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years. (Emphasis added.)

In summary, the average expected yield on 30-year U.S. Treasury Notes is the appropriate proxy for the risk-free rate in the CAPM because it is almost risk-free and has a long-term investment horizon consistent with utilities' common stocks (not individual investors) and is thus consistent with the long-term investment horizon implicit in the standard DCF model.

3. <u>Market Equity Risk Premium</u>

50. Q: <u>Please explain the basis for your estimation of the expected market equity risk premium.</u>

A: I estimate investors' expected total return rate which is based upon the same weighting of forecasted and long-term historical return rates discussed *supra*

[20] <u>Stocks, Bonds, Bills and Inflation: 2010 Yearbook – Valuation Edition</u>, Morningstar, Inc., Chicago, IL, p. 44.

regarding the equity risk premium in my RPM analysis from which I subtract the risk-free rate. The result is a market equity risk premium of 7.94%, which must be allocated to the proxy groups. I make the allocations of the market equity risk premium through the use of the median beta which is the same for both proxy groups, namely 0.65.

The basis of the projected market equity risk premium is explained in detail in Note 2 on Page 3, Schedule FJH-16. The Value Line projected total market appreciation projection, when converted to an annual rate plus the market's average dividend yield, equals a forecasted total annual return rate of 14.06%. The long-term historical total annual arithmetic mean return rate of 11.80% on the market is from Table 2-1 on page 23 of Stocks, Bonds, Bills and Inflation: 2010 Yearbook – Valuation Edition (Morningstar, Inc., Chicago, IL). The relevant risk-free rate was deducted from each total market return rate. For example, from the Value Line projected total market return of 14.06%, the forecasted average risk-free (income return) rate of 4.78% was deducted indicating a forecasted market risk premium of 9.28%. From the arithmetic mean long-term historical total return rate of 11.80% the long-term historical income return rate on long-term U.S. Government Bonds of 5.20% was deducted indicating an historical equity risk premium of 6.60%. With equal weight given to the forecasted and historical market risk premia, the average is 7.94%.

4. Conclusion of CAPM Cost Rate

51. Q: What are the results of your applications of the CAPM and ECAPM?

A: They are shown on Schedule FJH-16, Page 1.

The average of the CAPM and ECAPM cost rates are 10.29% applicable to each proxy group whose median beta is identical at 0.65.

XI. COST OF COMMON EQUITY MODELS APPLIED TO COMPARABLE DOMESTIC, NON-PRICE REGULATED COMPANIES

A. Basis of Selection of Domestic, Non-Price Regulated Companies

52. Q: Why do you also focus upon domestic, non-price regulated companies?

A: First, in the famous Bluefield and Hope cases before the U.S. Supreme Court, the Court did not say the companies of comparable risk had to be utilities. If one can demonstrate that non-price regulated companies are comparable in total risk, it seems to me to be a perfectly valid approach. The purpose of rate regulation is to be a substitute for the competition of the marketplace. Thus, non-price regulated firms operating in the competitive marketplace make an excellent proxy if they are comparable in total risk to utility groups being used as proxies for the utility in its rate proceeding. As shown *infra*, I believe that my basis of selection of such non-price regulated competitive firms theoretically and empirically results in proxy groups of domestic, non-price regulated firms which are comparable in total risk to the utility proxy groups. Moreover, there is evidence in the public utility literature that indicates such an approach is appropriate. For instance, I quote Phillips, *supra*, who in turn quotes Levanthal as stating:

> Unless the utility is permitted to earn a return comparable to that available elsewhere on similar risk, it will not be able in the long run to attract capital.

In addition, Phillips, *supra*, states:

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.'

53. Q: <u>How do you go about selecting companies comparable in total risk to the regulated public utility proxy groups?</u>

A: The EMH affirms that market prices reflect investors' assessment of all perceived risks. That concept is also a precept of the DCF model. In order to select proxy groups of domestic, non-price regulated companies which are similar in total risk to the proxy groups, I rely upon statistics derived from the market prices paid by investors.

I rely upon the betas and related statistics derived from Value Line regression analyses of weekly market prices over the most recent 260 weeks (five years). The bases of selection resulted in proxy groups of non-price regulated firms comparable to the utility proxy groups. The average company in the proxy groups of domestic, non-price regulated companies is comparable to the average company in each utility proxy group. Total risk is the sum of non-diversifiable market risk and diversifiable company-specific risks. The criteria used in the selection of the domestic, non-price regulated firms were:

1) They must be covered by Value Line Investment Survey (Standard Edition).
2) They must be domestic, non-price regulated companies, i.e., non-utilities.
3) Their betas must lie within plus or minus two standard deviations of the average unadjusted beta of each utility proxy group.

4) The residual standard errors of the regressions must lie within plus or minus two standard deviations of the average residual standard error of the regression for each utility proxy group.

Betas are a measure of market, or systematic, risk. The standard errors of the regressions were used to measure each firm's company-specific risk (diversifiable, unsystematic risk). The standard errors of the regressions measure the extent to which events specific to a company affect its stock price. Because market prices reflect investors' perceptions of total risk, all risk which is not systematic market risk (beta) is reflected in the standard error of the regression which is a measure of total non-systematic risk which is diversifiable. In essence, companies which have similar betas and similar standard errors of the regressions have similar total investment risk, i.e., the sum of non-diversifiable market risk and diversifiable company-specific risk. The betas and standard errors result from regression analyses of market prices which reflect all perceived risks consistent with the EMH. Consequently, the use of those regression statistics results in proxy groups of domestic, non-price regulated firms which are similar in total investment risk to each utility proxy group. The use of two standard deviations captures 95.50% of the distribution of unadjusted betas and standard errors thereby assuring comparability of total risk.

54. Q: <u>Have you prepared a schedule which shows the data from which you select the domestic, non-price regulated companies which are comparable in total risk to each of the two proxy groups that you use?</u>

A: Yes. That information is shown in Schedule FJH-17 which consists of four pages.

55. Q: <u>Please describe Schedule FJH-17.</u>

A: On Page 1 of Schedule FJH-17, I show each of my two proxy groups, namely the seven gas distribution companies and the eleven combination gas and electric companies. As can be seen, in addition to the betas which are adjusted, I also show the unadjusted betas and the residual standard errors resulting from the regression analyses for each company. As discussed *supra*, beta is a reflection of non-diversifiable market risk, while the standard error of the regression is a reflection of all of the non-market risk, i.e., diversifiable market risks. Also shown is the average for each group for each statistic. I then show the calculation of two standard deviations of the unadjusted betas and the range within the two standard deviations, which as noted, will capture 95.50% of the universe of companies in the Value Line Investment Survey universe of companies which it covers. I also calculate the standard deviation of the residual standard errors for each proxy group of utility companies and calculate a range plus or minus two standard deviations for the residual standard error. In essence, I searched for and found domestic, non-price regulated companies that are comparable to the average of the proxy group of seven gas distribution companies by screening for those companies whose unadjusted betas fall between 0.30 and 0.52 and also whose residual standard error of the regression falls between 2.2483 and 2.6815. Fifteen companies met those parameters and, as a group, are comparable to the proxy group of seven gas distribution companies. Their data is shown on Page 2 of Schedule FJH-17. As can be seen, the averages for the group are close to identical to the averages for the utility proxy group of seven gas distribution companies, assuring comparability.

I performed similar calculations and screened for domestic, non-price regulated companies whose regression statistics fall between the following parameters, namely unadjusted betas between 0.37 and 0.57 and whose residual standard errors of the regression fall between 2.1496 and 2.5640. Nine companies met those parameters and therefore are comparable to the averages of the proxy group of eleven combination gas and electric companies. Their information is shown on Page 3 of Schedule FJH-17. Page 4 contains notes relative to Pages 1 through 3. The averages shown for the proxy group of nine domestic, non-price regulated companies are extremely close to the averages of the utility proxy group of eleven combination gas and electric utilities, thereby assuring comparability.

B. Calculation of Market-Based Cost Rates for the Proxy Groups <u>Of Domestic, Non-Price Regulated Companies</u>

56. Q: <u>Did you calculate market-based common equity cost rates for the proxy groups of domestic, non-price regulated companies similar in total risk to the utility proxy groups?</u>

A: Yes. That information is shown in Schedule FJH-18, which consists of seven pages.

57. Q: <u>Did you apply the DCF, RP and CAPM models in the same manner and using the same time periods as for the utility proxy groups?</u>

A: Yes. Because each market-based model has been applied in the same manner described *supra* regarding the utility proxy groups, there is no need to repeat the details of the application of each model. The only exception is that in the application of the RPM, I did not use utility-specific equity risk premia.

58. Q: <u>Please explain the information contained in Schedule FJH-18?</u>

A: Page 1 is a summary of the application of the three market-based cost of common equity models relative to each proxy group of domestic, non-price regulated companies. As shown on Page 1 of Schedule FJH-18, the average cost rates resulting from the application of all three market-based cost of common equity models are 11.34% applicable to the proxy group comparable to the utility proxy group of seven gas distribution companies and 11.27% applicable to the proxy group comparable in total risk to the proxy group of eleven combination gas and electric companies.

Page 2 contains the summary of the DCF cost rates. As shown, the median cost rate for the proxy group comparable to the proxy group of seven gas distribution companies is 12.77%, while the median cost rate for the group comparable in total risk to the proxy group of eleven combination gas and electric companies is 12.76%.

Pages 3 through 6 of Schedule FJH-18 contain the cost rates derived from application of the RPM to the proxy groups of domestic, non-price regulated companies comparable in total risk to the proxy groups of utility companies. As shown on Page 3 of Schedule FJH-18, the adjusted prospective bond yields reflecting the average bond rating of each domestic, non-price regulated proxy group are 6.31% for the group comparable to the gas distribution companies and 6.10% for the group comparable to the eleven combination gas and electric companies. Combined with the equity risk premium of 4.66% shown on Line 7, Page 3, the indicated RPM cost rates are 10.97% for the proxy group comparable in total risk to the seven gas distribution companies and 10.76% for the proxy group comparable in total risk to the proxy group of eleven combination gas and electric companies. As the non-price regulated proxies are not utilities, the estimated equity risk premium is based upon the average of the historical and projected market risk premia which is 7.17%, adjusted by their median beta of 0.65. The result is an equity risk premium of 4.66% as shown on Page 6 of Schedule FJH-18.

Page 7 has the details of the application of the CAPM and ECAPM to those proxy groups of domestic, non-price regulated companies. As shown, the median cost rate is 10.29% applicable to each group.

59. Q. What is the average cost rate related to each of the domestic, non-price regulated proxy groups comparable in total risk to the two utility proxy groups?

A. The average cost rates based upon application of the DCF, RPM and CAPM/ECAPM models to those groups are 11.34% and 11.27% applicable to the utility proxy groups of seven gas distribution and eleven combination gas and electric companies, respectively, as summarized on Page 1 of Schedule FJH-18.

XII. FLOTATION COSTS

60. Q: What are flotation costs?

A: Flotation costs are those costs associated with the sale of new issuances of common stock. They include market pressure and essential costs of issuance such as underwriting fees and out-of-pocket costs for printing, legal, registration, etc.

61. Q: <u>Why is it important to recognize flotation costs in the allowed common equity cost rate?</u>

A: It is important because there is no other mechanism in the ratemaking paradigm by which such costs can be recovered. These costs are real and legitimate. They should be permitted to be recovered. A common method for flotation costs to be recovered is through an adjustment to common equity cost rate.

62. Q: <u>Should flotation costs be recognized only when there had been an issuance during the test year or an imminent post test year issuance of additional common stock?</u>

A: No. Absent a specific adjustment, there is no mechanism for recapture of such costs in the ratemaking paradigm other than adjustment to the allowed common equity cost rate. Flotation costs are charged to capital accounts and are not reflected in a utility's income statement. As such, flotation costs are analogous to capital investments reflected on balance sheets. Recovery of capital investments relates to the expected useful lives. Since common equity has a very long and indefinite life (assumed to be infinite in the standard DCF model), flotation costs should be recovered through an adjustment to common equity cost rate even if there had not been an issuance during the test year or in the absence of an imminent issuance.

63. Q: <u>Is there a need to reflect flotation costs for Delmarva because it is a subsidiary of Conectiv which in turn is wholly-owned by Pepco Holdings, Inc.?</u>

A: Yes. Delmarva receives common equity investment other than retained earnings from the funds raised by Pepco Holdings, Inc. which have to be raised in the capital market through public offerings of common stock. The costs associated with such issuances are real. To deny recovery of issuance costs associated with the capital that is invested in the Company would penalize investors and make it more difficult to raise new equity capital on a reasonable cost basis.

64. Q: <u>Do the DCF, RPM, and CAPM derived cost rates already reflect investors' anticipation of flotation costs?</u>

A: No. All the models used in estimating an appropriate common equity cost rate assume no transaction costs. That is, those costs are not reflected in the market prices paid for common stocks. The literature is quite clear on this point. For example, Brigham and Daves confirm that point as well as the need to adjust the cost rate of common equity capital. They also show the method used to calculate the adjustment which is shown on Pages 3 and 4 of Schedule FJH-19. Consequently, it is proper to include a flotation cost adjustment when utilizing the DCF, RPM, and CAPM cost of common equity models to estimate common equity cost rate.

65. Q: <u>How did you calculate the flotation cost allowance?</u>

A: I modified the DCF calculations of the two utility proxy groups in order to provide a dividend yield for each that would reimburse investors for issuance costs in accordance with the method which is specified by Brigham and Daves. It is an adjustment to the dividend yield in accordance with the formula discussed in their text at Pages 3 and 4 of Schedule FJH-19, *supra*, and also in Note 14 on Page 2 of Schedule FJH-19. The flotation cost adjustments I calculated recognize the costs of issuing equity that were incurred by Pepco Holdings, Inc. since its formation. Four issues have occurred. Based on the issuance costs shown on Page 1 of Schedule FJH-19, the flotation cost percentages have been volatile, most notably the issuance in November 2008 during the height of the financial crisis. Accordingly, I use the median percentage of 4.52% instead of the average of all four issuances of 6.93%. Thus, adjustments of 0.21%, or 21 basis points and 0.25%, or 25 basis points, are required to reflect the flotation costs applicable to the gas distribution and combination gas and electric proxy groups, respectively, which are proxies for Delmarva. Page 2 of Schedule FJH-19 contains notes relative to Page 1.

XIII. SIZE AND ITS IMPACT ON COMMON EQUITY INVESTMENT

66. Q: <u>Does the size of an enterprise affect the level of business risk perceived by common equity investors?</u>

A: Yes. It is well-established in the financial literature, and well noted by investors, that the size of an enterprise affects the level of its business risk. I have included information on size and risk which is shown in Schedule FJH-20, which consists of 13 pages.

67. Q: <u>Please explain why size has a bearing on risk.</u>

A: Smaller companies are less capable of coping with significant events which affect sales, revenues and earnings.

Large capital programs often have a greater effect on small companies than on larger companies. Consequently, size is an important factor which affects business risk and hence common equity cost rate. Thus, the cost of common equity capital must reflect the impact of Delmarva's smaller size on common equity cost rate because Delmarva is smaller than the average company in the combination gas and electric proxy group based on recent market capitalization data as shown in the Table below:

	Median Market Capitalization 6/4/10 (Millions)
Delmarva (Based Upon Median Market/Book Ratio of the Proxy Group of Combination Gas and Electric Companies	$1,024.544
Proxy Group of Eleven Combination Gas and Electric Companies	$4,371.420
Number of Times Proxy Group is Larger than Delmarva	4.3x

As shown above, the proxy group of combination gas and electric companies is 4.3 times larger than Delmarva based on market capitalization. The details are shown on Page 2 of Schedule FJH-20.

Because Delmarva's common stock is not traded, I have assumed that if it were traded it would have sold at the median market-to-book ratio of 126.8% of the proxy group of combination companies on June 4, 2010, as shown on Page 2 of Schedule FJH-20. As can be gleaned from the data on Page 1 of Schedule FJH-20, based upon the median market-to-book ratios of the proxy group of seven gas distribution companies, the June 4, 2010 market capitalization of Delmarva would be similar, albeit slightly larger than the proxy group. Thus, no adjustment for size to that proxy group is warranted.

Conventional wisdom, supported by the financial literature and actual returns over time, confirms that smaller companies tend to be riskier, causing investors to expect greater returns to compensate them for that greater risk. Moreover, Eugene F. Fama and Kenneth R. French, distinguished professors of Finance, Graduate School of Business at the University of Chicago and Tuck School of Business of Dartmouth College, respectively, developed an improved Capital Asset Pricing Model. The "three-factor" model discussed in their paper entitled, "The Capital Asset Pricing Model: Theory and Evidence" which was published in The Journal of Economic Perspectives, Volume 18, Number 3 – Summer 2004 – at pages 25-46 includes company size as one of the critical three factors that impact the cost of common equity.

68. Q: Can you provide another example from the financial literature which affirms a relationship between size and risk and hence common equity cost rate?

A: Yes. Brigham[21] states:

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of

[21] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 623.

> large-firms stocks; this is called the "small-firm effect." *On the surface, it would seem to be advantageous to the small firms to provide average returns in the stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.* (Emphasis added.)

In addition, as shown on Page 4 of Schedule FJH-20, Morningstar states:

> *One of the most remarkable discoveries of modern finance is that of a relationship between firm size and return. The relationship cuts across the entire size spectrum* but is most evident among smaller companies which have higher returns on average than larger ones. (Emphasis added.)

These higher returns, as demonstrated in the preceding quotation by Brigham, create higher expectations from investors, creating an unfortunate catch-22 situation for smaller firms; these firms are *expected* to earn higher returns because of their size, and therefore, may end up struggling to meet the return demands of the capital market.

69. Q: <u>How have you estimated the impact of Delmarva's small size on its common equity cost rate?</u>

A: Based on my analyses, an upward adjustment to the common equity cost rate derived from the proxy group of combination gas and electric companies is necessary to account for Delmarva's smaller size related to the larger size of that proxy group based on average market capitalization. The results of my analyses are summarized on Page 1 of Schedule FJH-20, and are based upon the data on Pages 2 through 13 of Schedule FJH-20. The results indicate that an upward adjustment of 0.88%, or 88 basis points, should be made to the common equity cost rate derived from that proxy group. However, in an effort to be conservative, I only will use one-half of the indicated cost rate differential, or 0.44%.

XIV. IMPLICATIONS ON COST RATE ASSUMING APPROVAL OF THE REQUESTED MFV RATE DESIGN

70. Q: <u>Previously, you have shown the relative percentages of revenues, as measured by customers or meters, which are decoupled to varying degrees by the proxy companies in each of your two utility proxy groups. What are the cost rate implications on common equity cost rate derived from each of the two utility proxy groups that you used to establish common equity cost rate for Delmarva assuming this Commission approves the requested MFV rate design?</u>

A: In my expert opinion, when there is no decoupling related to the proxies used to establish common equity cost rate and the decoupling mechanism is requested, a 25 basis point downward adjustment to the common equity cost rate would be appropriate. I do not believe it is possible to empirically quantify with precision the value of any potential reduction to the rate of return on common equity capital attributable to the implementation of a decoupling mechanism. This is because there are numerous factors which affect the market prices that investors pay for common stocks. Those factors include company- and industry-specific events as well as national and global economic, financial and political events. Consequently, it is not possible to unbundle from market prices paid for securities a portion thereof which is attributable to a single circumstance or event such as the approval of a decoupling mechanism. My expert subjective judgment is that the absolute maximum value of such a mechanism is 25 basis points, or 0.25%, on common equity capital. It is likely that approval of a decoupling mechanism would stabilize revenues and earnings to an extent that a company's bond rating might be improved by one rating notch or possibly even two rating notches. Based on long-term average yield differentials between Moody's public utility bonds rated A and Baa, my judgement of a maximum value of 25 basis points is quite reasonable especially in view of the inverse relationship between interest rates and equity risk premium as demonstrated in Schedule FJH-14. Moreover, a review of gas distribution rate orders resulting from fully-litigated rate cases from 2007 through early June 2010, reveals that where specified, the range of reduction in the allowed common equity cost rate was from zero to 25 basis points with an average of 9 basis points resulting from seven decisions, as shown in the Table below:

Date	Jurisdiction	Company	Docket/ Case No.	ROE Reduction
12/21/07	NY	National Fuel Gas Distribution	07-G-0141	10 basis points
03/25/09	IL	NICOR Gas	08-0363	6.5 basis points
09/30/09	MA	Bay State Gas Company	DPU-09-30	Not Specified
10/28/09	NV	Southwest Gas Corporation	09-04003	25 basis points
01/21/10	IL	North Shore Gas Company	09-0166	10 basis points
02/10/10	MO	Missouri Gas Energy	GR-2009-0355	0 basis points
06/03/10	MI	Michigan Consolidated Gas Co.	U-15985	0 basis points
			Average	9 basis points

In the instant matter, I assume a maximum value of reduction in ROE attributable to decoupling mechanisms of 25 basis points. However, the proxies which I have used to develop my recommendation of common equity cost rate and overall fair rate of return for Delmarva have a significant percentage of revenues which are decoupled as summarized on Page 1 of Schedule FJH-5. As shown on Schedule FJH-5, Page 1, that percentage is 88.81% of the proxy group of seven natural gas distribution companies and 24.38% of the combination gas and electric companies proxy group. Thus, any reduction to ROE if the MFV rate design is approved must in fairness be on a pro rata basis as the associated risk reduction is already subsumed in their market data and cost rates.

71. Q: <u>What are the specific implications on common equity cost rate developed utilizing those two proxy groups of utility companies?</u>

A: As shown on Page 2, Schedule FJH-1 at Line 9, a reduction of 0.03%, or 3 basis points, is applicable to common equity cost rate derived from the proxy group of seven gas distribution companies. This is based upon an absolute value of 25 basis points times the percentage of their revenues not impacted to some extent by decoupling (100.00% - 88.81% = 11.19%). Consequently, a reduction of 3 basis points is indicated (25 basis points x .1119 = 2.80 basis points, rounded to 3).

Utilizing a similar type of calculation relative to the proxy group of eleven combination gas and electric companies, I calculate a reduction in common equity cost rate of 19 basis points, or 0.19%. That is calculated by the difference between 100.00% and the 24.38% of the revenues of the proxy group which are decoupled. Thus, a reduction of 19 basis points is indicated (100.00% - 24.38% = 75.62%) and (25 basis points x .7562 = 18.91 basis points, rounded to 19).

XV. <u>CONCLUSION OF COMMON EQUITY COST RATE</u>

A. Conclusion of Common Equity Cost Rate <u>Must be Based on the Application of Multiple Models</u>

72. Q: <u>Please summarize why the conclusion of common equity cost rate should be based upon multiple cost of common equity models.</u>

A: As discussed *supra*, the EMH and common sense mandate the use of multiple market-based cost of common equity models. Moreover, the financial literature encourages the use of multiple models. All of the models which I have relied upon are market-based.

- The DCF model uses market prices paid by investors
- The RPM uses the expected market yield on company-specific long-term debt and the equity risk premium is based upon an expectation of the market equity risk premium
- The CAPM/ECAPM use total market returns, and betas which result from each individual stock's market price movement relative to the market as a whole.

73. Q: <u>Please briefly summarize the basis for your recommended common equity cost rate of 11.00% which assumes approval of the requested MFV rate design.</u>

A: My recommended common equity cost rate is 11.00% and is based upon the results of the application of the three market-based cost of common equity models discussed *supra*. The basis of my conclusion is summarized on Page 2 of Schedule FJH-1. On Lines 1-3, I show the results for each proxy group utilizing the DCF, RPM, and CAPM/ECAPM models based upon the two proxy groups of utility companies, namely the seven gas distribution companies and the eleven combination gas and electric companies. On Line 4, I show an average of the three cost rates, namely DCF, RPM, and CAPM/ECAPM relative to the two proxy groups of domestic, non-price regulated companies which are comparable in total risk to the two utility proxy groups. As a result, the indicated range of common equity cost rates before any adjustment for Delmarva's unique risks vis-à-vis those proxies are 10.43% based upon the proxy group of seven gas distribution companies and 10.78% based upon the proxy group of eleven combination gas and electric companies as shown on Line 5.

On Line 6, I show the necessary financial risk adjustments to reflect the differentials in cost rate attributable to yield differences based upon the relative Moody's bond ratings of Delmarva vis-à-vis each proxy group. As can be seen, the required upward adjustments are 12 basis points for the proxy group of seven gas distribution companies and 6 basis points relative to the proxy group of eleven combination gas and electric companies.

On Line 7, I show the flotation cost adjustment relative to each proxy group. The adjustments have been discussed *supra* and are necessary in order to permit recovery of these necessary costs which are otherwise not provided for in the ratemaking paradigm. They are 21 and 25 basis points applicable to the proxy groups of gas distribution and combination gas and electric companies, respectively.

On Line 8, I show that there is no need for a size adjustment for Delmarva vis-à-vis the proxy group of seven natural gas distribution companies. However, because of the much larger size (4.3 times greater based on market capitalization) of the proxy group of eleven combination gas and electric companies versus Delmarva, I have made a conservative upward adjustment of 44 basis points which is just one-half of the absolute differential of 88 basis points.

I have explained *supra* the need for downward adjustments to reflect the impact of the MFV rate design if it is approved. As shown on Line 9 of Schedule

FJH-1, Page 2, downward adjustments of 3 and 19 basis points are required to be made to the proxy group of seven natural gas distribution companies and eleven combination gas and electric companies, respectively.

As shown on Line 10, Page 2 of Schedule FJH-1, the range of common equity cost rates is from 10.73% to 11.34% after reflecting the necessary upward and downward adjustments so that the cost rates derived from the proxy groups will be reflective of Delmarva's risks. As shown on Line 11, the indicated common equity cost rate, or midpoint of that range, is 11.04%. On Line 12, my recommended common equity cost rate of 11.00%, which has been rounded down from the midpoint of 11.04%, assuming approval of the requested MFV rate design.

74. Q: <u>What is your recommended common equity cost rate if the requested MFV rate design is not approved?</u>

A: In that event, my common equity cost rate recommendation is 11.25%.

Based upon the indicated common equity cost rate of 11.04%, an 11.29% common equity cost rate would be indicated. However, since my recommendation is 11.00% assuming approval of the MFV rate design, it is 11.25% if the MFV rate design is not approved.

75. Q: <u>Does that conclude your direct testimony?</u>

A: Yes, it does.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

FRANK J. HANLEY, CRRA
PRINCIPAL & DIRECTOR
AUS CONSULTANTS

PROFESSIONAL QUALIFICATIONS OF FRANK J. HANLEY

EDUCATIONAL BACKGROUND

I am a graduate of Drexel University where I received a Bachelor of Science Degree from the College of Business Administration. The principal courses required for this Degree include accounting, economics, finance and other related courses. I am also Certified by the Society of Utility and Regulatory Financial Analysts, formerly the National Society of Rate of Return Analysts, as a Rate of Return Analyst (CRRA).

PROFESSIONAL EXPERIENCE

In 1959, I was employed by American Water Works Service Company, Inc., which is a wholly-owned subsidiary of American Water Works Company, Inc., the largest investor-owned water works operation in the United States. I was assigned to its Treasury Department in Philadelphia until 1961. During that period of time, I was heavily involved in the development of cash flow projections and negotiations with banks for the establishment of lines of credit for all of the operating and subholding companies in the system, which normally aggregated more than $100 million per year.

In 1961, I was assigned to its Accounting Department where I remained until 1963. During that two-year period, I became intimately familiar with all aspects of a service company accounting system, the nature of the services performed, and the methods of allocating costs. In 1963, I was reassigned to its Treasury Department as a Financial Analyst. My duties consisted of those previously performed, as well as the expanded responsibilities of assisting in the preparation of testimony and exhibits to be presented to various public utility commissions in regard to fair rate of return and other financial matters. I also designed and recommended financing programs for many of

American's operating subsidiaries and negotiated sales of long-term debt securities and preferred stock on their behalf either directly with institutional investors or through investment bankers. I was elected Assistant Treasurer of a number of operating subsidiaries in the Fall of 1967, just prior to accepting employment with the Communications and Technical Services Division of the Philco-Ford Corporation located in Fort Washington, Pennsylvania. While in the employ of the Philco-Ford organization, as a Senior Financial Analyst, I had responsibility for the pricing negotiations and analysis of acceptable rates of return to the corporation for all types of contract proposals with various agencies of the U.S. Government and foreign governments.

In the Summer of 1969, I accepted a position with the Financial Division of The Philadelphia National Bank. I was elected Financial Planning Officer of the bank in December 1970. While employed with The Philadelphia National Bank, my responsibilities included preparation of the annual and five-year profit plans. In the compilation of these plans, I had to perform detailed analyses and measure the various levels of profitability for each organizational unit. I also assisted correspondent banks in matters of recapitalization and merger, made recommendations and studies for their use before the various regulatory bodies having jurisdiction over them.

In September 1971, I joined AUS Consultants - Utility Services Group as Vice President. I was elected Senior Vice President in May 1975. I was elected President in September 1989. As a result of a reorganization of AUS Consultants by practice effective January 1, 2007, I am currently a Principal & Director of AUS Consultants.

<u>EXPERT WITNESS QUALIFICATIONS</u>

I have offered testimony as an expert witness on the subjects of fair rate of return and utility financial matters in more than 300 various cases and dockets before the following agencies and courts: before the Alaska Public Utilities Commission and its successor the Regulatory Commission of Alaska, the Arizona Corporation Commission, the Arkansas Public Service Commission, the California Public Utilities Commission, the Public Utilities Control Authority of Connecticut, the Delaware Public Service Commission, the District of Columbia Public Service Commission, the Florida Public Service Commission, Hawaii Public Utilities Commission, the Idaho Public Utilities Commission, the Illinois Commerce Commission, the Indiana Public Utility Regulatory Commission, the Iowa Utilities Board, the Public Service Commission of Kentucky, the Maryland Public Service Commission, the Massachusetts Department of Public Utilities, the Michigan Public Service Commission, the Minnesota Public Utilities Commission, the Missouri Public Service Commission, Nevada Public Utilities Commission, the New Jersey Board of Public Utilities, the New Mexico State Corporation Commission, the Public Service Commission of the State of New York, the North Carolina Utilities Commission, the Ohio Public Utilities Commission, the Oklahoma Corporation Commission, the Pennsylvania Public Utility Commission, the Rhode Island Public Utilities Commission, the Tennessee Public Service Commission, the Public Service Board of the State of Vermont, the Virginia State Corporation Commission, the Public Services Commission of the Territory of the U.S. Virgin Islands, the Washington Utilities and Transportation Commission, the Public Service Commission of West Virginia, the Wisconsin Public Service Commission, the Federal Power Commission and its successor the Federal Energy Regulatory Commission. I have testified before the New Jersey Division of Tax Appeals and the United States Bankruptcy Court - Middle District of Pennsylvania with regard to the economic valuation of utility property. Also, I have testified before the U.S. Tax Court in Washington D.C. as an expert witness on the value of closely held utility common stock in a contested Federal Estate Tax case.

In addition, I have appeared as a Staff rate of return witness for the Arizona Corporation Commission, the Delaware Public Service Commission and the Virgin Islands Public Services Commission. I have testified on the fair rate of return on behalf of the City of New Orleans, Louisiana, and also acted as project manager for my firm in representing the City in the 1980-1981 rate proceeding of New Orleans Public Services, Inc. The City of New Orleans then had, as it does now, regulatory authority with regard to the retail rates charged by New Orleans Public Service, Inc., for electric and natural gas service. I have also acted as a consultant to the District of Columbia Public Service Commission itself -- not in the capacity of Staff. AUS Consultants is currently under contract to provide consulting services to the Regulatory Commission of Alaska (RCA). I have provided analyses and recommendations regarding cost of capital to the RCA.

I have testified before a number of local and county regulatory bodies in various states on the subject of fair rate of return on behalf of cable television companies as well as before an arbitration panel in Ohio and a State District Court in Texas. I have testified before the Public Works Committee of the Nebraska State Senate in relation to Legislative Bill 731 which proposed permitting Public Power Districts and Municipalities to enter the Cable Television field.

PROFESSIONAL ASSOCIATIONS,
PUBLICATIONS AND GUEST SPEAKER APPEARANCES

I am a Member of the Society of Utility and Regulatory Financial Analysts (SURFA), formerly known as the National Society of Rate of Return Analysts. I am a Certified Rate of Return Analyst (CRRA). I am on the Advisory Council of New Mexico State University's Center for Public Utilities which is endorsed by the National Association of Regulatory Utility Commissioners (NARUC). I am also a member of the Executive Advisory Council of the Rutgers University School of Business at Camden. AUS Consultants is an associate member of the American Gas Association (AGA) and I am a member of AGA's Rate and Strategic Issues Committee. I am also an associate member of the Energy Association of Pennsylvania and the National Association of Water Companies. AUS Consultants is an associate member of the New Jersey Utilities Association.

I often attend SURFA meetings during which considerable information on the subject of rate of return is exchanged. I have also attended corporate bond rating seminars held by Standard & Poor's Corporation. I continuously review financial publications of institutions such as Standard & Poor's, Moody's Investors' Service, Value Line Investment Survey, and periodicals of various agencies of the U.S. Government.

I co-authored an article with A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" which was published in the July 15, 1991 issue of Public Utilities Fortnightly. Also, an article which I co-authored with Pauline M. Ahern entitled "Comparable Earnings: New Life for an Old Precept" was published in the American Gas Association's Financial Quarterly Review, Summer 1994. I also authored an article entitled "Why Performance-Based Incentives Are Essential" which was published in <u>THE CITY GATE</u>, Fall 1995, a magazine published by the Pennsylvania Gas Association. I am a co-author, along with Pauline M. Ahern and Richard A. Michelfelder, of a working paper entitled, "New Approach to Estimating the Cost of Common Equity Capital for Public Utilities", which has been submitted for publication.

I have appeared as a guest speaker before an annual convention of the Mid-American Cable Television Association in Kansas City, Missouri and as a guest panelist on the small water companies' operation seminar of the National Association of Water Companies' 77th Annual Convention in Hollywood, Florida. I addressed the Second Annual Seminar on Regulation of Water Utilities sponsored by N.A.R.U.C., at the University of South Florida's St. Petersburg campus. I have spoken on fair rate of return to the Third and Fourth Annual Utilities Conferences, as well as the special conference on the cost of capital in El Paso, Texas sponsored by New Mexico State University. In 1983 I also made a presentation on the Cost of Capital in Atlantic City, New Jersey, at a seminar co-sponsored by Temple University. I have also addressed the Public Utility Law Section of the American Bar Association's Third Institute on Fundamentals of Ratemaking which was held in Washington, D.C. and I addressed a Conference on Cable Television sponsored by The University of Texas School of Law at Austin, Texas. Also, I addressed a meeting of the New England Water Works Association at Boxborough, Massachusetts, on the subject of Enterprise Financing. In addition, I was a speaker and mock witness in three different Utility Workshops for Attorneys sponsored by the Financial Accounting Institute held in Boston and Washington, D.C. I also was on a panel at the 23rd Financial Forum sponsored by the National Society of Rate of Return Analysts. The topic was Rate of Return Determination in the Diversified and/or Partially

Deregulated Environment. I addressed the 83rd Annual Meeting of the Pennsylvania Gas Association in Hershey, PA. My topic was the Cost of Capital Implications of Demand Side Management. In June 1993, I lectured on the cost of capital at the American Gas Association's Gas Rate Fundamentals Course. In October 1993, I was a guest speaker at the University of Wisconsin's Center for Public Utilities -- my topic was "Diversification and Corporate Restructuring in the Electric Utility Industry - Trends and Cost of Capital Implications." In October 1994, I was a guest speaker on a panel at the Fourteenth Annual Electric & Natural Gas Conference in Atlanta, Ga., sponsored by the Bonbright Utilities Center of the University of Georgia and the Georgia Public Service Commission. The panel topic was "Responses to Competition and Incentive Rates." In October 1994, I was a guest speaker on a panel at a conference and workshop called "Navigating the Shoals of Cable Rate Regulation" sponsored by EXNET in Washington, D.C. The panel topic was "Rate of Return." Also, in March 1995, I was a guest speaker on a panel at a conference entitled, "Current Issues Challenging the Regulatory Process" sponsored by New Mexico State University - Center for Public Utilities. My panel topic concerned the electric industry and was titled, "Impact of a Competitive Structure on the Financial Markets". In May 1995, I was a guest speaker at the 87th Annual Meeting of the Pennsylvania Gas Association in Hershey, PA. My topic was "The Pennsylvania Economy and Utility Regulation: Impact on Industry, Consumers and Investors." In May 1996, I was on a panel at the 28th Financial Forum of the Society of Utility and Regulatory Financial Analysts. The panel's topic was "Revisiting the Risk Premium Approach" and was held in Richmond, Virginia. From 1996 through 2005, I participated as an instructor in 2-3 seminars per year on the “Basics of Regulation” (and the ratemaking process in a changing environment) and also in a program called "A Step Beyond the Basics", all sponsored by New Mexico State University's Center for Public Utilities and NARUC. In March 2002, I was a guest speaker before the Rate and Strategic Issues Committee of the American Gas Association in St. Petersburg, Florida. My topic was Rate of Return Strategies. In December 2002, I was a guest speaker at a seminar entitled, "Service Innovations and Revenue Enhancements for the Energy Distribution Business" sponsored by the American Gas Association in Washington, DC. My topic was "The Impact of Volatile Energy Markets on Rate of Return Strategies". In February 2003, I spoke at the Rutgers University-Camden, NJ M.B.A. Speaker Series. I addressed M.B.A. students and interested faculty on the role of the expert witness in the public utility ratemaking process. In November 2003, 2004, 2007 and 2008, by invitation, I was a Guest Professor at Rutgers University – Camden for classes of undergraduate accounting and finance students. In October 2006, I made a presentation entitled "Mergers & Acquisitions: A Regulatory Perspective" at the Bonbright Center Electric and Natural Gas Conference at the University of Georgia. In February 2008, I taught a course entitled, "The Basics of Cost of Capital Analysis" in Albuquerque, NM as part of a program entitled, "More Basic Practical Training" sponsored by New Mexico State University's Center for Public Utilities.