Appendix D

EPCOR WATER SERVICES

Return on Equity Report

May 31, 2024

CITY OF EDMONTON

DETERMINATION OF COST-OF-CAPITAL

REPORT

OF

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ON BEHALF OF

EPCOR WATER SERVICES INC.

May 31, 2024

Table of Contents

I. INTRODUCTION 1

II. SUMMARY 1

III. GENERAL PRINCIPLES REGARDING FAIR RATE OF RETURN 4

i. Importance of Considering Multiple Cost of Common Equity Models 9

ii. Business and Financial Risk 13

iii. Credit Ratings as Measures of Business and Financial Risk 14

IV. PROXY GROUP SELECTION 16

i. Risk and Return 16

ii. Integration and Interdependence of the Canadian and U.S. Economies 26

V. COST OF COMMON EQUITY ANALYSES 30

i. Discounted Cash Flow Model 30

The Theoretical Basis of the DCF Model 30

Constant Growth DCF Model 31

Summary of DCF Results 35

ii. Risk Premium Model 36

Theoretical Basis of the Risk Premium Model 36

Total Market Approach Risk Premium Model 36

Beta-Derived Equity Risk Premium 38

S&P/TSX Capped Utilities Index and S&P Utility Index Equity Risk Premium 39

Bond Yield Plus Risk Premium Based on Authorized Returns for U.S. Water Utility Companies 39

Summary of RPM Results 43

iii. Capital Asset Pricing Model 43

The Theoretical Basis of the CAPM 43

Risk-Free Rate of Return 51

Beta Coefficients 53

Expected Market Risk Premiums for the Canadian and U.S. Markets 56

Summary of CAPM Results 57

iv. Summary of Results of ROE Models Applied to the Proxy Groups 58

VI. FLOTATION COST ADJUSTMENT 58

VII. CAPITAL STRUCTURE AND COST OF LONG-TERM DEBT 59

VIII. SUMMARY AND CONCLUSION 59

I. INTRODUCTION

My name is Dylan W. D'Ascendis. I am a Partner at ScottMadden, Inc. My business address is 3000 Atrium Way, Suite 200, Mount Laurel, NJ 08054. I hold a Bachelor's degree in Economic History from the University of Pennsylvania, and an MBA with concentrations in Finance and International Business from Rutgers University. I am a member of the Society of Utility and Regulatory Financial Analysts ("SURFA"). In 2011, I was awarded the professional designation "Certified Rate of Return Analyst" by SURFA, which is based on education, experience, and the successful completion of a comprehensive written examination. I am also a member of the National Association of Certified Valuation Analysts ("NACVA") and was awarded the professional designation "Certified Valuation Analyst" by NACVA in 2015

I have worked in regulated industries for over 15 years, offering expert testimony in over 150 proceedings regarding various financial and regulatory matters, including issues relating to capital structure, return on common equity ("ROE"), class cost of service, and valuation. A summary of my professional and educational background, including a list of my testimony in prior proceedings, is included in Appendix A to this Report.

I have been retained by EPCOR Water Services Inc. ("EWS" or the "Company") to provide my expert opinion before the City of Edmonton's Utility Committee (the "Utility Committee") regarding the appropriate cost of capital for EWS in its Performance Based Regulation ("PBR") application for the 2025 through 2027 term.

The supporting schedules and workpapers on which my evidence is based are being filed concurrently with this Report.

II. SUMMARY

It is my opinion that the appropriate weighted average cost of capital for EWS to implement in its PBR application for the 2025 through 2027 term is 6.76%, based on a capital structure consisting of 60.00% debt at a 2027 debt cost rate of 4.07%, and 40.00% common equity at a recommended ROE of 10.80%, as summarized in Table 1 below:

Table 1: Summary of the Weighted Average Cost of Capital[1]

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	60.00%	4.07%	2.44%
Common Equity	40.00%	10.80%	4.32%
Total	100.00%		6.76%

In recommending an ROE of 10.80% I applied multiple cost of common equity models, specifically, the Discounted Cash Flow ("DCF") model, the Risk Premium Model ("RPM"), and the Capital Asset Pricing Model ("CAPM") to the market data of two proxy groups of utility companies; one comprised of U.S. water utility companies ("U.S. Water Utility Proxy Group"), and one comprised of Canadian utility companies ("Canadian Utility Proxy Group"). The use of U.S. and Canadian utilities in an ROE analysis reflects the financial principles of risk and return and the fact that both economies are interdependent, as will be discussed in detail below. The results of the DCF model, RPM, and CAPM are presented in Table 2 below:

Table 2: Cost of Common Equity Model Results[2]

	Canadian Utility Proxy Group	U.S. Water Utility Proxy Group
Discounted Cash Flow Model	9.24%	10.00%
Risk Premium Model	10.81%	11.17%
Capital Asset Pricing Model	9.15%	11.70%
Indicated Cost of Common Equity before Flotation Cost Adjustment	10.00% - 11.70%	
Flotation Cost Adjustment[3]	0.50%	
Indicated Cost of Common Equity before Flotation Cost Adjustment	10.50% - 12.20%	
Recommended Cost of Common Equity	10.80%	

As can be gleaned from Table 2, the indicated range of common equity cost rates are based on the results of the U.S. Water Utility Proxy Group results. As will be discussed in Section IV,

[1] Schedule 1, page 1.
[2] Schedule 1, page 2.
[3] The Utility Committee has historically approved ROEs inclusive of a 50-basis point flotation cost adjustment.

there are clear operational differences between water utilities, such as EWS, and energy utilities, such as the Canadian Utility Proxy Group, that must be accounted for.

One can also observe from Table 2 that the results of the Canadian Utility Proxy Group and the U.S. Water Utility Proxy Group overlap from 10.00% to 10.81% and 10.50% to 11.31%, before and after accounting for flotation costs, respectively. My recommended ROE falls within this range, which is subsequently at the low end of the indicated range of common equity cost rates of 10.50% to 12.20%. This approach recognizes that primary weight must be applied to the results based on the U.S. Water Utility Proxy Group results due to operational comparability, while also recognizing that geographical similarities between EWS and the Canadian Utility Proxy Group must also be accounted for.

Further, while I appreciate that EWS's ROE has previously been determined with reference to returns authorized by the Alberta Utilities Commission ("AUC"), that approach fails to adequately reflect the long-standing regulatory principles discussed in Section III below.

Lastly, my recommended capital structure consisting of 40.00% common equity is unchanged from that approved most recently from EWS. Given the capital structures in place at the proxy groups, a capital structure of 40.00% common equity is reasonable and in line with those in place at the proxy group companies.

The items summarized above are addressed in the remainder of this Report as follows:

Section III	Provides a summary of the general principles pertinent to fair rate of return;
Section IV	Explains my selection of the U.S. Water Utility Proxy Group and the Canadian Utility Proxy Group;
Section V	Describes the cost of common equity analyses on which my recommendation is based;
Section VI	Discusses the application of a flotation cost adjustment;
Section VII	Discusses the Company's capital structure and cost of long-term debt; and
Section VIII	Presents my conclusions.

III. GENERAL PRINCIPLES REGARDING FAIR RATE OF RETURN

In general terms, the ROE is the return investors require to make an equity investment in a firm. That is, investors will only provide funds if the return that they expect to receive is equal to, or greater than, the return that they require considering the risks assumed in making the investment. That required return, whether it is provided to debt or equity investors, is a cost to the utility. Individually, I speak of the "cost of debt" and the "cost of common equity"; together, they are referred to as the "cost of capital."

The cost of capital (including the costs of both debt and equity) is based on the economic principle of "opportunity costs." Investing in any asset, whether debt or equity securities, implies a forgone opportunity to invest in alternative assets. For any investment to be sensible, its expected return must be at least equal to the return expected on alternative, comparable investment opportunities. Because investments with like risks should offer similar returns, the opportunity cost of an investment should equal the return available on an investment of comparable risk.

Although both debt and equity have required costs, they differ in certain fundamental ways. Most noticeably, the cost of debt is contractually defined and can be directly observed as the interest rate or yield on debt securities. The cost of common equity, on the other hand, is neither directly observable nor a contractual obligation. Rather, equity investors have a claim on cash flows only after debt holders are paid; the uncertainty (or risk) associated with those residual cash flows determines the cost of common equity. Because equity investors bear the "residual risk", they require higher returns than debt holders. In that basic sense, equity and debt investors are distinct: they invest in different securities, face different risks, and require different returns.

In unregulated industries, marketplace competition is the principal determinant of the price of goods and services. For regulated public utilities, regulation must act as a substitute, or surrogate, for competition. Assuring the utility can fulfill its obligations to the public while providing safe and reliable service requires a level of earnings sufficient to maintain its financial integrity, and to permit the attraction of capital at reasonable costs and terms. Doing so is consistent with the concept of a fair rate of return.

The standards of fair rate of return have been established by the *Northwestern* and *TransCanada* cases in Canada, and the *Hope* and *Bluefield* cases in the U.S.

Those standards have informed the rate of return decision making of regulatory commissions throughout Canada and the United States for nearly 100 years. In 1929, the Supreme Court of Canada reinforced the fair rate of return standards in *Northwestern*, which involved the City of Edmonton, when it stated:

> The duty of the Board was to fix fair and reasonable rates; rates which, under the circumstances, would be fair to the consumer on the one hand, and which, on the other hand, would secure to the company a fair return for the capital invested. By a fair return is meant that the company will be allowed as large a return on the capital invested in its enterprise (which will be net to the company) as it would receive if it were investing the same amount in other securities possessing an attractiveness, stability and certainty equal to that of the company's enterprise. In fixing this net return the Board should take into consideration the rate of interest which the company is obliged to pay upon its bonds as a result of having to sell them at a time when the rate of interest payable thereon exceeded that payable on bonds issued at the time of the hearing. To properly fix a fair return the Board must necessarily be informed of the rate of return which money would yield in other fields of investment.[4]

In 2004, the Federal Court of Appeal (Canada) in 2004 FCA 149 reaffirmed the fair rate of return standards when it stated:

> [6] The cost of capital to a utility is equivalent to the aggregate return on investment investors require in order to keep their capital invested in the utility and to invest new capital in the utility. That return will be made in the form of interest on debt and dividends and capital appreciation on equity. Usually, that return is expressed as the rate of return investors require on their debt or equity investments.
>
> [12] Even though cost of capital may be more difficult to estimate than some other costs, it is a real cost that the utility must be able to recover through its revenues. If the Board does not permit the utility to recover its cost of capital, the utility will be unable to raise new capital or engage in refinancing as it will be unable to offer investors the same rate of return as other investment of similar risk. As well, existing shareholders will insist that retained earnings not be reinvested in the utility.

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[4] Northwestern (1929) S.C.R. 186, at 192-193.

> [13] In the long run, unless a regulated enterprise is allowed to earn its cost of capital, both debt and equity, it will be unable to expand its operations or even maintain existing ones. Eventually, it will go out of business. This will harm not only its shareholders, but also the customers it will no longer be able to service. The impact on customers and ultimately consumers will be even more significant where there is insufficient competition in the market to provide adequate service. [5]

The fair return standard has been interpreted numerous times by both the AUC[6] and by the National Energy Board ("NEB").

The AUC specifically stated:

> The requirements of comparable investments, financial integrity, and capital attraction remain fundamental to setting a fair return. The Commission and its predecessors have employed these principles in setting rates of return, and other regulators apply these principles. All three components must be satisfied to arrive at a fair return.[7]

The NEB specifically noted:

> The Board is of the view that the fair return standard can be articulated by having reference to three particular requirements. Specifically, a fair or reasonable return on capital should:
>
> - be comparable to the return available from the application of the invested capital to other enterprises of like risk (the comparable investment standard);
> - enable the financial integrity of the regulated enterprise to be maintained (the financial integrity standard); and
> - permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (the capital attraction standard).

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5 TransCanada, 2004 FCA 149 [6] [12] [13].

6 *See*, for example, Alberta Utilities Commission, 2018 Generic Cost of Capital, Decision 22570-D01-2018, dated August 2, 2018, pp. 38 at 8.

7 Decision 27084-D02-2023, Determination of the Cost-of-Capital Parameters in 2024 and Beyond, at para. 21 (October 9, 2023)(footnotes omitted)

The findings of comparable investments, capital attraction, and financial integrity are consistent with long-standing precedent in the United States. As noted by the U.S. Supreme Court's decision in *Bluefield*:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises of speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.[8]

The U.S. Supreme Court affirmed the fair rate of return standards in *Hope*, when it stated:

> The rate-making process under the Act, *i.e.*, the fixing of 'just and reasonable' rates, involves a balancing of the investor and the consumer interests. Thus we stated in the Natural Gas Pipeline Co. case that 'regulation does not insure that the business shall produce net revenues.' 315 U.S. at page 590, 62 S.Ct. at page 745. But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. Cf. Chicago & Grand Trunk R. Co. v. Wellman, 143 U.S. 339, 345, 346 12 S.Ct. 400,402. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[9]

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[8] *Bluefield*, 262 U.S. 679 (1923), at 692-693.

[9] *Hope*, 320 U.S. 591 (1944), at 603.

In summary, Canadian and U.S. courts have found a return that is adequate to attract capital at reasonable terms enables the utility to provide service while maintaining its financial integrity. As discussed above, and in keeping with established regulatory standards, that return should be commensurate with the returns expected elsewhere for investments of equivalent risk. The Utility Committee's decision regarding the Company's ROE in this proceeding, therefore, should provide the Company with the opportunity to earn a return that is: (1) adequate to attract capital at reasonable cost and terms; (2) sufficient to ensure their financial integrity; and (3) commensurate with returns on investments in enterprises having corresponding risks.

Investors see the principal regulatory guidelines establishing the fair rate of return as the "comparable risk", "financial integrity", and "capital attraction" standards. Investors also understand the long-standing regulatory principle that "[u]nder the statutory standard of 'just and reasonable', it is the result reached not the method employed which is controlling."[10] A reasonable ROE estimate therefore considers alternative methods, quantitative and qualitative market data, and the reasonableness of empirical results relative to relevant, observable benchmarks.

Whereas the "capital attraction" and "financial integrity" standards may be viewed, to some extent, from the perspective of debt investors, the "comparable risk" standard makes clear that the relevant assessment of equity risk, and the fair return on common equity, relates to equity investors. Although observations and analyses regarding rating agency actions (or inactions) and *pro forma* estimates of credit metrics are informative for that purpose, they are not full measures of the risk assessments and return requirements of equity investors. As discussed later in this Report, for example, because common equity represents a perpetual claim on residual cash flows (that is, cash flows available after debtholders are paid), equity investors are exposed to business risks whose probability and effect may be difficult to quantify. That does not mean, however, that those risks are of no consequence to equity investors, or that they should not be reflected in the authorized ROE.

Lastly, the required return for a regulated public utility is established on a stand-alone basis. Parent entities, like other investors, have capital constraints and must look at the attractiveness of the expected risk-adjusted return of each investment alternative in their capital budgeting process.

[10] *Ibid*, at 602.

The opportunity cost concept applies regardless of the source of the funding. When funding is provided by a parent entity, the return still must be sufficient to provide an incentive to allocate equity capital to the subsidiary or business unit rather than other internal or external investment opportunities. That is, the regulated subsidiary must compete for capital with all the parent company's affiliates, and with other, similarly situated utility companies. In that regard, investors value corporate entities on a sum-of-the-parts basis and expect each division within the parent company to provide an appropriate risk-adjusted return. It therefore is important that the authorized ROE reflects the risks and prospects of the utility's operations and supports the utility's financial integrity from a stand-alone perspective. Consequently, the ROE authorized in this proceeding should be sufficient to support the Company's operations and financing of their utility operations on a stand-alone basis.

i. *Importance of Considering Multiple Cost of Common Equity Models*

Each model used to estimate the ROE is subject to assumptions that may become more, or less, applicable as market conditions change, and each provides a perspective on investors' return requirements. The choice of models (including their inputs), the selection of proxy companies, and the interpretation of the model results all require the application of reasoned judgment. That judgment should consider data and information that is not directly included in the models themselves. The estimated ROE should reflect the return that investors require in light of the subject company's risks, capital market conditions, and the returns available on comparable investments. Although we cannot observe how investors estimate the cost of common equity as a component of valuation models at all times, it stands to reason that no relevant information would be systematically ignored by them. Therefore, we can conclude that no one method to estimate cost of common equity prevails across all investors, and no single measure of value remains constant over time.

The use of multiple methods in estimating the cost of common equity is well-supported in academic literature. As Roger A. Morin[11] notes:

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[11] Roger A. Morin has taught as the Distinguished Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University, the Wharton School of Finance at the

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 to account for variables that affect security returns other than beta tarnishes its use.

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)

* * *

There is ample academic support in the financial literature for the need to rely upon several financial models in arriving at a recommended common equity cost rate. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts(footnote omitted):

> *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. (italics in original) (emphasis added)*

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated(footnote omitted):

> *Use more than one model when you can. Because estimating the opportunity cost of capital is difficult,*

University of Pennsylvania, the Amos Tuck School of Business at Dartmouth College, Drexel University, McGill University, among others. He has authored or co-authored articles published in academic journals on the subject of finance, including *The Journal of Finance*, *The Journal of Business Administration*, and *International Management Review*.

> ***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. (italics in original) (emphasis added)*
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> * * *
>
> Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), '*no single or group test or technique is conclusive.*' (italics in original)
>
> * * *
>
> While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity. It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods. The same comments are equally applicable to the Risk Premium and CAPM methodologies.[12]

Professor Eugene Brigham, a widely respected scholar and finance academician, recommends the CAPM, DCF, and Bond Yield Plus Risk Premium approaches:

> However, three methods typically can be 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.[13]

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12 Roger A. Morin, PhD, Modern Regulatory Finance, PUR books 2021 ("Morin"), at 476-480.
13 Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed., 1994, at 341.

Similarly, Morin (quoting, in part, Professor Stewart Myers), stated:

> *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.*
>
> ***
>
> While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity. It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods. The same is true of the Risk Premium and CAPM methodologies.[14]

In addition, regulators throughout the U.S. and Canada frequently consider multiple models in determining authorized returns. For example, the Ontario Energy Board (the "OEB") stated that "[t]he Board agrees that **the use of multiple tests to directly and indirectly estimate the ERP is a superior approach to informing its judgment than reliance on a single methodology**."[15] The AUC has also relied on the results of multiple models, recently noting that:

> In this section, the Commission determines the notional ROE of 9.0 per cent using current market data and considering results of well-known and widely accepted empirical models to estimate the required return such as the CAPM, constant growth discounted cash flow (DCF), and multi-stage DCF.[16]

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14 Morin at 476 – 480 (emphasis in original)

15 Ontario Energy Board, EB-2009-0084, Report of the Board on the Cost of Capital for Ontario's Regulated Utilities, December 11, 2009, at p. 36. [Emphasis in original] "ERP" is defined as equity risk premium.

16 Decision 27084-D02-2023, Determination of the Cost-of-Capital Parameters in 2024 and Beyond, at para. 115 (October 9, 2023)

Similarly, in its review of the Company's 2017 – 2021 Filing, the City of Edmonton hired Grant Thornton LLP ("Grant Thornton") to conduct its review. In their report, Grant Thornton stated:

> "[i]n our view it is best to estimate the cost of capital using more than one methodology, as the return determined by any model or test will not perfectly capture all of the variables that might be considered in determining a fair return."[17]

In the U.S., the Pennsylvania Public Utilities Commission for example has stated:

> Based on the record, we agree with the ALJs that it is appropriate to consider the CAPM results to account for economic changes such as those occurring currently, in addition to the DCF results, to determine Columbia's ROE.[18]

In summary, it is necessary to consider multiple models in determining the ROE; one should not assume the many factors investors weigh in determining market prices may be distilled to the few variables and strict relationships assumed in any single model. Rather, the Utility Committee should recognize the limitations and modeling risks associated with focusing on a single approach, and base its ROE determinations on a thorough review of multiple methods. My estimate of the Company's cost of common equity therefore considers three well-established methods: The Constant Growth DCF model; the RPM; and the CAPM, including its "Empirical" form.

ii. *Business and Financial Risk*

The investor-required ROE reflects investors' assessment of the total investment risk of the subject firm. Total investment risk often is considered in the context of business risk and financial risk, both of which are discussed below.

Business risk reflects the uncertainty associated with owning the subject company's common stock, without the use of debt and/or preferred capital. Examples of the business risks generally faced by utilities include but are not limited to: supply risk; demand (or market) risk;

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17 City of Edmonton, EPCOR Performance Based Regulation 2017-2021 Filing Review, Prepared by Grant Thornton LLP, at p. 127 (September 22, 2016); Grant Thornton ultimately relied exclusively on the results of the CAPM in their final recommendation.

18 PA PUC v. Columbia Water Company, R-2023-3040258, pp. 107-108 (Order entered January 18, 2024).

competitive risk; operating risk; and regulatory risk, all of which have a direct bearing on earnings levels and volatility.

Financial risk, which is the additional risk that the subject company may not have adequate cash flows to meet its financial obligations, is created by the introduction of senior capital, i.e., debt and preferred stock, into the capital structure. Intuitively, as the degree of financial leverage increases, the risk of financial distress also increases. Even if two firms face the same business risks, the company with meaningfully higher levels of debt in its capital structure is likely to have greater financial risk and, therefore, higher costs of both debt and equity. As Brigham and Gapenski point out, "…the use of debt, or financial leverage, concentrates the firm's business risk on its stockholders."[19]

Because the capital structure affects the subject company's overall level of risk, it is an important consideration in establishing a fair rate of return: The higher the proportion of senior debt capital in the capital structure, the higher the financial risk that must be factored into the cost of common equity.

iii. *Credit Ratings as Measures of Business and Financial Risk*

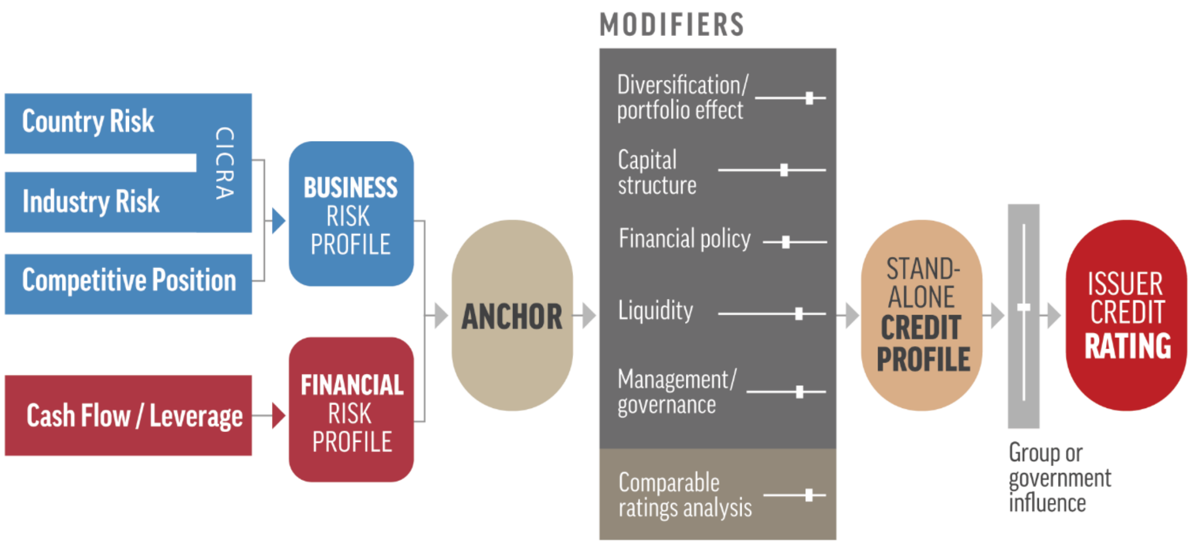
The principal relevance of business and financial risk is how they are reflected in the credit rating process. Standard & Poor's ("S&P") describes its overall process as follows:

> The corporate analytical methodology organizes the analytical process according to a common framework, and it divides the task into several factors so that Standard & Poor's considers all salient issues. First we analyze the company's business risk profile, then evaluate its financial risk profile, then combine those to determine an issuer's anchor. We then analyze six factors that could potentially modify our anchor conclusion.
>
> To determine that assessment for a corporate issuer's business risk profile, the criteria combine our assessments of industry risk, country risk and competitive position. Cash flow/leverage analysis determines a company's financial risk profile assessment. The analysis then combines the corporate issuer's business risk profile assessment and its financial risk profile assessment to determine its

[19] Eugene F. Brigham, Louis C. Gapenski, Financial Management, Theory and Practice, 1994, The Dryden Press, at 528.

anchor. In general, the analysis weighs the business risk profile more heavily for investment-grade anchors, while the financial risk profile carries more weight for speculative-grade anchors.[20]

<u>Chart 1: Standard & Poor's Corporate Criteria Framework[21]</u>



S&P determines stand-alone credit profiles for an issuer, then takes into account the influence of the parent company before determining a final issuer credit rating. The key observation is that S&P considers a variety of business and financial risks, and applies a variety of analyses to assess those risks.

Although they reflect business and financial risk, in the final analysis credit ratings are opinions regarding the subject company's financial capacity to pay its financial obligations as they come due. As S&P notes:

> An S&P Global Ratings issuer credit rating is a forward-looking opinion about an obligor's overall creditworthiness. This opinion focuses on the obligor's capacity and willingness to meet its financial commitments as they come due.[22]

Credit ratings therefore speak to overall creditworthiness from the perspective of debtholders. The claims of equity holders, the subject of this Report, are subordinate to those of

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[20] Standard & Poor's Ratings Services, *Corporate Methodology*, November 19, 2013, at 4-5.
[21] *Ibid.*, at 5.
[22] https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352

debt holders. In short, the risks associated with common equity exceed the risks of owning bonds. The two have common considerations, but only to a point.

IV. PROXY GROUP SELECTION

I rely on the application of the cost of common equity models to both Canadian and U.S. utility proxy groups. The use of Canadian and U.S. utility proxy groups reflects the underlying financial principles of risk and return and that the economies of both countries are highly interdependent.

Canadian regulators frequently rely on proxy groups of both Canadian and U.S. utilities in determining the appropriate ROE. The AUC, for example, relied on both sets of proxy groups in Decision 20622-D01-2016,[23] Decision 22570-D01-2018,[24] and most recently in Decision 27084-D02-2023.[25] The OEB similarly relied on data from both Canadian and U.S. Utilities in EB-2009-0084.[26] Additionally, the British Columbia Utilities Commission ("BCUC") found US utility data to be acceptable "when Canadian data do not exist in significant quantity or quality".[27]

i. ***Risk and Return***

Because EWS is not themselves a publicly traded entity and does not have publicly traded equity securities, it is necessary to develop groups of publicly traded, comparable companies to serve as their "proxy". In addition to the analytical necessity of doing so, the use of proxy companies is consistent with the *Northwestern*, *TransCanada*, *Hope*, and *Bluefield* comparable risk standards.

Even when proxy groups are carefully selected, it is common for analytical results to vary from company to company. Despite the care taken to ensure comparability, because no two companies are identical, market expectations regarding future risks and prospects will vary within

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23 Decision 20622-D01-2016, 2016 Generic Cost of Capital, PDF 72 (October 7, 2016)

24 Decision 22570-D01-2018, Determination of the Cost-of-Capital Parameters in 2024 and Beyond, para. 275 (August 2, 2018)

25 Proceeding 27084, Determination of the Cost-of Capital Parameters in 2024 and Beyond, Appendix B – Comparator Group of Utilities, November 10, 2022.

26 EB-2009-0084, Report of the Board on the Cost of Capital for Ontario's Regulated Utilities, December 11, 2009, at 21-23.

27 BCUC Return on Equity and Capital Structure Decision for Terasen Gas Inc., December 16, 2009, at 16.

the proxy group. It therefore is common for analytical results to reflect a seemingly wide range, even for a group of similarly situated companies. At issue is how to estimate the cost of common equity from within that range. That determination necessarily must consider the sort of quantitative and qualitative information discussed throughout this Report.

My analyses are based on two proxy groups, the first containing publicly traded U.S. water utilities, and the second containing publicly traded Canadian utility companies. The selection of a proxy group of water utilities reflects the fact that EWS is engaged exclusively in regulated water and wastewater activities. Therefore, a proxy group of water utilities is comparable in risk to EWS. Further, because there are no publicly traded Canadian water utilities,[28] I relied on a proxy group of publicly traded U.S. water utilities. The use of U.S. proxy companies is appropriate as all utilities, whether they operate in Canada or the U.S., must compete for capital on a global basis, and to do so, must be provided the opportunity to earn a fair and reasonable return. That said, there still may be factors that are pertinent to companies based in Canada as opposed to the U.S. which require consideration. While it is appropriate to consider both groups in determining the EWS ROE, I attribute more weight to the results based on the U.S. Water Utility Proxy Group, which directly considers the operational risks facing water utilities, as will be discussed in detail below.

To select the group of U.S. water proxy companies, I began with the companies listed in *Value Line Investment Survey's* ("*Value Line*")[29] Standard Edition as Water Utilities, and applied the following screening criteria:

(1) I excluded companies that do not consistently pay quarterly cash dividends;[30]

(2) I excluded companies that do not have positive projections of earnings per share ("EPS") growth;[31]

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28 Algonquin Power & Utilities Corp's. regulated water operations accounts for 12.53% of total revenues and 9.83% of total assets for the company. See, Algonquin Power & Utilities Corp's. 2022 Annual Report at PDF 18, 77-79. No other member of the Canadian Utility proxy group reports revenues or earnings from regulated water operations.

29 *Value Line* is a widely available and credible source for investment information for U.S. companies.

30 Because utility investors consider dividends in their investment decisions, if a utility company either cut or suspended regular dividend payments, it could be a signal of unusual risk, which would not be representative of a traditional utility company.

31 The projected EPS growth rate would logically need to be positive, as rational investors would not invest in a company which is expected to experience a contraction of earnings in perpetuity.

(3) I excluded companies that do not have *Value Line* and Bloomberg Professional Services ("Bloomberg") betas;[32]

(4) I excluded companies with less than 60.00% of total net operating income or assets derived from regulated water utility operations for the fiscal year 2022;[33] and

(5) I excluded companies that are currently known to be party to a merger or other significant transaction, as such transactions can temporarily skew market data.

That screening process produced the proxy group summarized in Table 3, below:

Table 3: U.S. Water Utility Proxy Group Screening Results

Company	Ticker
American States Water Company	AWR
American Water Works Co., Inc.	AWK
California Water Service Group	CWT
Essential Utilities, Inc.	WTRG
Middlesex Water Company	MSEX
SJW Group	SJW

To select the group of Canadian proxy companies, I began with all Canadian utilities identified by Yahoo! Finance,[34] and applied the following screening criteria:

(1) I excluded companies that do not consistently pay quarterly cash dividends;

(2) I excluded companies that do not have positive projections of EPS growth;

(3) I excluded companies with less than 60.00% of total net operating income or assets derived from regulated utility operations for the fiscal year 2022; and

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32 *Value Line,* as mentioned above, is widely available to individual investors. Bloomberg information is widely available to institutional investors.

33 In developing my proxy groups, my objective is to identify companies that, on balance are fundamentally risk comparable to EWS. To that end, I selected proxy companies with a significant portion of operating income derived from utility operations. Although comparability is important, it is also important that the proxy group is sufficiently large in number that the analytical results may be seen as representative of the returns required for utilities comparable to EWS. The threshold to eliminate companies with significant unregulated operations must balance the need to develop a group of companies that are fundamentally comparable to EWS with the need to develop a proxy group of sufficient size.

34 Yahoo! Finance Canada is a widely available and credible source for investment information. Please note that the list of initial companies produced by Yahoo! Finance Canada included regulated electric, natural gas, and water utilities in addition to renewable generators and independent power producers.

(4) I excluded companies that are currently known to be party to a merger or other significant transaction.

That screening process produced the proxy group summarized in Table 4, below:

Table 4: Canadian Utility Proxy Group Screening Results[35]

Company	Ticker
Algonquin Power & Utilities Corp.	AQN.TO
Canadian Utilities, Ltd.	CU.TO
Emera Inc.	EMA.TO
Fortis, Inc.	FTS.TO
Hydro One Limited	H.TO

As noted above, it is appropriate to afford primary weight to the results of the U.S. Water Utility Proxy Group, as those companies are more comparable in risk to EWS. In Proceeding 27084, the AUC excluded water utilities from its list of comparator companies relative to electric and natural gas utilities,[36] reflective of the importance of operational comparability.

When determining the comparability of one company to another company, it is important to consider if the potential proxy company has similar operations to EWS, which is a pure-play water and wastewater utility. Because the companies in the Canadian Utility Proxy Group are electric or natural gas distribution utilities, it is important to distinguish the different operational risks each industry faces to determine whether or not they are indeed comparable. For example, electric utilities transport a commodity through wires, while water and wastewater utilities transport a commodity through pipes in the ground. Further, water is mostly used for direct human consumption. Certain measures indicate that water utilities are riskier, while other measures indicate that water utilities are less risky. As demonstrated in the subsequent tables and charts, while electric, gas and water utilities have similar risks, they are not identical. As such, neither electric nor gas utility market data should directly be used as a measure of the investor required return for water utilities, like EWS, in a regulatory proceeding.

35 ATCO Ltd., was excluded as its regulated operations consists solely of Canadian Utilities, Ltd., of which it is a majority shareholder.

36 Proceeding 27084, Determination of the Cost-of Capital Parameters in 2024 and Beyond, Appendix A – Finalized Screening Criteria, November 10, 2022.

Table 5: Safety Rankings for the U.S.
Electric, Natural Gas and Water Utilities[37] as of December 2022[38]

	Mean	Median	Minimum	Maximum
Electric	1.85	2.00	1.00	3.00
Gas	2.22	2.00	1.00	3.00
Water	2.67	3.00	2.00	3.00

Table 6: Summary Statistics for the U.S.
Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities – 2013 to 2022[39]

	Mean	Median	Minimum	Maximum
FFO/Debt[40]				
Can. Electric	13.15%	12.47%	9.61%	18.17%
U.S. Electric	18.30%	19.18%	12.48%	23.33%
Gas	19.86%	19.79%	13.86%	25.19%
Water	20.39%	22.45%	13.13%	26.51%

37 U.S. utilities reflect the companies that are contained within the *Value Line Standard Edition's* water, gas and electric utility universes.

38 Source: *Value Line*; *Value Line* also ranks stocks for Safety by analyzing the total risk of a stock compared to the approximately 1,700 stocks in the *Value Line* universe. Each of the stocks tracked in the *Value Line Investment Survey* is ranked in relationship to each other, from 1 (the highest rank) to 5 (the lowest rank). Safety is a quality rank, not a performance rank, and stocks ranked 1 and 2 are most suitable for conservative investors; those ranked 4 and 5 will be more volatile. Volatility means prices can move dramatically and often unpredictably, either down or up. The major influences on a stock's Safety rank are the company's financial strength, as measured by balance sheet and financial ratios, and the stability of its price over the past five years.

39 Sources: S&P Capital IQ; Bloomberg Professional Services.

40 Funds From Operations/Debt is a common metric used for assessing risk as it indicates the extent to which a firm generates the funds needed to cover its debts; higher percentages indicate lower risk.

	Mean	Median	Minimum	Maximum
CapEx/Net Plant[41]				
Can. Electric	9.13%	8.89%	7.29%	11.21%
U.S. Electric	10.13%	10.24%	9.67%	10.63%
Gas	11.32%	11.19%	10.33%	12.83%
Water	9.18%	9.71%	7.35%	10.14%
FCF/Interest (times)[42]				
Can. Electric	-0.42	-0.25	-1.84	0.21
U.S. Electric	-0.73	-0.48	-1.84	0.08
Gas	-1.23	-1.21	-2.68	0.36
Water	-0.92	-1.14	-2.60	1.00
FCF/EBITDA (times)[43]				
Can. Electric	-0.11	-0.07	-0.36	0.03
U.S. Electric	-0.13	-0.10	-0.33	0.01
Gas	-0.17	-0.15	-0.43	0.09
Water	-0.18	-0.21	-0.47	0.14
Free Cash Flow (millions)[44]				
Can. Electric	-178.40	-154.11	-613.67	48.34
U.S. Electric	-551.44	-500.96	-1,188.80	60.26
Gas	-90.19	-114.74	-209.01	82.16
Water	-81.95	-57.37	-296.62	67.81

[41] Capital Expenditures to Net Plant is a common metric used to as risk as it indicates how much money a firm invests each year relative to its current level of plant; higher percentages indicate higher risk.

[42] Free Cash Flow/Interest is a common metric used for assessing risk as it indicates the extent to which a firm generates the funds needed to cover its continuing obligations; higher measures indicate lower risk.

[43] Free Cash Flow/EBITDA is a common metric used for assessing risk as it indicates the extent to which a firm generates free cash relative to its operations; higher measures indicate lower risk.

[44] Free Cash Flow is a common metric used for assessing risk as it demonstrates whether a firm produces positive or negative cash flows and needs to raise additional funds; higher measures indicate lower risk.

Chart 2: Free Cash Flow/Operating Revenues for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[45]

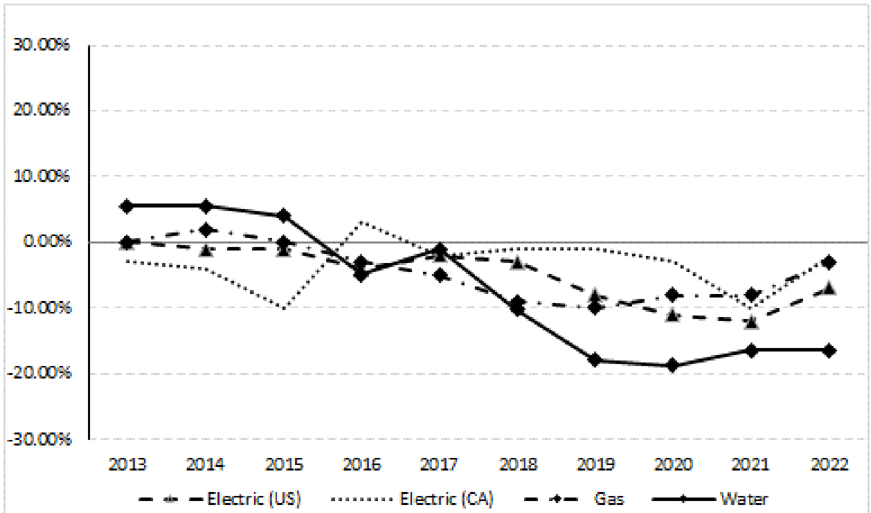
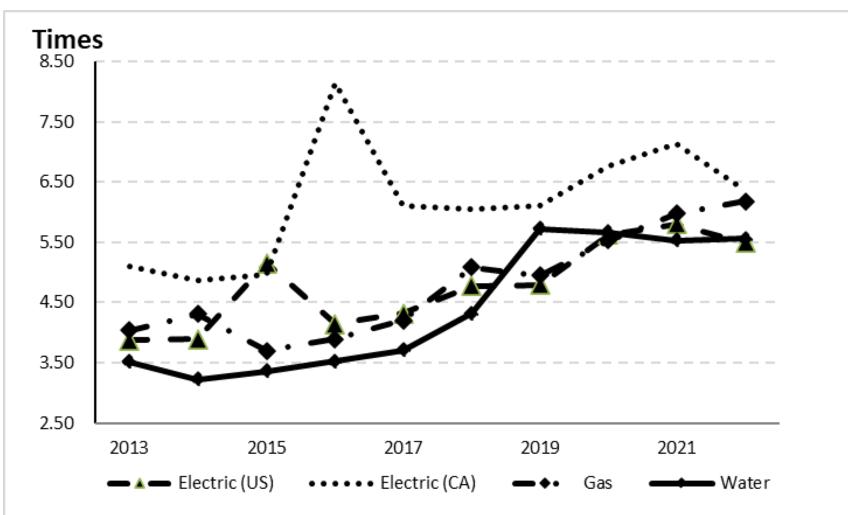


Chart 3: Total Debt/EBITDA for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[46]



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[45] Source: S&P Capital IQ; Free Cash Flow/Operating Revenue is a common metric used for assessing risk as it indicates the extent to which a firm generates free cash relative to its operations; higher measures indicate lower risk.

[46] Source: S&P Capital IQ; Total Debt/EBITDA is a common metric used for assessing risk as it indicates the level of a firm's obligations compared to its operational earnings; higher measures indicate higher risk.

Chart 4: Funds from Operations/Total Debt for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[47]

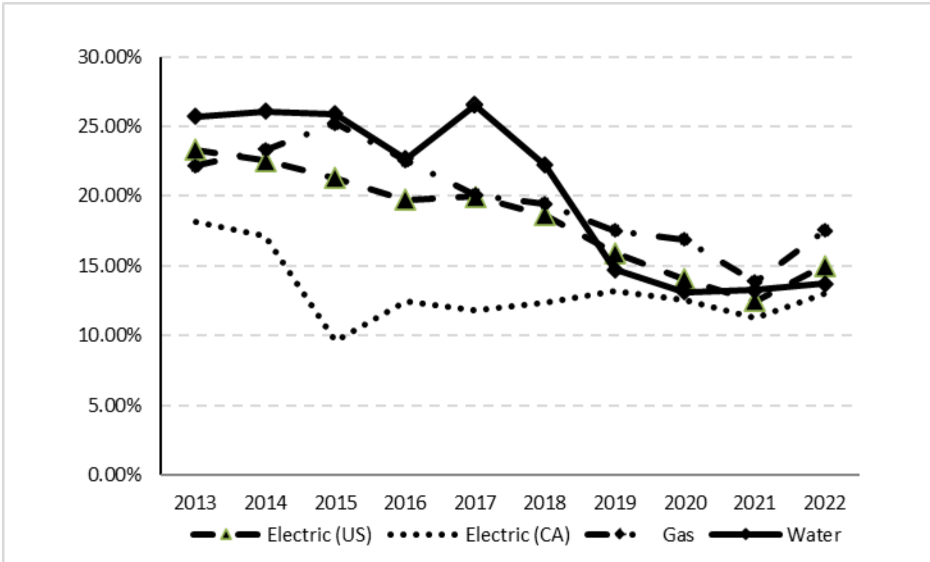
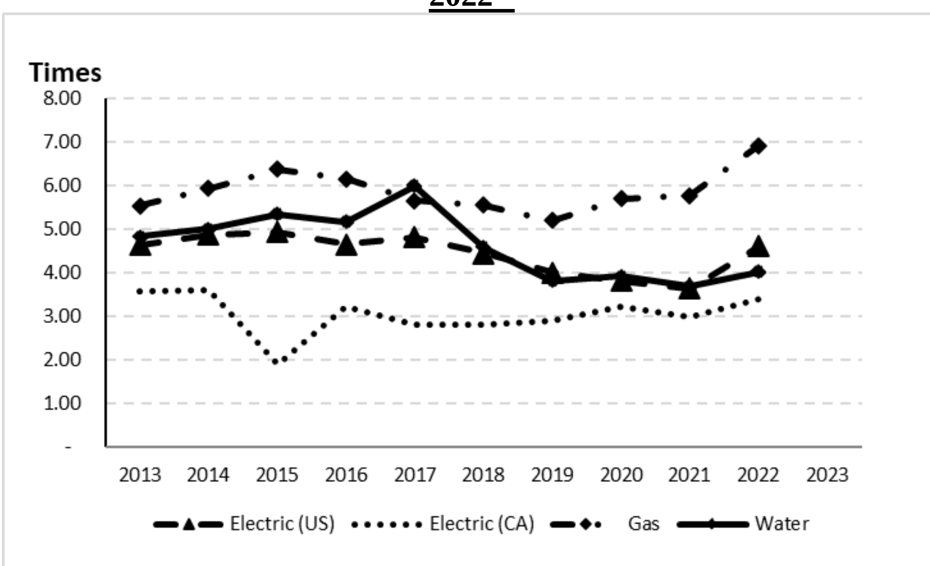


Chart 5: Funds from Operations/Interest Coverage for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[48]



47 Source: S&P Capital IQ; Funds From Operations/Debt is a common metric used for assessing risk as it indicates the extent to which a firm generates the funds needed to cover its debts; higher percentages indicate lower risk.

48 Source: S&P Capital IQ; Funds From Operations /Interest is a common metric used for assessing risk as it indicates the extent to which a firm generates the funds needed to cover its continuing obligations; higher measures indicate lower risk.

Chart 6: Pre-Tax Interest Coverage for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[49]

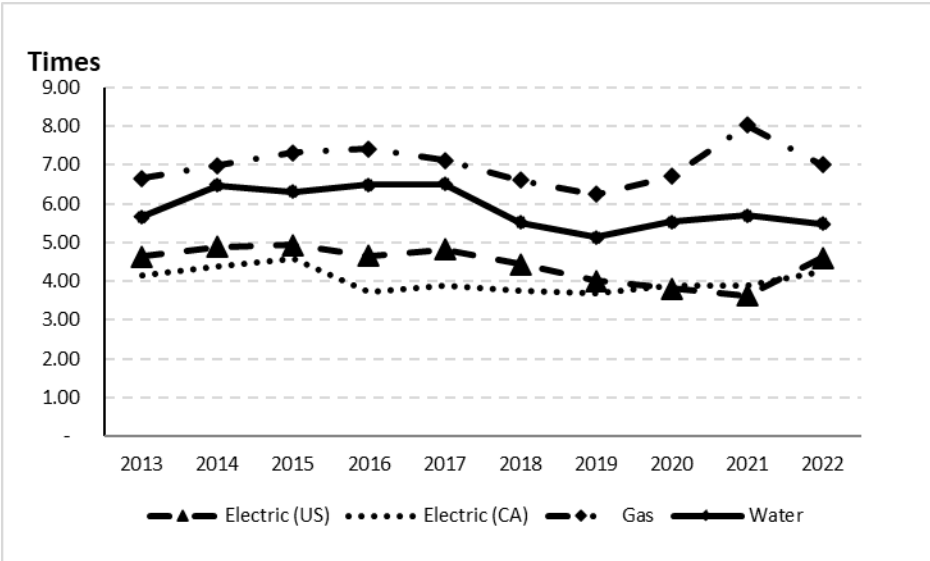
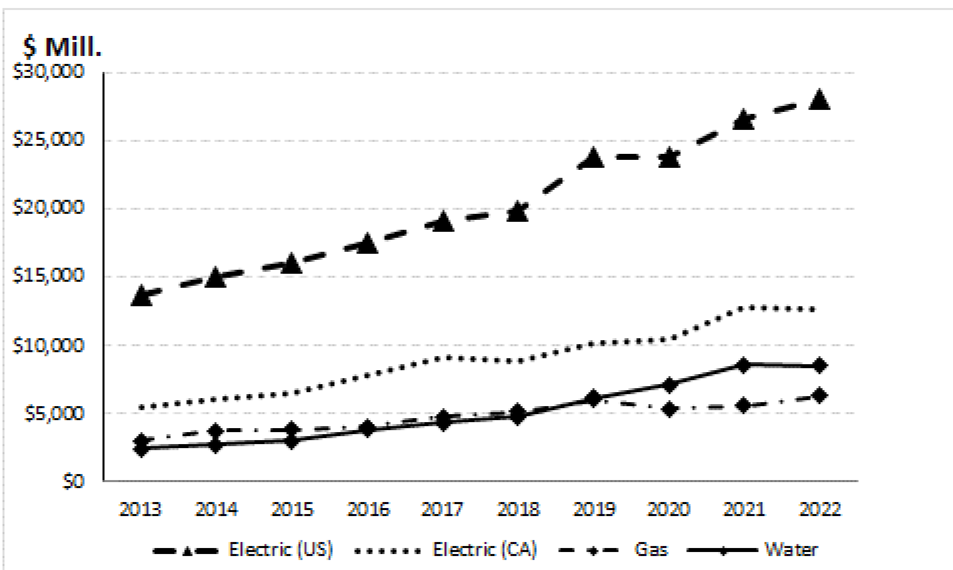


Chart 7: Market Capitalization for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities– 2013 to 2022[50]



49 Source: S&P Capital IQ; Pre-tax Interest Coverage is a common metric used for assessing risk as it indicates the extent to which a firm generates the funds needed to cover its continuing obligations; higher measures indicate lower risk.

50 Source: S&P Capital IQ; Market Capitalization provides an indication of a firm's equity value; higher measures indicate lower risk.

Chart 8: 2022 Capital Intensity for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities[51]

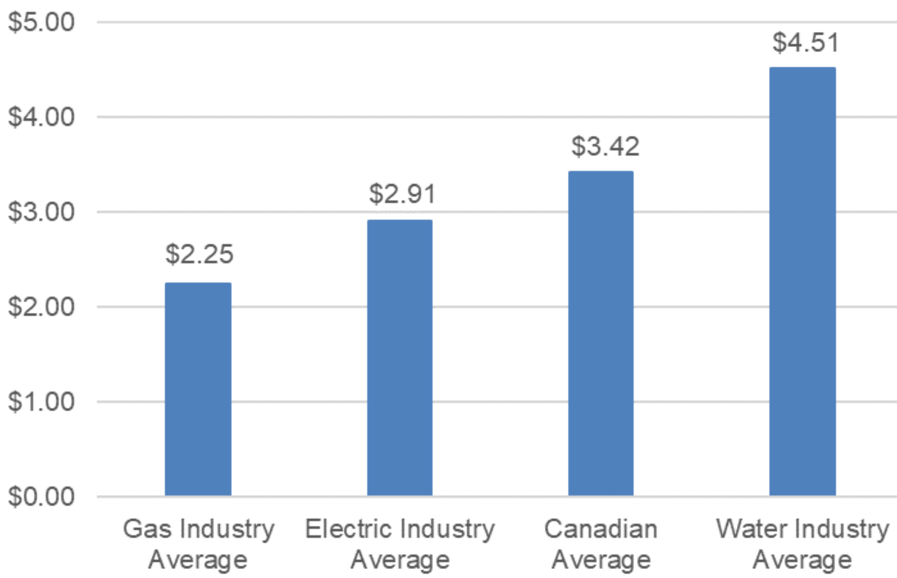
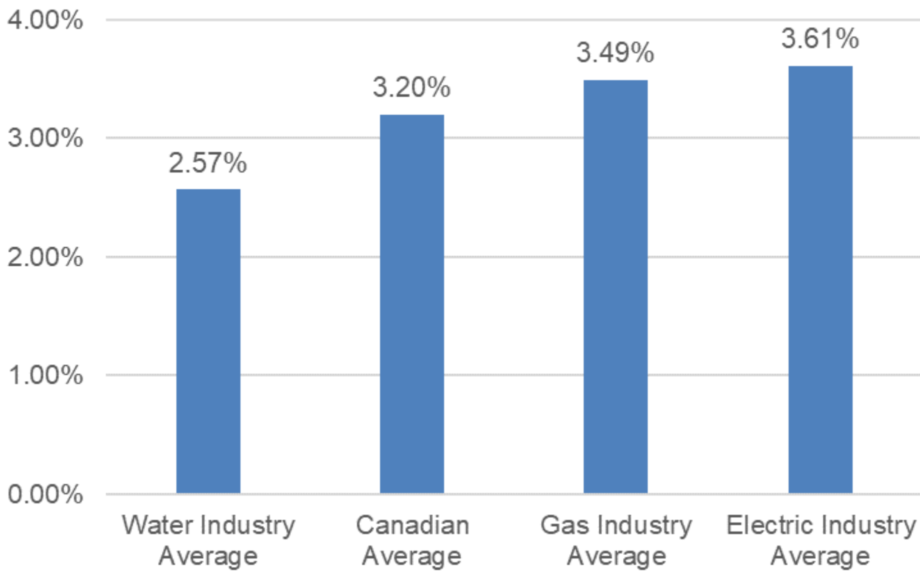


Chart 9: 2022 Depreciation Rates for the U.S. Electric, Natural Gas and Water Utilities and the Canadian Electric Utilities[52]



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[51] Source: S&P Capital IQ, Company SEC Form 10-Ks; Capital Intensity is a common measure used to assess risk as it represents how capital it takes to produce $1 of revenue; higher measures indicate higher risk.

[52] Source: S&P Capital IQ, Company SEC Form 10-Ks; Depreciation rates are one of the principal sources of internal cash flows for utilities, lower depreciation rates indicate lower cash flows.

In view of the above, the risks facing water utilities are not identical to those faced by gas and electric utilities. Given that, I conclude that primary weight should be placed on the results of the U.S. Water Utility Proxy Group when determining the ROE for EWS.

Further, given the above and the lack of publicly traded water utilities in Canada, and the extent to which the U.S. and Canadian economies are linked as discussed below, the use of U.S. publicly traded water utilities is appropriate.

ii. *Integration and Interdependence of the Canadian and U.S. Economies*

In addition to operational comparability, locational comparability should be considered because companies in a certain region or country may share similar risks to each other. Although there is significant interdependence between the U.S. and Canadian economies and markets (as discussed below), it may be useful to separate Canadian and U.S. utilities to gain insight into possible risk differentials for utilities in the two nations.

The Canadian and U.S. economies remain highly integrated and interdependent. The significant amount of Canadian investment in the U.S. is particularly important as the performance of Canadian investments in the U.S. is driven by U.S. capital market conditions. Not only are the Canadian and U.S. economies integrated and interdependent, their stock markets are intricately linked. David A. Bessler and Jian Yang studied the dynamic structure of nine major stock markets, including those of Canada and the U.S.[53] The authors found "the Canadian market follows the U.S. market in contemporaneous time, which is consistent with the common notion on the relationship between the two countries' economies."[54] As Bessler and Yang observed, "[t]he U.S. market is probably the only market that has a consistently strong impact on price movements in other major stock markets in the longer-run."[55]

Looking to the Canadian and U.S. markets, both the S&P TSX Composite and the S&P 500 Index, and the Canada 30-year bond yield and the U.S. 30-year Treasury bond yields have moved in tandem (*see* Charts 10 and 11, respectively, below). In fact, since 2007, the correlation

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[53] David A. Bessler and Jian Yang, *The structure of interdependence in international stock markets*, Journal of International Money and Finance, 22 (2003), at 261-287.

[54] *Ibid*., at 277.

[55] *Ibid*., at 285.

between the equity and bond markets has been extremely high at approximately 95.71% and 95.52%, respectively. That degree of correlation is generally consistent with, although somewhat higher than, the relationship between the volatility of the respective Canadian and U.S. equity markets (correlation of 90.25% since 2017, *see* Chart 12, below). The data indicate that although they are not perfect substitutes, investors see the two capital markets as fundamentally related.

Chart 10: Relative Performance (S&P/TSX Composite Index and S&P 500 Index)[56]

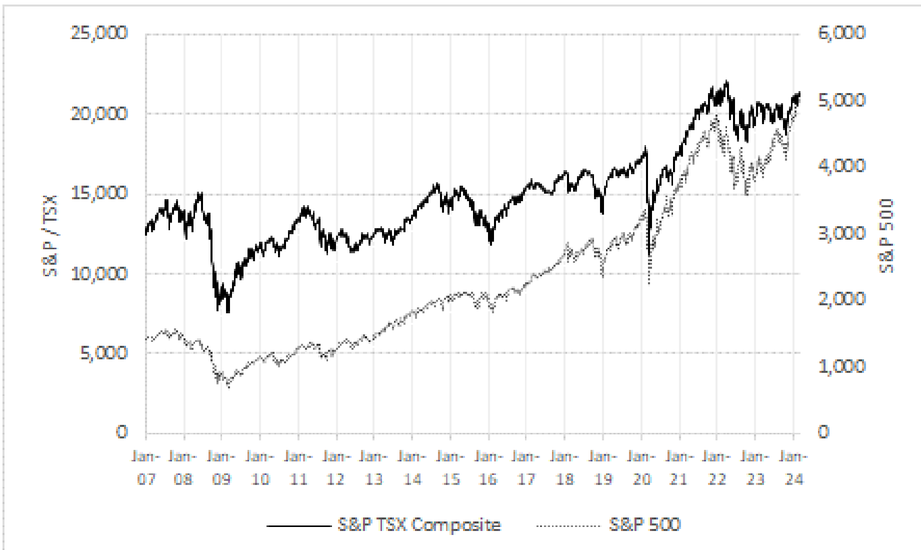
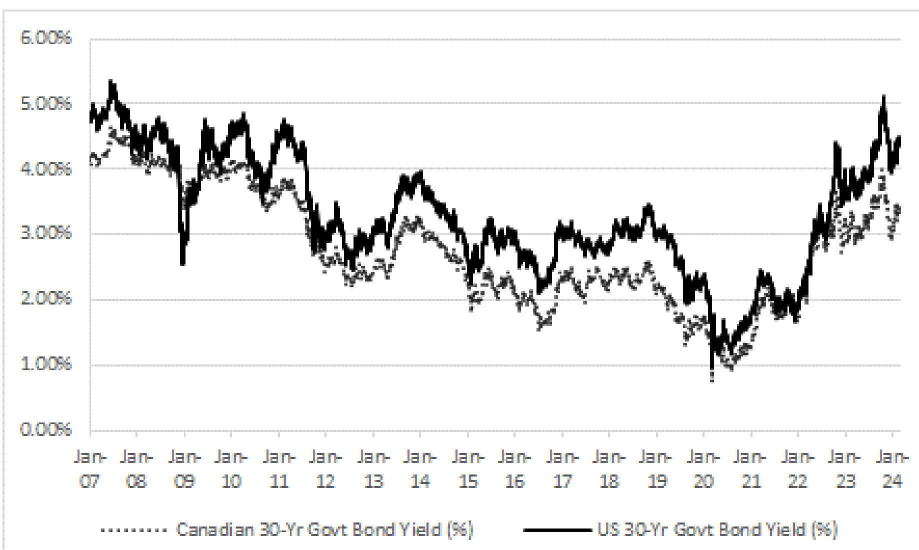
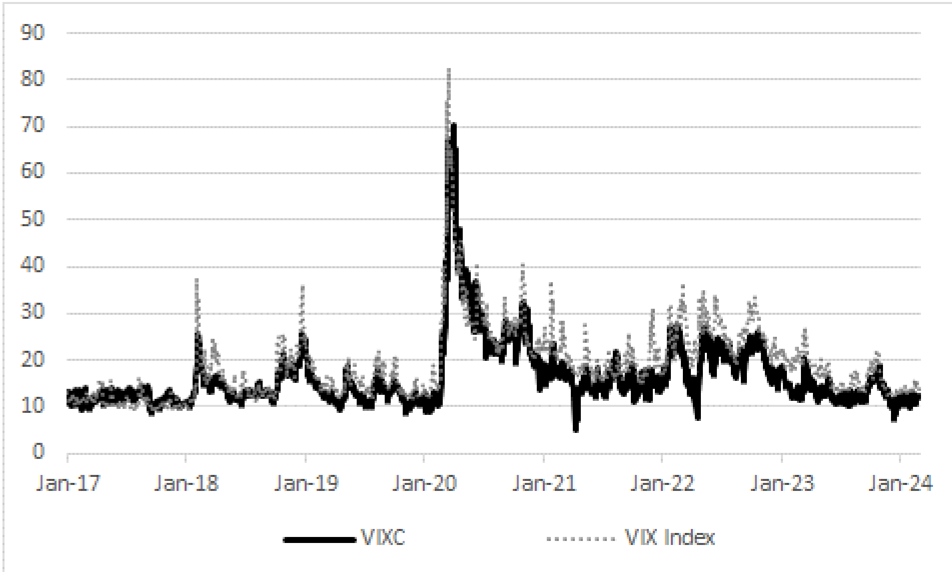


Chart 11: Thirty-Year Canadian and U.S. Government Bond Yields[57]



56 Source: S&P Capital IQ.
57 Source: Bloomberg Professional Service.

<u>Chart 12: Relative Performance (VIXC/VIX) 2017-2024[58]</u>



The capital market interdependence reflected in Charts 10 through 12 is reinforced given the foreign direct investment between Canada and the U.S., which is also highly linked. In *Canada and the United States: Trade, Investment, Integration and the Future*,[59] Blayne Haggart noted that investment flows between Canada and the U.S. have become greatly liberalized, with U.S. investors being the largest foreign investor in Canada.[60] As Chart 13 below indicates, U.S. direct investment in Canada for the seven years ended 2022 averaged slightly more than 45.37% of total foreign direct investment in Canada.

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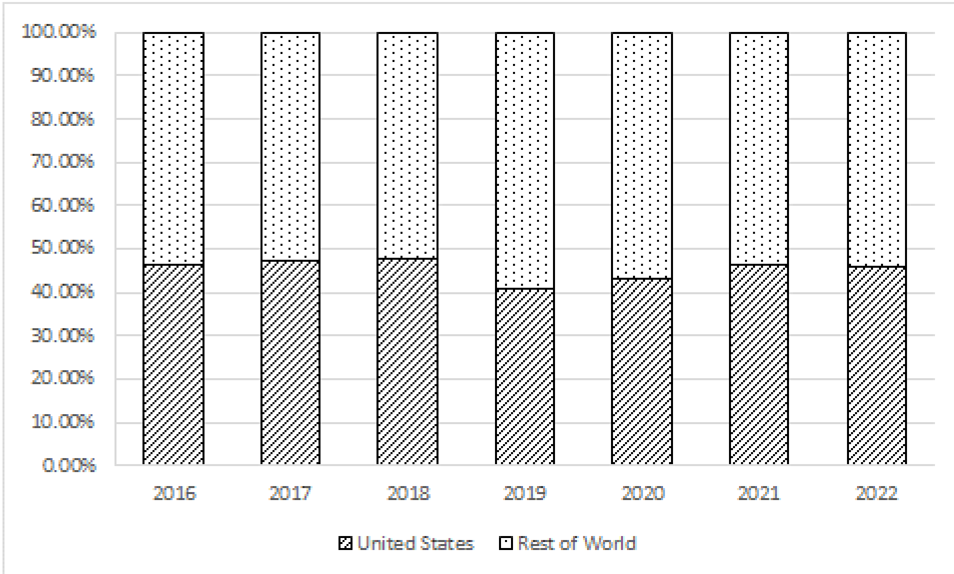
[58] Source: S&P Capital IQ.

[59] Blayne Haggart, *Canada and the United States: Trade, Investment, Integration and the Future*, Economics Division, Library of Parliament, Parliamentary Research Branch, April 2, 2001 (revised August 28, 2001) PRB 01-3E. Please note that the recent data discussed in this section continues to support Haggart's perspective.

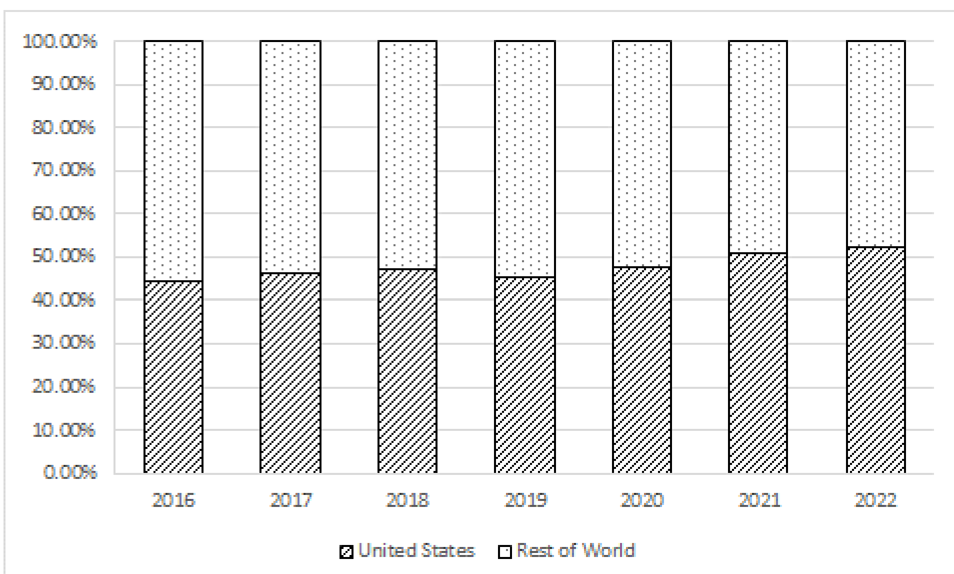
[60] *Ibid*., at 14.

Chart 13: Foreign Direct Investment in Canada (2016-2022)[61]



Likewise, Canadian direct investment in the U.S. constitutes a significant amount of total Canadian direct investment abroad, averaging approximately 47.76% for the seven years ended 2022.

Chart 14: Canadian Direct Investment Abroad (2016-2022)[62]



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61 Source: Statistics Canada.

62 Source: Statistics Canada.

Given the level of direct investment between Canada and the U.S., it is not surprising that their capital markets continue to move in tandem. As such, it would be impractical to not consider U.S. proxy companies as U.S. capital market data, which is subsumed by the market data of U.S. companies, is considered by Canadian investors. Likewise, to the extent that investors in the Canadian proxy group are based in the U.S., which is a natural conclusion given Chart 13, those investors would consider U.S. companies as alternative investment opportunities.

In view of the forgoing, the economies and capital markets of Canada and the U.S. remain highly integrated and interdependent. Because the cost of common equity represents an opportunity cost, Canadian utility investors also consider U.S. utility investments in their decisions. In my view, it therefore is reasonable to consider U.S. utility companies as relevant proxies for EWS.

The use of U.S. and Canadian utilities in an ROE analysis reflects the financial principles of risk and return and the fact that both economies are interdependent. As the subject utility in this report is engaged solely in providing regulated wastewater utility services, I believe it is imperative to place primary weight on the results of the U.S. Water Utility Proxy Group, as these companies are more comparable to EWS operationally.

V. COST OF COMMON EQUITY ANALYSES

As mentioned above, I will employ three cost of common equity models, the DCF, RPM, and CAPM, to the proxy groups identified above. As discussed in Section III, each method used to estimate the cost of common equity is subject to assumptions that become more, or less, applicable as market conditions change. The following sections discuss the methods used to estimate EWS's cost of common equity, how those methods were applied, and how their results should be considered.

i. *Discounted Cash Flow Model*

The Theoretical Basis of the DCF Model

The theoretical basis of the DCF model is that the value of an investment is measured by the net present value of the cash flows derived from its ownership. As it relates to common stock, the market price equals the present value of cash flows associated with the ownership of that stock.

Under that construct, the cost of common equity is the discount rate that sets the stock's current market price equal to the present value of its expected cash flows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_\infty}{(1+k)^\infty} \quad \text{Equation [1]}$$

where P_0 represents the current stock price, $D_1 \ldots D_\infty$ represent expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the familiar form:

$$k = \frac{D(1+g)}{P_0} + g \quad \text{Equation [2]}$$

Equation [2] often is referred to as the "constant growth DCF" model, in which the first term is the expected dividend yield and the second term is the expected long-term growth rate. The constant growth DCF model requires several assumptions, including:

(1) Earnings, book value, and dividends all grow at the same, constant rate in perpetuity;
(2) The dividend payout ratio remains constant in perpetuity;
(3) The price-to-earnings ("P/E") ratio remains constant in perpetuity;
(4) The discount rate is greater than the expected growth rate; and
(5) The estimated cost of common equity remains constant in perpetuity.

Because all assumptions are held constant in perpetuity, the market price at any point in the future is based on assumptions established in the present. Consequently, the holding period does not matter; the DCF result will be the same under any assumed horizon. The implication is that the model effectively assumes the market conditions in place when the stock is bought will remain in place in perpetuity.

Constant Growth DCF Model

Dividend Yield

I calculated the dividend yield by dividing each proxy group company's annualized dividend at February 29, 2024 by their 60-trading day average stock price ending February 29, 2024. It has been my practice to use an averaging period to avoid any biases that may arise from anomalous or transitory events. At the same time, the averaging period should be reasonably representative of expected capital market conditions over the long term. In my view, the use of the 60-trading day averaging period reasonably balances those concerns. As Morin notes:

> Average stock prices are appropriate during volatile market periods, when stock prices experience large random fluctuations. Visual inspection of a chart of daily closing prices over the last few weeks should reveal whether the current stock price…is an outlier.[63]

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

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. Since the various proxy group companies increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. Because the dividend should be representative of the next 12-month period, my adjustment is a conservative approach that does not overstate the dividend yield. Therefore, the actual average dividend yields in Column 1 on pages 2 and 3 of Schedule 2 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Growth Rates

Investors with more limited resources than institutional investors are likely to rely on widely available financial information services, such as *Value Line*, Zacks, Yahoo! Finance, and S&P Capital IQ. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as companies' abilities to effectively manage the effects of changing laws and regulations, and ever-changing economic and market conditions. For these reasons, I used analysts' five-year forecasts of EPS growth in my DCF analysis.

Over the long run, there can be no growth in dividends per share ("DPS") without growth in EPS. Security analysts' earnings expectations have a more significant influence on market prices than dividend expectations. Thus, using projected earnings growth rates in a DCF analysis

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[63] Morin, at 356.

provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF.

Regarding the use of analysts' growth rate projections, there is considerable evidence they have significant influence on market prices.[64] As noted by Morin:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of g. [65]

The use of security analysts' EPS growth rate forecasts therefore provides the proper match between investors' expectations of market price appreciation, and the growth rate component of the DCF model.

The relationship between various growth rates and stock valuation metrics has been the subject of considerable academic research.[66] In a March 1990 speech before the Institute for Quantitative Research and Finance, Myron Gordon recognized the significance of analysts' EPS forecasts:

> We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks[…] estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg.
>
> * * *
>
> Eq (7) is not as elegant as Eq (4), but it has a good deal more intuitive appeal. It says that investors buy earnings, but what they will pay for a dollar of earnings increases with the extent to which the earnings are reflected in the dividend or in appreciation through growth.[67]

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[64] Morin, at 371-380.

[65] Morin, at 371.

[66] *See*, for example, Harris, Robert, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management, Spring 1986.

[67] Myron J. Gordon, *The Pricing of Common Stocks*, Presented before the Spring 1990 Seminar, March 27, 1990 of the Institute for Quantitative Research in Finance, Palm Beach Fl., at 12, 14.

Professor Gordon recognized that the total return is largely affected by the terminal price, which is mostly affected by earnings (for example, in the context of P/E multiples). Subsequent academic research clearly and consistently has indicated that measures of earnings and cash flow are strongly related to returns, and that analysts' forecasts are superior to other measures of growth in explaining stock prices.[68] For example, Vander Weide and Carleton state that, "[our] results…are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy-and-sell decisions."[69]

Other research specifically notes the importance of analysts' growth estimates in determining the cost of common equity, and in the valuation of equity securities. Dr. Robert Harris noted that "a growing body of knowledge shows that analysts' earnings forecasts are indeed reflected in stock prices." Citing Cragg and Malkiel, Dr. Harris notes that those authors "found that the evaluations of companies that analysts make are the sorts of ones on which market valuation is based."[70] Similarly, Brigham, Shome and Vinson noted that "evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts."[71]

To that point, the research of Vander Weide and Carleton demonstrates that whereas earnings growth projections have a statistically significant relationship to stock valuation levels, dividend growth projections do not. Those findings indicate investors form their investment decisions based on expectations of growth in earnings, not dividends. Consequently, earnings growth, not dividend growth, is the appropriate estimate in the constant growth DCF model.

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68 See, for example, Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts Growth Forecasts*, Financial Management, 21 (Summer 1992); and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management, Spring 1988.

69 Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management, Spring 1988, at 81.

70 Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management, Spring 1986, at 59.

71 Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management, Spring 1985, at 36.

Studies performed by Cragg and Malkiel[72] demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. Although some question the accuracy of analysts' projections, it does not matter well after the fact whether or not those forecasts were accurate. What matters is the forecasts reflect widely held expectations influencing investors at the time they make asset pricing decisions, i.e. the market prices investors are willing to pay.

Summary of DCF Results

In arriving at a conclusion for the constant growth DCF-indicated common equity cost rate for the two proxy groups, I relied on an average of the mean and the median results of the DCF. This approach considers all the individual proxy utilities' results from within their respective proxy groups, while mitigating the high and low outliers of those individual results. The constant growth DCF results are summarized in Table 7, below (*see also* Schedule 2).

Table 7: Constant Growth DCF Results

	Mean	**Median**	**Average of Mean and Median**
Canadian Utility Proxy Group	9.49%	8.98%	9.24%
U.S. Water Utility Proxy Group	9.89%	10.10%	10.00%

As shown on Table 7, the average result of the constant growth DCF model, as applied to the Canadian Utility Proxy Group results in mean and median cost rates of 9.49% and 8.98%, respectively. The DCF model as applied to the U.S. Water Utility Proxy Group, is 9.89%, while the median result is 10.10%. My indicated ROE using the DCF model is the average of the mean and median results, or 9.24% and 10.00% for the Canadian and U.S. Water Utility and Canadian Utility Proxy Groups, respectively.

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72 John G. Cragg, and Burton G. Malkiel, Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.

ii. ***Risk Premium Model***

Theoretical Basis of the Risk Premium Model

The RPM is based on the fundamental financial principle of risk and return; namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are behind debt holders in any claim on a company's assets and earnings. As a result, investors require higher returns from common stocks than from bonds to compensate them for bearing the additional risk.

While it is possible to directly observe bond returns and yields, investors' required common equity returns cannot be directly determined or observed. According to RPM theory, one can estimate an equity risk premium ("ERP") over bonds (either historically or prospectively) and use that premium to derive an indicated ROE. The cost of common equity equals the expected cost rate for long-term debt capital, plus a risk premium over that cost rate, to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings upon liquidation.

Total Market Approach Risk Premium Model

The total market approach RPM adds a prospective public utility bond yield to an average of: (1) an ERP that is derived from a beta-adjusted total market ERP, (2) an ERP based on the S&P Utilities Index/TSX Capped Utilities Index; and (3) an ERP based on authorized ROEs for U.S. utilities.

The first step in the total market approach RPM analysis is to determine the expected bond yield.[73] Because both ratemaking and the cost of capital, including the common equity cost rate, are prospective in nature, a prospective yield on similarly-rated long-term debt is essential. Because I am unaware of any publication that provides forecasted public utility bond yields, I relied on a consensus forecast of about 50 economists of the expected yield on Aaa-rated corporate bonds for the six calendar quarters ending with the second calendar quarter of 2025, and *Blue Chip Financial Forecast's ("Blue Chip")* long-term projections for 2025 to 2029, and 2030 to 2034.

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[73] For purposes of the total market approach RPM, I will be calculating the expected yield on A3-rated Canadian Utility bonds and A3-rated U.S. Utility bonds, consistent with the average bond rating of the Canadian and U.S. Water Utility Proxy Groups, respectively.

As shown on line 1, page 1 of Schedule 3, the average expected yield on Moody's Investor Service ("Moody's") Aaa-rated corporate bonds is 4.90%.

Because the 4.90% estimate represents an Aaa-rated U.S. corporate bond yield and not an A/A2-rated utility bond yield, I adjusted the expected Aaa-rated U.S. corporate bond yield to an equivalent A/A2-rated utility bond yield. The recent spread between Aaa-rated U.S. corporate bond yield and an A-rated Canadian utility bond yield is negative 0.22% and the recent spread between Aaa-rated corporate bond yields and A2-rated U.S. utility bond yields is 0.61%. Adding those spreads to the Aaa-rated U.S. corporate bond yield results in a Canadian A-rated utility bond yield of 4.68% and A-rated U.S. utility bond yield of 5.51%.

Since the average Moody's credit rating of the Canadian Utility Proxy Group is A3, I need to reflect the difference in risk between A2-rated Canadian utility bonds and A3-rated Canadian utility bonds. To reflect that risk, I must adjust the A2-rated Canadian utility bond yield to an A3-rated Canadian utility bond. The recent spread between BBB and A-rated Canadian utility bond yields is 0.51%. Taking one-third of that spread results in a prospective A3-rated Canadian public utility bond yield of 4.85%. Since the average credit rating of the U.S. Water Utility Proxy Group is also A3, a similar adjustment needs to be made to their 5.51% prospective A2-rated bond yield. The recent spread between Baa2- and A2-rated U.S. utility bond yields is 0.24%. Applying one-third of that spread results in a prospective A3-rated U.S. utility bond yield of 5.58%. The summary of each proxy group's indicated bond yield is summarized in Table 8, below:

Table 8: Summary of the Calculation of Each Proxy Group's Indicated Bond Yield[74]

	Canadian Utility	U.S. Water Utility
Prospective Yield on U.S. Aaa-Rated Corporate Bonds	4.90%	4.90%
Adjustment to Reflect Yield Spread Between Aaa-Rated Corporate Bonds and A/A2-Rated Public Utility Bonds	-0.22%	0.61%
Prospective Yield on A/A2-Rated Public Utility Bonds	4.68%	5.51%
Adjustment to Reflect Bond Rating Difference of the Utility Proxy Group	0.17%	0.08%
Prospective Bond Yield Applicable to the Utility Proxy Group	4.85%	5.59%

To develop the total market approach RPM estimate of the appropriate ROE, these prospective bond yields are then added to the average of three different ERPs: (1) the beta-derived ERP; (2) the utility-specific ERP; and (3) the authorized return ERP, which I now discuss, in turn.

Beta-Derived Equity Risk Premium

The components of the beta-derived RPM are: (1) an expected market ERP over corporate bonds, and (2) the beta. The derivation of the beta-derived ERP that I applied to the proxy goups are shown on lines 1 through 5, page 7 of Schedule 3. The total beta-derived ERP uses projected returns on the S&P TSX Composite and the S&P 500, and projected Canadian and U.S. corporate bond yields, to determine a market ERP. That market ERP is then adjusted by the betas of each proxy group to determine the prospective ERP applicable to the respective proxy groups.

Using data from Bloomberg, *Value Line*, and S&P Capital IQ, I calculated expected total returns for the S&P TSX Composite and the S&P 500 using expected dividend yields as a proxy for income returns and long-term growth estimates as a proxy for capital appreciation. The expected total returns for the S&P TSX Composite and the S&P 500 are 14.51% and 14.35%, respectively. Subtracting the prospective yields on Canadian and U.S. Aa/Aaa-rated corporate bonds of 4.63%[75] and 4.90% result in 9.88% and 9.45% projected ERPs, respectively.

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74 As shown on page 1 of Schedule 3.

75 Calculated as the forecasted U.S. Aaa-rated corporate bonds (4.90%) less the spread between U.S. Aaa-rated corporate bonds and Canadian Aa-rated corporate bonds (0.27%).

After calculating average market ERPs of 9.88% and 9.45%, I adjusted it by the betas of the proxy groups to account for the risk of the respective proxy groups. As discussed below, beta is a meaningful measure of prospective relative risk to the market as a whole, and is a logical way to allocate a company's, or proxy group's, share of the market's total ERP relative to corporate bond yields. As shown on pages 1 and 2 of Schedule 4, the averages of the mean and median beta for the Canadian Utility Proxy Group and the U.S. Water Utility Proxy Group are 0.70 and 0.80, respectively. Multiplying the betas by their respective market ERPs of 9.88% and 9.45%, respectively, result in a Canadian beta-adjusted ERP of 6.92% and a U.S. Water beta-adjusted ERP of 7.56%.

S&P/TSX Capped Utilities Index and S&P Utility Index Equity Risk Premium

As done for the S&P TSX Composite and the S&P 500, using dividend and EPS growth rate data from Bloomberg, *Value Line*, and S&P Capital IQ, I calculated projected total returns of the S&P/TSX Capped Utilities Index and the S&P Utility Index. Because the calculated S&P/TSX Capped Utilities Index projected total return exceeded the projected total return of the S&P TSX Composite Index, I chose to exclusively rely on the S&P Utility Index projected total return of 10.36%. Subtracting the prospective A/A2-rated Canadian/U.S. public utility bond yields of 4.68% and 5.51% results in equity risk premiums of 5.68% and 4.85%, respectively.

Bond Yield Plus Risk Premium Based on Authorized Returns for U.S. Water Utility Companies

The ERP based on authorized returns reflects the tendency of the ERP to change inversely with interest rates as discussed in the financial literature on the subject.[76] That is, as interest rates fall, the ERP increases; the converse also is true. A consequence of that relationship is that although the cost of common equity generally is a positive function of interest rates, the two do not move in lockstep. That finding is important, especially when interest rates have been volatile, reaching secular lows, then rebounding from them. The inverse relationship between ERPs and

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[76] *See*, *e.g.*, Robert S. Harris and Felicia C. Marston, *The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts*, Journal of Applied Finance, Vol. 11, No. 1, 2001, at pages 11 to 12; Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management, Spring 1985, at pages 33 to 45.

interest rates has been acknowledged by the OEB,[77] the AUC,[78] and in previous reports presented before the Utility Committee.

Although my analyses rely on authorized returns to estimate the relationship between interest rates and the ERP, please note that I am not using U.S. authorized returns as a benchmark in isolation – I use them as a proxy for required market returns to estimate the relationship between the ERP and interest rates.

Used in that context, I believe authorized returns are a reasonable input. In my practical experience investors consider a broad range of data, including returns authorized in other jurisdictions, in establishing their return requirements.

As noted earlier, the practice of finance involves the efficient allocation of capital. Equity investors have many options available to them, and allocate their capital based on the expected risks and returns associated with those alternatives. The regulatory orders establishing the cost of common equity, in addition to regulation being the substitute for market competition, often discuss at length the issues surrounding the application and interpretation of market-based models. Because authorized ROEs reflect prevailing market conditions during each rate case and results of multiple market-based models, it is reasonable to use authorized returns to estimate the relationship between interest rates and the ERP. As Morin notes:

> [a]llowed risk premiums are presumably based on the results of market-based methodologies presented to regulators in rate hearings and on the actions of objectives unbiased investors in a competitive marketplace. [79]

With those points in mind, I defined the ERP as the difference between the authorized ROE from fully litigated cases[80] and the then-prevailing level of long-term A2-rated utility bond yields. I then gathered data for 2,069 U.S. electric and gas rate proceedings between January 1980 and

[77] Ontario Energy Board, EB-2009-0084, Report of the Board on the Cost of Capital for Ontario's Regulated Utilities, December 11, 2009, at p. 36-37. The derivation of the OEB's ROE formula explicitly recognizes the inverse relationship as it contains an ROE adjustment factor based on 0.5 times the change in the Long Canada Bond from the base period.

[78] Decision 27084-D02-2023, Determination of the Cost-of-Capital Parameters in 2024 and Beyond, at para. 105 (October 9, 2023)

[79] Morin, at 139.

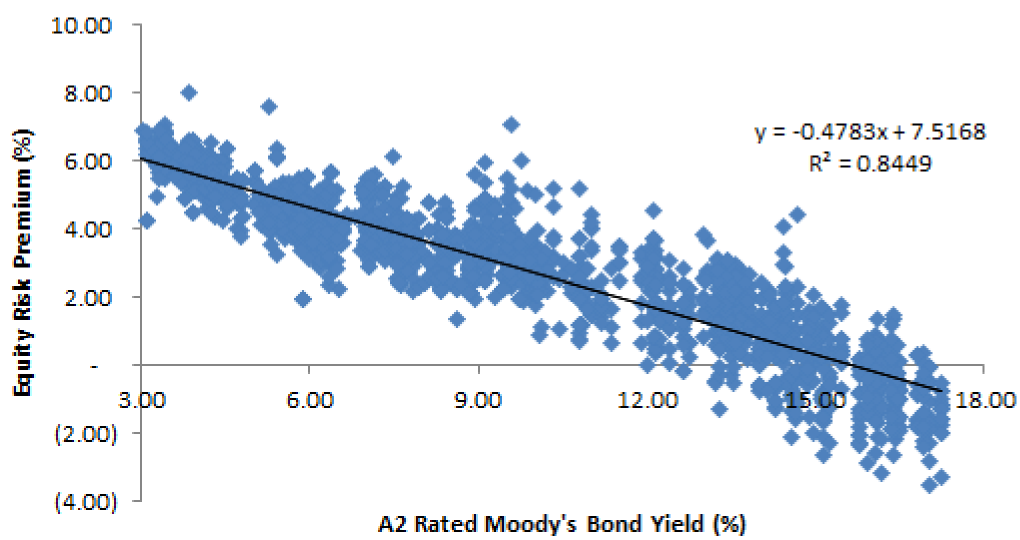
[80] Please note I excluded returns associated with "Limited Issue Rate Riders", such as those resulting from incentive returns provided in Virginia, and "Settled" cases.

February 29, 2024, as reported by Regulatory Research Associates, as well as 56 U.S. water rate proceedings between July 2008 and February 29, 2024, also reported by Regulatory Research Associates.

Please note that a similar analysis could not be performed for Canadian returns because Regulatory Research Associates only reports U.S. authorized returns. However, given the integration of Canadian and U.S. markets,[81] I believe the relationship between interest rates and electric and natural gas industry ERPs using authorized ROEs can reasonably be applied using Canadian utility bond yields to develop an estimate of the Canadian specific cost of common equity.

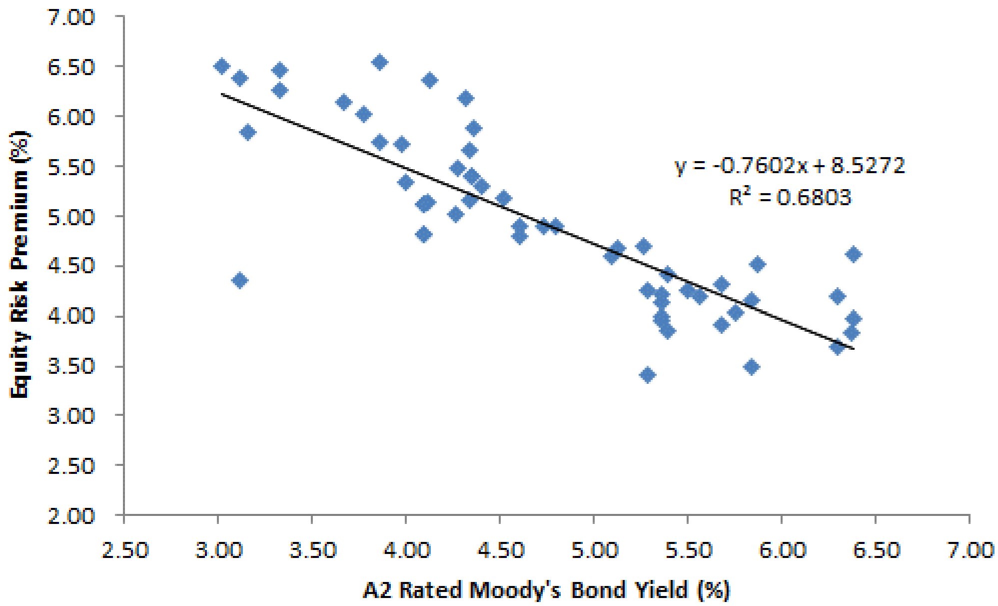
I modeled the relationship between interest rates and the ERP using regression analysis, in which the observed ERP is the dependent variable, and the average A-rated Public Utility bond is the independent variable. That is, the analysis considers the relationship between authorized returns and prevailing public utility bond yields at the time of the decision.

<u>Chart 15: Equity Risk Premium Based on Authorized Returns for U.S. Electric and Gas Utilities</u>



[81] As detailed in Section IV, above.

Chart 16: Equity Risk Premium Based on Authorized Returns for U.S. Water Utilities



As Charts 15 and 16 demonstrate, it is discernible that there is an inverse relationship between the yield on A2-rated public utility bonds and equity risk premiums. I used the regression results to estimate the ERP applicable to the projected yield on A2-rated Canadian public utility bond yields and A2-rated U.S. public utility bonds. Given an expected A2-rated Canadian public utility bond yield of 4.68%, it can be calculated that the indicated electric and gas ERP applicable to that bond yield is 5.28%. Given an A2-rated U.S. public utility bond of 5.51%, an indicated water ERP of 4.34% results.

The ERPs I applied were 5.96% (Canadian Utility Proxy Group) and 5.58% (U.S. Water Utility Proxy Group), which averaged the beta-adjusted equity risk premium, the utility-specific equity risk premium, and the authorized return ERPs as shown on Table 9, below:

Table 9: Summary of the Indicated Equity Risk Premium[82]

Equity Risk Premium	Canadian Utility Proxy Group	U.S. Water Utility Proxy Group
Beta-Adjusted Equity Risk Premium	6.92%	7.56%
Utility-Specific Equity Risk Premium	5.68%	4.85%
Authorized Return Equity Risk Premium	5.28%	4.34%
Average Risk Premium	5.96%	5.58%

Summary of RPM Results

As shown on line 7, page 1 of Schedule 3 and shown on Table 10, below, I calculated indicated common equity cost rates of 10.81% and 11.17% for the Canadian and U.S. Water Utility Groups, respectively, based on the total market approach.

Table 10: Summary of Indicated Cost Rate Using the Risk Premium Model[83]

	Canadian Utility Proxy Group	U.S. Water Utility Proxy Group
Prospective Utility Bond Applicable to the Utility Proxy Group	4.85%	5.59%
Prospective Equity Risk Premium	5.96%	5.58%
Indicated Cost of Common Equity	10.81%	11.17%

iii. ***Capital Asset Pricing Model***

The Theoretical Basis of the CAPM

CAPM theory defines risk as the co-variability of a security's returns with the market's returns as measured by beta (β). A beta of less than 1.0 indicates lower variability than the market as a whole, while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk (i.e., all non-market or unsystematic risk) can be eliminated through diversification. For example, consider two firms, X and Y, with expected returns, and the expected variation in returns noted in Chart 17, below. Although the two have the same expected return (12.50%), Firm X is far more variable (i.e., uncertain). As such, Firm Y would be considered the riskier investment.

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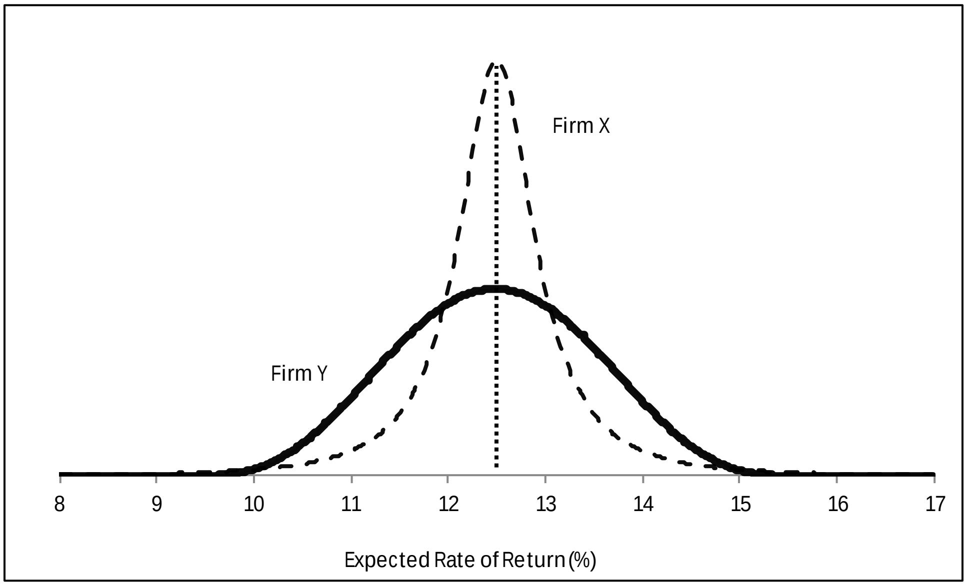
[82] As shown on page 6 of Schedule 3.

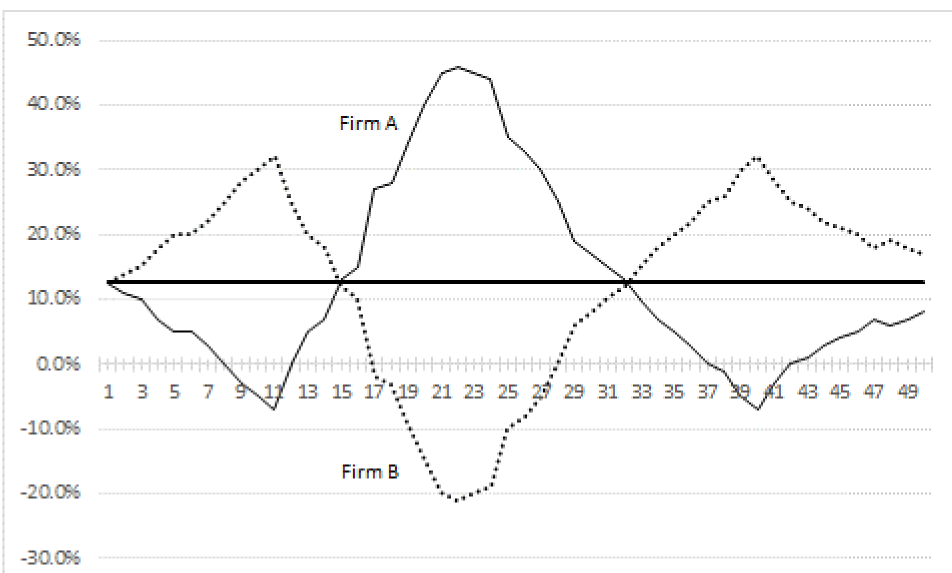
[83] As shown on page 1 of Schedule 3.

Chart 17: Expected Return and Risk



Now consider two other firms, Firm A and Firm B. Both have expected returns of 12.50%, and both are equally risky as measured by their volatility. But as Firm A's returns go up, Firm B's returns go down. That is, the returns are negatively correlated.

Chart 18: Relative Risk



If one were to combine Firms A and B into a portfolio, they would expect a 12.50% return with no uncertainty because their risk profiles counteract each other. That is, the risk can be diversified away. As long as two stocks are not perfectly correlated, the benefits of diversification can be achieved by combining them in a portfolio. The premise of the CAPM is because firms can be combined into a portfolio, the only risk that matters is the risk that remains after diversification, i.e., the "non-diversifiable" risk, which is the result of macroeconomic and other events that affect the returns on all assets.

The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market, as measured by beta. The traditional CAPM model 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; and
	β	=	Adjusted beta (volatility of the security relative to the market as a whole).

Numerous tests of the CAPM have measured the extent to which security returns and beta are related as predicted by the CAPM, confirming its validity. The empirical CAPM ("ECAPM") reflects the reality that while the results of these tests support the notion that beta is related to security returns, the empirical Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML.[84] The ECAPM reflects this empirical reality. Fama and French clearly state regarding Figure 2, below, that "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low."[85]

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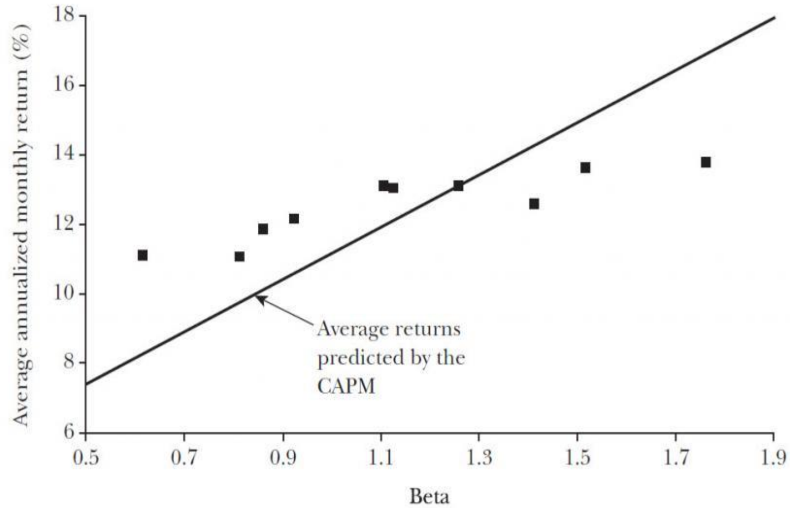
84 Morin, at 220-226.

85 Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence", *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer 2004 at 33 ("Fama & French").

Figure 2 http://pubs.aeaweb.org/doi/pdfplus/10.1257/0895330042162430

Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on Prior Beta, 1928–2003



In addition, Morin observes that while the results of these tests support the notion that beta is related to security returns, the empirical SML described by the CAPM formula is not as steeply sloped as the predicted SML. Morin states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.[86]
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1\text{-}x)\ \beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship [is] Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\ \beta(R_M - R_F)$$[87]

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[86] Morin, at 207.

[87] Morin, at 221.

Fama and French provide similar support for the ECAPM when they state:

> The early tests firmly reject the Sharpe-Lintner version of the CAPM. There is a positive relation between beta and average return, but it is too 'flat.'… The regressions consistently find that the intercept is greater than the average risk-free rate… and the coefficient on beta is less than the average excess market return… This is true in the early tests… as well as in more recent cross-section regressions tests, like Fama and French (1992).[88]

Finally, Fama and French further note:

> Confirming earlier evidence, the relation between beta and average return for the ten portfolios is much flatter than the Sharpe-Linter CAPM predicts. The returns on low beta portfolios are too high, and the returns on the high beta portfolios are too low. For example, the predicted return on the portfolio with the lowest beta is 8.3 percent per year; the actual return as 11.1 percent. The predicted return on the portfolio with the highest beta is 16.8 percent per year; the actual is 13.7 percent.[89]

Research from Dianna R. Harrington also supports the use of the ECAPM. Harrington summarizes studies on the predicted results of the CAPM versus the actual returns in her text Modern Portfolio Theory & the Capital Asset Pricing Model:

> So far we have learned some very interesting things about the CAPM and reality. Some of the earliest work tested realized data (history) against data generated by simulated portfolios. Early studies by Douglas (1969) and Lintner (Douglas [1969]) showed discrepancies between what was expected on the basis of the CAPM and the actual relationships that were apparent in the capital markets. Theoretically, the minimal rate of return from the portfolios (the intercept) and the actual risk-free rate for the period should have been equal. They were not.
>
> * * *
>
> Another study, now more famous than Lintner's was done by Black, Jensen, and Scholes (1972). Lintner had used what is called a cross-sectional method (looking at a number of stock returns during one time period), whereas Black, Jensen, and Scholes used a time-series method (using returns for a number of stocks over several time

88 Fama & French, at 32.
89 Fama & French, at 33.

periods). To make their test, Black, Jensen, and Scholes assumed that what had happened in the past was a good proxy for the investor expectations (a frequent assumption in CAPM tests). Using historical data, they generated estimates using what we call the market model:

$$R_{jt} = \alpha_j + \beta_j (R_{mt}) + \varepsilon_j$$

Where:

R = total returns

β = the slope of the line (the incremental return for risk)

α = the intercept or a constant (expected to be 0 over time and across all firms)

ε = an error term (expected to be random, without information)

m = the market proxy

j = the firm or portfolio

t = the time period

Instead of using single stocks, they formed portfolios in an effort to wash out one source of error; because betas of single firms are quite unstable. On the basis of the CAPM, they expected to find

1. That the intercept was equal to the risk-free rate (their proxy was the Treasury bill rate)

2. That the capital market line had a positive slope and that riskier (higher beta) securities provided higher return

Instead they found

1. That the intercept was different from the risk-free rate

2. That high-risk securities earned less and low-risk securities earned more than predicted by the model

3. That the intercept seemed to depend on the beta of any asset: high-beta stocks had a different intercept than low-beta stocks

* * *

Fama and MacBeth (1974) criticized the Black, Jensen, and Scholes study (hereafter called BJS). In a reformation of the study, they supported the first of the BJS findings. They found that the intercept exceeded the risk-free proxy, but did not find the evidence to support the other BJS conclusions.[90]

Harrington discusses Black's potential solution to this phenomenon:

Black's replacement for the risk-free asset was a portfolio that had no covariability with the market portfolio. Because the relevant risk in the CAPM is systematic risk, a risk-free asset would be the one with no volatility relative to the market – that is, a portfolio with a beta of zero. All investor-perceived levels of risk could be obtained from various linear combinations of Black's zero-beta portfolio and the market portfolio… Since R_z (the rate of return of the zero-beta asset) and R_m are uncorrelated (as R_f and R_m were assumed to be in the simple CAPM), the investor can choose from various combinations of R_z and R_m. On segment R_mY, R_z, is sold short and proceeds are invested in R_m. On segment R_zR_m, portions of the zero-beta portfolio are purchased. At R_m, the investor is fully invested in the market portfolio. The equilibrium CAPM was rewritten by Black as follows:

$$E\,(R_i) = (1 - \beta_i)\,E\,(R_z) + \beta_i E(R_m)$$

Where:

E indicates expected,

$E\,(R_z)$ is less than $E(R_m)$, and

R_z holdings over the whole market must be in equilibrium. That is, the number of short sellers and lenders of securities must be equal.

Black's adaptation is intriguing. The result of using this model is a capital market line that has a less steep slope and a higher intercept than those of the simple CAPM. If Black's model is more correct in its description of investor behavior in the marketplace, then the use of the simple model would produce equity return predictions that would be too low for sticks with betas greater than one and too high for stocks with betas of less than one.[91]

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90 Dianna R. Harrington, Modern Portfolio Theory & the Capital Asset Pricing Model – A User's Guide, Prentice-Hall, Inc. 1983, at 43-45.

91 Dianna R. Harrington, Modern Portfolio Theory & the Capital Asset Pricing Model – A User's Guide, Prentice-Hall, Inc. 1983, at 30-31.

Some analysts argue that using adjusted betas addresses the empirical issues with the CAPM by increasing the expected returns for low beta stocks and decreasing the returns for high beta stocks. They conclude there is no need for the ECAPM approach. I disagree with that conclusion. The use of adjusted betas is not equivalent to the use of the ECAPM. As discussed above, betas are adjusted because of their general regression tendency to converge toward 1.00 over time, i.e., over successive calculations. As also noted earlier, numerous studies have determined that at any given point in time the SML described by the CAPM formula is not as steeply sloped as the predicted SML. To that point, Morin states that:

> Some critics of the ECAPM argue that the use of Value Line adjusted betas in the traditional CAPM amounts to using an ECAPM. This is incorrect. The use of adjusted betas in CAPM analysis is not equivalent to the ECAPM. Betas are adjusted because of the regression tendency of betas to converge toward 1.0 over time. We have seen that numerous empirical studies have determined that the SML, described by the CAPM formula *at any given moment* in time is not as steeply sloped as the predicted SML. The slope of the SML should not be confused with beta.
>
> * * *
>
> The ECAPM corrects for the for the fact that the CAPM under-predicts observed returns when beta is less than one and over-predicts observed returns when beta is greater than one… The two adjustments are not the same and there is no-double counting.[92]

Moreover, the slope of the SML should not be confused with beta. As Brigham and Gapenski state:

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.[12]
>
> [12]Students sometimes confuse beta with the slope of the SML. This is a mistake. As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A, beta does represent the slope of a line, but *not* the Security Market Line. This confusion arises partly because the SML equation is generally written, in this

[92] Morin at 223-224.

> book and throughout the finance literature, as $k_i = R_F + b_i(k_M – R_F)$, and in this form b_i looks like the slope coefficient and $(k_M – R_F)$ the variable. It would perhaps be less confusing if the second term were written $(k_M – R_F)b_i$, but this is not generally done.[93]

Clearly, the justification from Morin, Fama, and French, and Harrington, along with their reviews of other academic research on the CAPM, validate the use of the ECAPM. In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the proxy groups and averaged the results.

Risk-Free Rate of Return

I relied on two measures of the risk-free rate. The first measure is a projected 30-year Government of Canada bond yield, and the second measure is a projected 30-year Treasury bond yield. The Canadian projected risk-free rate of 3.21% is calculated using quarterly forecasts of the 30-year Government of Canada bonds from BMO Economics, CIBC Capital Markets, National Bank of Canada Financial Markets, RBC Capital Markets, Scotiabank Global Economics, and TD Economics from Q1 2024 through Q4 2025. The U.S. risk-free rate of 4.20% is based on the average of the *Blue Chip* consensus forecast of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the second calendar quarter of 2025, and long-term projections for the years 2025 to 2029 and 2030 to 2034.

Yields on long-term Canadian government and U.S. Treasury bonds are considered default-free, and their terms are consistent with the long-term cost of capital to public utilities as measured by yields on A2-rated public utility bonds, the long duration of utility equities, the perpetual horizon assumed in the constant growth DCF model, and the long-term life of the jurisdictional rate base to which the allowed fair rate of return will be applied. In contrast, short-term Government bond yields are more volatile, do not match the duration or life of utility equity and assets, and are greatly influenced by Bank of Canada ("BoC") and Federal Reserve monetary policy.

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93 Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985) at 201-204.

More specifically, the term of the risk-free rate used for cost of capital purposes should match the life (or duration) of the underlying investment (i.e., perpetuity). As noted by Morningstar:

> The traditional thinking regarding the time horizon of the chosen Treasury security is that it should match the time 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.[94]

Morin also confirms this when he states:

> [b]ecause common stock is a long-term investment and because the cash flows to investors in the form of dividends last indefinitely, the yield on very long-term government bonds, namely, the yield on 30-year Treasury bonds, is the best measure of the risk-free rate for use in the CAPM (footnote omitted)… The expected common stock return is based on long-term cash flows, regardless of an individual's holding time period.[95]

Pratt and Grabowski recommend a similar approach to selecting the risk-free rate: "[i]n theory, when determining the risk-free rate and the matching ERP you should be matching the risk-free security and the ERP with the period in which the investment cash flows are expected."[96]

As a practical matter, equity securities represent a perpetual claim on cash flows; 30-year Treasury bonds are the longest-maturity securities available to approximate that perpetual claim. The average life of the Company's utility plant is approximately 35 years based on the composite depreciation rate of the components of their utility plant.[97] Thus, the use of a 30-year Canada bond yield is an appropriate risk-free rate as it reflects the life of the assets it finances.

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[94] Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 44.

[95] Morin, at 169

[96] Shannon Pratt and Roger Grabowski, Cost of Capital: Applications and Examples, 3rd Ed. (Hoboken, NJ: John Wiley & Sons, Inc., 2008), at 92. "ERP" is the Equity Risk Premium.

[97] Composite depreciation rate for EWS is 2.86%; calculated as 1 / 2.86% = 34.97 years.

Beta Coefficients

Typically, I use both *Value Line* and Bloomberg published adjusted betas. However, *Value Line* provides beta for only two of the five Canadian proxy companies. For the companies not covered by *Value Line*, I calculated equivalent betas using the same parameters used by *Value Line* (i.e., five years of weekly return data and the New York Stock Exchange as the market index.)[98]

Betas are measured using an Ordinary Least Squares ("OLS") regression, in which the dependent variable is the return of the subject security, and the independent variable is the return on the market as measured by a given index (*Value Line*, for example, uses the New York Stock Exchange Index). Beta is represented by the slope term of the regression estimates. Intuitively, beta measures the change in the subject company's returns relative to the change in the market return.

The resulting beta is considered "raw" or unadjusted. Unadjusted betas are historical in nature, as they use historical market data. Blume studied the stability of beta over time and found that "[n]o economic variable including the beta coefficient is constant over time."[99] Consistent with that finding, Blume observed a tendency of raw betas to change gradually over time. Blume further stated:

> …there is obviously some tendency for the estimated values of the risk parameter [beta] to change gradually over time. This tendency is most pronounced in the lowest risk portfolios, for which the estimated risk in the second period is invariably higher than that estimated in the first period. There is some tendency for the high risk portfolios to have lower estimated risk coefficients in the second period than in those estimated in the first. Therefore, the estimated values of the risk coefficients in one period are biased assessments of the <u>future values</u>, and furthermore the values of the risk coefficients as measured by the estimates of β_1 tend to regress towards the means with this tendency stronger for the lower risk portfolios than the higher risk portfolios. (emphasis added)[100]

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98 Discussions with *Value Line* revealed that regardless of nationality of the stock, its returns are compared with the NYSE when their betas are calculated.

99 Marshal E. Blume, "On the Assessment of Risk", The Journal of Finance, Vol. XXVI, No. 1, March 1971.

100 *Ibid.*

Blume proposed a correction for this tendency, also known as “regression bias”, which is inherent in the calculation of all betas. He stated:

> In so far as the rate of regression towards the mean is stationary over time, one can in principle correct for this tendency in forming one’s assessments.
>
> * * *
>
> For individual securities as well as portfolios of two or more securities, the assessments adjusted for the historical rate of regression are more accurate than the unadjusted or naïve assessments. Thus, an improvement in the accuracy of one’s assessments of risk can be obtained by adjusting for the historical rate of regression even though the rate of regression over time is not strictly stationary.[101]

Based on Blume’s results, the typical adjustment is calculated based upon an approximate of the following formula:

$$\beta_{adjusted} = 0.35 + .67 x \beta_{raw\ (unadjusted)}$$

This adjustment transforms the historical unadjusted beta into an expectational value, consistent with the expectational nature of the cost of capital.

As noted by Morin:

> Several authors have investigated the regression tendency of beta and generally reached similar conclusions [as Blume]. High-beta portfolios have tended to decline over time toward unity, while low-beta portfolios have tended to increase over time toward unity…He demonstrated that the Value Line adjustment procedure anticipated differences between past and future betas.[102]

Morin further notes:

> A comprehensive study of beta measurement methodology by Kryzanowski and Jalilvand (1983) concludes that raw unadjusted beta (OLS beta) is one of the poorest beta predictors, and is outperformed by the Blume-style Bayesian beta approach. Gombola and Kahl (1990) examine the time-series properties of utility betas

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101 *Ibid.*

102 Morin, at 81.

> and find strong support for the application of adjustment procedures such as the Value Line and Bloomberg procedures.
>
> ***
>
> Because of this observed regressive tendency, a company's raw unadjusted beta is not the appropriate measure of market risk to use. Current stock prices reflect expected risk, that is, expected beta, rather than historical risk or historical beta. Historical betas, whether raw or adjusted, are only surrogates for expected beta. The best of the two surrogates is adjusted beta.[103]

Morin also provides economic and statistical justification for using adjusted betas to estimate the cost of common equity for utilities. Relative to economic justification, he states:

> Adjusted betas compensate for the tendency of regulated utilities to be extra interest-sensitive relative to industrials.[(footnote omitted)] In the same way that bondholders get compensated for inflation through an inflation premium in the interest rate, utility shareholders receive compensation for inflation through an inflation premium in the allowed rate of return. Thus, utility company returns are sensitive to fluctuations in interest rates. Conventional betas do not capture this extra sensitivity to interest rates. This is because the market index typically used in estimating betas is a stock-only index, such as the S&P 500. A focus on stocks alone distorts the betas of regulated companies. The true risk of regulated utilities relative to other companies is understated because when interest rates change, the stocks of regulated companies react in the same way as bonds do. A nominal interest rate on the face value of a bond offers the same pattern of future cash flows as a nominal return applied on a book value rate base. Empirical studies of utility returns confirm that betas are higher when calculated in a way that captures interest rate sensitivity. *The use of adjusted betas compensates for the interest sensitivity of regulated companies.* (*italics added for emphasis)*[104]

Relative to statistical justification, Morin states:

> There is a statistical justification for the use of adjusted betas as well. High-estimated betas will tend to have positive error (overestimated) and low-estimated betas will tend to have negative error (underestimated). Therefore, it is necessary to squash the estimated betas in toward 1.00. One way to accomplish this is by

[103] Morin, at 81-82.
[104] Morin, at 82.

> measuring the extent to which estimated betas tend to regress toward the mean over time. As a result of this beta drift, several commercial beta producers adjust their forecasted betas toward 1.00 in an effort to improve their forecasts. This adjustment, which is commonly performed by investment services such as Value Line, and Bloomberg, uses the formula:
>
> $$\beta_{adjusted} = 1.0 + a(\beta_{raw} - 1.0) \quad (4-3)$$
>
> where "a" is an estimate of the extent to which estimated betas regress toward the mean based on past data. Value Line and Bloomberg betas are adjusted for their long-term tendency to regress toward 1.0 by giving approximately 66% weight to the measured beta and approximately 34% weight to the prior value of 1.0 for each stock, that is, a = 0.66 in the above equation:
>
> $$\beta_{\text{adjusted}} = 1.0 + 0.66\ (\beta_{\text{raw}} - 1.0)$$
>
> $$= 0.33 + 0.66\ \beta_{\text{raw}} \quad (4\text{-}4)$$ [105]

Expected Market Risk Premiums for the Canadian and U.S. Markets

Given the cost of common equity is inherently forward-looking, it is important to ensure that the expected market return, and the associated MRP, likewise are prospective.

For the MRP, I use two measures using both Canadian and U.S. data. The first MRP is a regression analysis of historical monthly return data to calculate a projected MRP given a projected risk-free rate. The second MRP calculates a prospective market return using the DCF model then subtracts a projected risk-free rate to derive a projected MRP.

To derive the regression-based MRPs, I used historical monthly annualized returns of the large Canadian companies relative to long-term BoC bonds and monthly annualized returns of large U.S. companies relative to long-term Treasury bonds. I modelled the relationships between interest rates and the MRP using the observed monthly MRP as the dependant variable, and the monthly yield on the long-term government bond as the independent variable. I then used a linear OLS regression, in which the MRP is expressed as a function of the long-term government bond yield:

[105] Morin, at 82-83.

$$RP = \alpha + \beta (R_f)$$

Given projected Canadian and U.S. long-term government bond yields of 3.21% and 4.20%, MRPs of 4.91% and 8.17% result.

To derive the projected MRPs, using data from Bloomberg, *Value Line,* and S&P Capital IQ, I calculated an expected total return[106] on the S&P TSX Composite and the S&P 500 by applying the constant-growth DCF model to the companies comprising each index. Using dividend yields as a proxy for income returns and long-term projected EPS growth rates as a proxy for capital appreciation, I calculated expected total returns on the Canadian and U.S. markets of 14.51% and 14.35%, respectively. Subtracting prospective Canadian and U.S. long-term government bond yields of 3.21% and 4.20% result in Canadian and U.S.-specific MRPs of 11.30% and 10.15%, respectively.

Averaging both measures of the MRP discussed above results in Canadian and U.S. MRPs of 8.11% and 9.16%, respectively.

Summary of CAPM Results

The indicated common equity cost rates for the proxy groups using the CAPM are shown on Tables 11 and 12, below:

Table 11: CAPM and ECAPM Results for the Canadian Utility Proxy Group[107]

	CAPM	ECAPM	Average
Mean	8.87%	9.48%	9.17%
Median	8.80%	9.43%	9.12%
Average	8.84%	9.46%	9.15%

Table 12: CAPM and ECAPM Results for the U.S. Water Utility Proxy Group[108]

	CAPM	ECAPM	Average
Mean	11.66%	12.09%	11.88%
Median	11.25%	11.78%	11.52%
Average	11.46%	11.94%	11.70%

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106 Total returns to investors are comprised of both income returns (dividends) and capital appreciation.
107 *See*, Schedule 4, page 1.
108 *See*, Schedule 4, page 2.

iv. *Summary of Results of ROE Models Applied to the Proxy Groups*

The results of the application of the constant growth DCF model, the total market RPM, and the traditional and empirical CAPM to the U.S. Water Utility Proxy Group and Canadian Utility Proxy Group are summarized in Table 13, below.

Table 13: Summary of ROE Model Results

	Canadian Utility Proxy Group	U.S. Water Utility Proxy Group
Discounted Cash Flow Model	9.24%	10.00%
Risk Premium Model	10.81%	11.17%
Capital Asset Pricing Model	9.15%	11.70%

Based on the results of the ROE models applied to the U.S. and Canadian Utility Proxy Groups shown on Table 13, above, I recommend a range of ROEs between 10.00% and 11.70%, prior to the inclusion of a flotation cost adjustment.

VI. FLOTATION COST ADJUSTMENT

Flotation costs are part of capital costs, which are properly reflected on the balance sheet under “paid in capital” rather than current expenses on the income statement. Flotation costs are incurred over time, just as investments in rate base or debt issuance costs. As a result, the great majority of flotation costs are incurred prior to the test year, but remain part of the cost structure during the test year and beyond.

It is important to recognize flotation costs in the authorized return on equity because there is no other mechanism in the ratemaking paradigm through which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. Moreover, models such as the RPM, DCF, and CAPM assume no transaction costs. Brigham and Daves confirm that point, providing the method used to calculate the flotation adjustment.[109] Morin also confirms the need for a flotation cost adjustment, even when no new issue is imminent.[110]

[109] Brigham, Eugene F. and Daves, Phillip R., Intermediate Financial Management, (Thomson-Southwestern, 2007), at 342.
[110] Morin, at 330-339.

In its review of the Company's 2017 – 2021 Filing, Grant Thornton noted that "[o]ther key elements in determining a fair return include the estimation of a risk free rate of return as well as estimate of the adjustment required for flotation cost and financial flexibility."[111]

Adding the 50-basis point flotation cost adjustment to the indicated range of ROEs attributable to the U.S. and Canadian Utility Proxy Groups of 10.00% to 11.70% results in a range of ROEs attributable to EWS of 10.50% to 12.20%. From this indicated range, I recommend an ROE of 10.80%. My recommendation also accounts for the fact that the Company is not requesting a continuation of its deferral account mechanism in its application.

VII. CAPITAL STRUCTURE AND COST OF LONG-TERM DEBT

The Company's requested capital structure, which approximates their actual capital structure, consists of 60.00% long-term debt at an embedded debt cost rate of 4.07% and 40.00% common equity is a reasonable capital structure for ratemaking purposes as it is in the lower end of the range of equity ratios maintained by the Canadian Utility and U.S. Water Utility Proxy Groups. The equity ratios of the Canadian Utility Proxy Group range from 32.23% to 45.0%, with an average of 38.32%,[112] and the equity ratios of the U.S. Water Utility Proxy Group range from 40.70% to 61.35%, with an average of 50.27%.[113]

The Company's requested 40.00% deemed equity ratio is consistent with their prior applications, which was not challenged by Grant Thornton in its 2016 review. As noted above regarding financial risk, the more leveraged a company is the higher the investor required ROE, as equity investors are last in line in the event of liquidation. If an equity ratio less than 40% is authorized, a corresponding increase in the ROE is warranted.

VIII. SUMMARY AND CONCLUSION

Based on the data and analyses discussed throughout this Report, I conclude that the ROE models applied to the U.S. and Canadian Utility Groups result in an ROE range of 10.00% to 11.70%.

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111 City of Edmonton, EPCOR Performance Based Regulation 2017-2021 Filing Review, Prepared by Grant Thornton LLP, at p. 127 (September 26, 2016)

112 Page 1 of Schedule 5.

113 Page 2 of Schedule 5.

Including the 50-basis point flotation cost adjustment, the adjusted range of ROEs applicable to EWS is 10.50% through 12.20%, and from that range, I recommend an ROE of 10.80%.

I also recommend that the deemed equity ratio applicable to EWS should remain at 40.00%. My ROE and deemed equity ratio recommendation takes into consideration market-based measures of investor expectations, and satisfies the comparable risk, capital attraction, and financial integrity standards that aligns with the Bylaws of the City of Edmonton, and which other regulatory jurisdictions in Canada and the U.S. are required by law to follow.

EPCOR Water Services Inc.
Table of Contents
Schedules to the Direct Testimony of Dylan W. D'Ascendis

	Schedule
Summary of Cost of Capital and Overall Rate of Return	1
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model	2
Indicated Common Equity Cost Rate Using the Risk Premium Model	3
Indicated Common Equity Cost Rate Using the Capital Asset Pricing Model	4
Capital Structures of the Proxy Groups	5

EPCOR Water Services Inc.
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes

Type Of Capital	Ratios (1)	Cost Rate		Weighted Cost Rate
Long-Term Debt	60.00%	4.07%	(1)	2.44%
Common Equity	40.00%	10.80%	(2)	4.32%
Total	100.00%			6.76%

Notes:
(1) Company provided.
(2) From page 2 of this Schedule.

EPCOR Water Services Inc.
Brief Summary of Common Equity Cost Rate

Line No.	Principal Methods	Results based on Canadian Utility Proxy Group	Results based on U.S. Water Utility Proxy Group
1.	Discounted Cash Flow Model (DCF) (1)	9.24%	10.00%
2.	Risk Premium Model (RPM) (2)	10.81%	11.17%
3.	Capital Asset Pricing Model (CAPM) (3)	9.15%	11.70%
4.	Indicated Common Equity Cost Rate before Adjustment for Unique Risk	10.00% - 11.70%	
5,	Flotation Cost Adjustment	0.50%	
6.	Indicated Common Equity Cost Rate after Adjustment	10.50% - 12.20%	
7.	Recommended Common Equity Cost Rate	10.80%	

Notes:
(1) From page 1 of Schedule 2.
(2) From page 1 of Schedule 3.
(3) From page 1 of Schedule 4.

EPCOR Water Services Inc.
Summary of DCF Models for the Proxy Groups

	Results based on Canadian Utility Proxy Group (1)	Results based on U.S. Water Utility Proxy Group (2)
DCF Result	9.24 %	10.00 %

Notes:
(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.

EPCOR Water Services Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Canadian Utility Proxy Group

Canadian Utility Proxy Group	[1] Average Dividend Yield (1)	[2] Value Line Projected Five Year Growth in EPS	[3] Zack's Five Year Projected Growth Rate in EPS	[4] Yahoo! Finance Projected Five Year Growth in EPS	[5] S&P Capital IQ Five Year Growth in EPS	[6] Average Projected Five Year Growth in EPS (2)	[7] Adjusted Dividend Yield (3)	[8] Indicated Common Equity Cost Rate (4)
Algonquin Power & Utilities Corporation	5.27 %	NA %	NA %	NMF %	NMF %	NA %	NA %	NA %
Canadian Utilities Ltd.	5.81	NA	NA	1.92	NMF	1.92	5.87	7.79
Emera Incorporated	5.87	10.50	NA	3.70	4.29	6.16	6.05	12.21
Fortis, Inc.	4.36	5.00	5.60	2.60	4.71	4.48	4.46	8.94
Hydro One Ltd.	3.00	NA	NA	5.75	6.11	5.93	3.09	9.02
							Average	9.49 %
							Median	8.98 %
							Average of Mean and Median	9.24 %

NA= Not Available
NMF=Not Meaningful Figure

Notes:

(1) Indicated dividend at 02/29/2024 divided by the average closing price of the last 60 trading days ending 02/29/2024 for each company.
(2) Average of columns 2 through 5 excluding negative growth rates.
(3) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for Canadian Utilities Ltd., 5.81% x (1+(1/2 x 1.92%)) = 5.87%.
(4) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 02/29/2024
www.yahoo.com Downloaded on 02/29/2024
S&P Global Market Intelligence

EPCOR Water Services Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
U.S. Water Utility Proxy Group

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
U.S. Water Utility Proxy Group	Average Dividend Yield (1)	Value Line Projected Five Year Growth in EPS	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	S&P Capital IQ Five Year Growth in EPS	Average Projected Five Year Growth in EPS (2)	Adjusted Dividend Yield (3)	Indicated Common Equity Cost Rate (4)
American States Water Company	2.21 %	6.50 %	6.30 %	4.40 %	14.00 %	7.80 %	2.30 %	10.10 %
American Water Works Company, Inc.	2.22	3.00	7.80	7.50	7.88	6.54	2.29	8.83
California Water Service Group	2.29	6.50	NA	10.80	8.00	8.43	2.39	10.82
Essential Utilities Inc.	3.37	7.50	5.60	5.20	6.10	6.10	3.47	9.57
Middlesex Water Company	2.14	5.00	NA	2.70	NA	3.85	2.18	6.03 (5)
SJW Group	2.55	8.00	7.50	7.50	7.00	7.50	2.65	10.15
							Average	9.89 %
							Median	10.10 %
							Average of Mean and Median	10.00 %

NA= Not Available

Notes:

(1) Indicated dividend at 02/29/2024 divided by the average closing price of the last 60 trading days ending 02/29/2024 for each company.
(2) Average of columns 2 through 5 excluding negative growth rates.
(3) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Company, 2.21% x (1+(1/2 x 7.80%)) = 2.30%.
(4) Column 6 + column 7.
(5) Result omitted due to its result being more than two standard deviations away from the mean value.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 02/29/2024
www.yahoo.com Downloaded on 02/29/2024
S&P Global Market Intelligence

EPCOR Water Services Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Canadian Utility Proxy Group		U.S. Water Utility Proxy Group	
1.	Prospective Yield on U.S. Aaa Rated Corporate Bonds (1)	4.90	%	4.90	%
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A/A2 Rated Public Utility Bonds	(0.22)	(2)	0.61	(3)
3.	Adjusted Prospective Yield on A/A2 Rated Public Utility Bonds	4.68	%	5.51	%
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.17	(4)	0.08	(5)
5.	Adjusted Prospective Bond Yield	4.85	%	5.59	%
6.	Equity Risk Premium (6)	5.96		5.58	
7.	Risk Premium Derived Common Equity Cost Rate	10.81	%	11.17	%

Notes:
(1) Consensus forecast of Moody's Aaa Rated U.S. Corporate bonds from Blue Chip Financial Forecasts.
(2) The average yield spread of A rated Canadian Public Utility Bonds over Aaa rated U.S. corporate bonds of -0.22% from page 2 of this Schedule.
(3) The average yield spread of A2 rated U.S. Public Utility Bonds over Aaa rated U.S. corporate bonds of 0.61% from page 2 of this Schedule.
(4) Adjustment to reflect the A3 Moody's LT issuer rating of the Canadian Utility Proxy Group as shown on page 3 of this Schedule. The upward adjustment is derived by taking 1/3 of the spread between Canadian A and BBB Public Utility Bonds of 0.51% from page 2 of this Schedule.
(5) Adjustment to reflect the A3 Moody's LT issuer rating of the U.S. Water Utility Proxy Group as shown on page 4 of this Schedule. The upward adjustment is derived by taking 1/3 of the spread between U.S. A2 and Baa2 Public Utility Bonds of 0.24% from page 2 of this
(6) From page 6 of this Schedule.

EPCOR Water Services Inc.
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1] BBB Rated Canadian Public Utility Bond	[2] A Rated Canadian Public Utility Bond	[3] A Rated Canadian Corporate Bond	[4] AA Rated Canadian Corporate Bond	[5] Baa2 Rated U.S. Public Utility Bond	[6] A2 Rated U.S. Public Utility Bond	[7] Aaa Rated U.S. Corporate Bond
Feb-2024	5.27 %	4.75 %	4.77 %	4.72 %	5.79 %	5.56 %	5.03 %
Jan-2024	5.23	4.73	4.75	4.65	5.73	5.48	4.87
Dec-2023	5.02	4.51	4.53	4.45	5.68	5.42	4.74
Average	5.17 %	4.66 %	4.68 %	4.61 %	5.73 %	5.49 %	4.88 %

Selected Bond Spreads

Canadian A Rated Public Utility Bonds Over U.S. Aaa Rated Corporate Bonds:
(0.22) % (1)

U.S. A2 Rated Public Utility Bonds Over U.S. Aaa Rated Corporate Bonds:
0.61 % (2)

Canadian BBB Rated Public Utility Bonds Over Canadian A Rated Public Utility Bonds:
0.51 % (3)

U.S. Baa2 Rated Public Utility Bonds Over U.S. A2 Rated Public Utility Bonds:
0.24 % (4)

Canadian A Rated Corporate Bonds Over U.S. Aaa Rated Corporate Bonds:
(0.20) % (5)

Canadian AA Rated Corporate Bonds Over U.S. Aaa Rated Corporate Bonds:
(0.27) % (6)

Notes:
(1) Column [2] - Column [7].
(2) Column [6] - Column [7].
(3) Column [1] - Column [2].
(4) Column [5] - Column [6].
(5) Column [3] - Column [7].
(6) Column [4] - Column [7].

Source of Information:
Bloomberg Professional Service

EPCOR Water Services Inc.
Comparison of Long-Term Issuer Ratings for
Canadian Utility Proxy Group

	Moody's		Standard & Poor's	
	Long-Term Issuer Rating February 2024		Long-Term Issuer Rating February 2024	
Canadian Utility Proxy Group	Long-Term Issuer Rating (1)	Numerical Weighting (2)	Long-Term Issuer Rating (1)	Numerical Weighting (2)
Algonquin Power & Utilities Corporation	Baa1/Baa2	8.5	BBB	9.0
Canadian Utilities Ltd.	NR	- -	BBB+	8.0
Emera Incorporated	A3	7.0	BBB	9.0
Fortis, Inc.	A3	7.0	BBB+	8.0
Hydro One Ltd.	A3	7.0	A-	7.0
Average	A3	7.4	BBB+	8.2

Notes:
(1) Ratings are that of the average of each company's regulated operating subsidiaries.
(2) From page 5 of this Schedule.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

EPCOR Water Services Inc.
Comparison of Long-Term Issuer Ratings for
U.S. Water Utility Proxy Group

	Moody's		Standard & Poor's	
	Long-Term Issuer Rating February 2024		Long-Term Issuer Rating February 2024	
U.S. Water Utility Proxy Group	Long-Term Issuer Rating (1)	Numerical Weighting (2)	Long-Term Issuer Rating (1)	Numerical Weighting (2)
American States Water Company	A2	6.0	A+	5.0
American Water Works Company, Inc.	A3	7.0	A	6.0
California Water Service Group	NR	- -	A+	5.0
Essential Utilities Inc.	Baa1	8.0	A	6.0
Middlesex Water Company	NR	- -	A	6.0
SJW Group	NR	- -	A-	7.0
Average	A3	7.0	A	5.8

Notes:
(1) Ratings are that of the average of each company's regulated operating subsidiaries.
(2) From page 5 of this Schedule.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

EPCOR Water Services Inc.
Judgment of Equity Risk Premium for the
Proxy Groups

Line No.		Canadian Utility Proxy Group	U.S. Water Utility Proxy Group
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.92 %	7.56 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A/A2 rated bonds (2)	5.68	4.85
3.	Predicted Equity Risk Premium Based on Regression Analysis of Past Fully-Litigated Gas and Electric Cases using Canadian Prospective A Rated Utility Bond (3)	5.28	NA
4.	Predicted Equity Risk Premium Based on Regression Analysis of Past Fully Litigated Water Cases using U.S. Prospective A2 Rated Utility Bond (4)	NA	4.34
5.	Average equity risk premium	5.96 %	5.58 %

Notes: (1) From page 7 of this Schedule.
(2) From page 8 of this Schedule.
(3) From page 9 of this Schedule.
(4) From page 10 of this Schedule.

EPCOR Water Services Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Groups

Line No.	Equity Risk Premium Measure	Canadian Utility Proxy Group		U.S. Water Utility Proxy Group	
1.	Projected Total Return - TSX and S&P 500 (1)	14.51	%	14.35	%
2.	Consensus Forecast Aa/Aaa Corporate Bonds	4.63	% (2)	4.90	% (3)
3.	Equity Risk Premium Based on Bloomberg TSX and S&P 500 Companies	9.88	%	9.45	%
4.	Adjusted Beta (4)	0.70		0.80	
5.	Forecasted Equity Risk Premium (5)	6.92	%	7.56	%

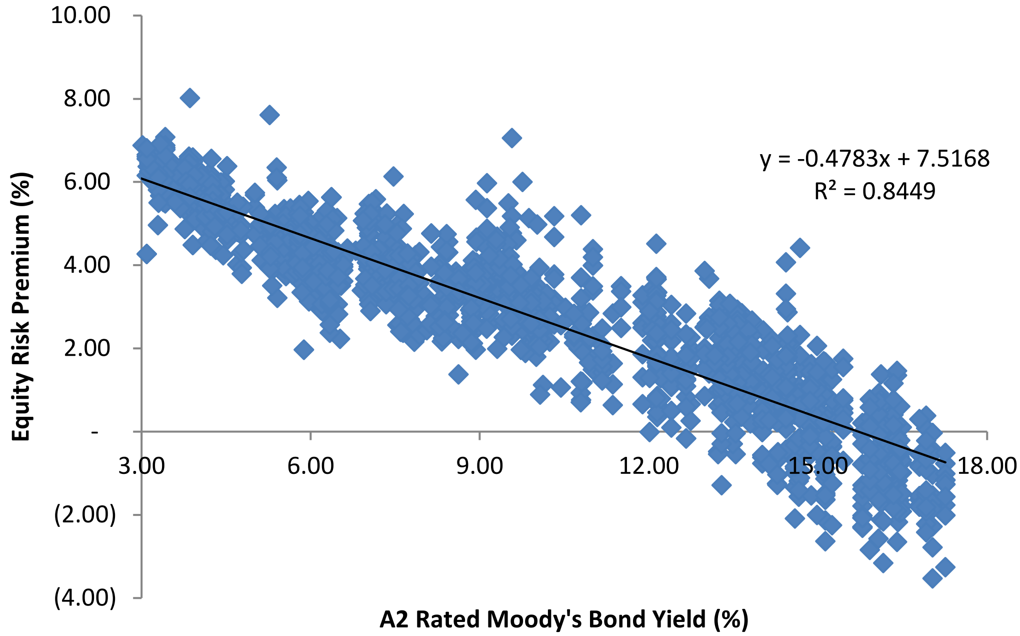
Notes:
(1) Source: Bloomberg Professional Service, Value Line, and S&P Global Market Inteligence.
(2) Calculated as the Prospective Yield on U.S. Aaa Rated Corporate Bonds from page 1 of this Schedule less the spread between U.S. Aaa Rated Corporate Bonds and Canadian Aa Rated Corporate Bonds from Page 2 of this Schedule.
(3) From line 1 of page 1 of this Schedule.
(4) Average of mean and median beta from Schedule 4, pages 1 and 2, respectively.
(5) Line 3 x Line 4.

EPCOR Water Services Inc.
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

Line No.		Results based on Canadian Inputs			Results based on U.S. Inputs	
1.	Projected Total Return on the S&P/TSX Capped Utilities Index and S&P Utilities Index (1)	10.36	%	(2)	10.36	%
2.	Expected A/A2 rated public utility bond yield (3)	4.68			5.51	
3.	Forecasted Equity Risk Premium	5.68	%		4.85	%

Notes:
(1) Source: Bloomberg Professional Service, Value Line, and S&P Global Market Inteligence.
(2) Used S&P Utilities Index because TSX Capped Utilities Index exceeded the required ROE for the TSX.
(3) Calculated on line 3 of page 1 of this Schedule.

EPCOR Water Services Inc.
Prediction of Equity Risk Premiums Relative to
Moody's A2 Rated Utility Bond Yields - Electric and Gas Utilities



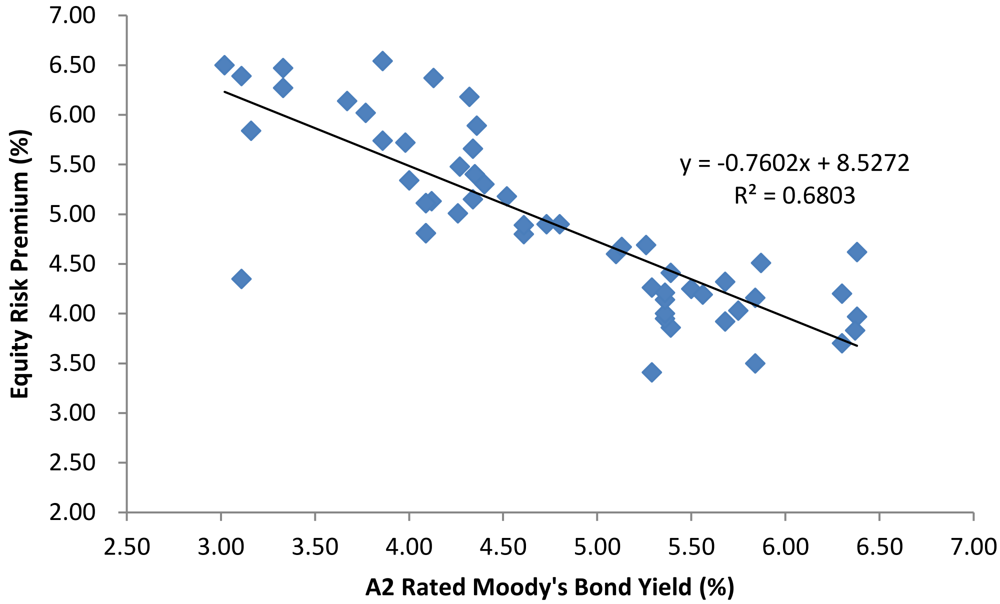
Constant	Slope	Canadian Prospective A Rated Utility Bond (1)	Canadian Prospective Equity Risk Premium
7.5168 %	-0.4783 %	4.68 %	5.28 %

Notes:

(1) From line 3 of page 1 of this Schedule.

Source of Information: Regulatory Research Associates.

EPCOR Water Services Inc.
Prediction of Equity Risk Premiums Relative to Moody's A2 Rated Utility Bond Yields - Water Utilities



Constant	Slope	U.S. Prospective A2 Rated Utility Bond (1)	U.S. Prospective Equity Risk Premium
8.5272 %	-0.7602 %	5.51 %	4.34 %

Notes:
(1) From line 3 of page 1 of this Schedule.

Source of Information: Regulatory Research Associates.

EPCOR Water Services Inc.
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Canadian Utility Proxy Group	Value Line Adjusted Beta	Bloomberg Adjusted Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
Algonquin Power & Utilities Corporation	0.75	0.90	0.83	8.11 %	3.21 %	9.94 %	10.28 %	10.11 %
Canadian Utilities Ltd.	0.73	0.66	0.69	8.11	3.21	8.80	9.43	9.12
Emera Incorporated	0.75	0.68	0.71	8.11	3.21	8.97	9.55	9.26
Fortis, Inc.	0.70	0.59	0.65	8.11	3.21	8.48	9.19	8.83
Hydro One Ltd.	0.60	0.61	0.61	8.11	3.21	8.15	8.95	8.55
Mean			0.70			8.87 %	9.48 %	9.17 %
Median			0.69			8.80 %	9.43 %	9.12 %
Average of Mean and Median			0.70			8.84 %	9.46 %	9.15 %

Notes on page 3 of this Schedule.

EPCOR Water Services Inc.
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
U.S. Water Utility Proxy Group	Value Line Adjusted Beta	Bloomberg Adjusted Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
American States Water Company	0.70	0.74	0.72	9.16 %	4.20 %	10.79 %	11.44 %	11.12 %
American Water Works Company, Inc.	0.95	0.99	0.97	9.16	4.20	13.08	13.15	13.12
California Water Service Group	0.75	0.75	0.75	9.16	4.20	11.07	11.64	11.36
Essential Utilities Inc.	1.00	0.82	0.91	9.16	4.20	12.53	12.74	12.64
Middlesex Water Company	0.75	0.76	0.76	9.16	4.20	11.16	11.71	11.44
SJW Group	0.85	0.70	0.78	9.16	4.20	11.34	11.85	11.60
Mean			0.82			11.66 %	12.09 %	11.88 %
Median			0.77			11.25 %	11.78 %	11.52 %
Average of Mean and Median			0.80			11.46 %	11.94 %	11.70 %

Notes on page 3 of this Schedule.

EPCOR Water Services Inc.
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is derived as illustrated below:

	Canada		U.S.	
Measure 1: Application of a Regression Analysis to Historical Data (1926-2023)	4.91	%	8.17	%
Measure 2: Bloomberg, Value Line, and S&P Global Market Inteligence Projected MRP				
Total return on the Market based on the TSX (Canada) and S&P 500 (U.S.):	14.51	%	14.35	%
Projected Risk-Free Rate (see note 2):	3.21		4.20	
	11.30	%	10.15	%
Average MRP:	8.11	%	9.16	%

(2) For reasons explained in the Report, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Government of Canada Bonds and U.S. Treasury Bonds. The projection of the risk-free rate is illustrated below:

Canada

	BMO	CIBC	National Bank	RBC	Scotia	TD	Average	
2024Q1	3.30	3.40	3.40	3.35	3.40	3.20	3.34	%
2024Q2	3.25	3.40	3.30	3.25	3.30	3.15	3.28	
2024Q3	3.25	3.30	3.20	3.15	3.25	3.15	3.22	
2024Q4	3.20	3.25	3.05	3.05	3.35	3.15	3.18	
2025Q1	3.20	NA	3.10	2.90	3.45	3.15	3.16	
2025Q2	3.15	3.10	3.10	2.95	3.50	3.15	3.16	
2025Q3	3.15	NA	3.10	3.05	3.50	3.15	3.19	
2025Q4	3.10	3.05	3.10	3.10	3.50	3.15	3.17	
							3.21	%

U.S.

First Quarter 2024	4.40	%
Second Quarter 2024	4.30	
Third Quarter 2024	4.20	
Fourth Quarter 2024	4.20	
First Quarter 2025	4.10	
Second Quarter 2025	4.10	
2025-2029	4.10	
2030-2034	4.20	
	4.20	%

(3) Average of Column 6 and Column 7.

Sources of Information:

BMO Rates Scenario, February 2024. Q1 2024 data uses the average of February and March forecast.
CIBC Capital Markets Economic Insights, February 2024. Q1 2024 data uses the average of February and March forecast.
National Bank of Canada Monthly Economic Monitor, February 2024. Only annual forecast available for 2025 which is applied to each quarter.
RBC Financial Markets Monthly, February 2024.
Scotiabank Forecast Tables, February 2024.
TD Economics Latest Forecast Tables January 2024.
Blue Chip Financial Forecasts December 1, 2023 and March 1, 2024.
Stocks, Bonds, Bills, and Inflation - 2023 SBBI Yearbook, Appendix A Tables, Kroll, Inc.
Bloomberg Professional Services, Value Line, and S&P Global Market Inteligence Projected MRP.

EPCOR Water Services Inc.
Capital Structures for Fiscal Year 2022
for the Canadian Utility Proxy Group

	2022	
Algonquin Power & Utilities Corporation		
Long-Term Debt	59.11	%
Preferred Stock	1.44	
Common Equity	39.44	
Total Capital	100.00	%
Canadian Utilities Ltd.		
Long-Term Debt	58.23	%
Preferred Stock	9.54	
Common Equity	32.23	
Total Capital	100.00	%
Emera Incorporated		
Long-Term Debt	58.91	%
Preferred Stock	5.11	
Common Equity	35.98	
Total Capital	100.00	%
Fortis, Inc.		
Long-Term Debt	57.79	%
Preferred Stock	3.26	
Common Equity	38.95	
Total Capital	100.00	%
Hydro One Ltd.		
Long-Term Debt	55.00	%
Preferred Stock	0.00	
Common Equity	45.00	
Total Capital	100.00	%
Average		
Long-Term Debt	57.81	%
Preferred Stock	3.87	
Common Equity	38.32	
Total Capital	100.00	%

Source of Information
Annual Forms 10-K

EPCOR Water Services Inc.
Capital Structures for Fiscal Year 2022
for the U.S. Water Utility Proxy Group

	2022	
American States Water Company		
Long-Term Debt	38.65	%
Preferred Stock	0.00	
Common Equity	61.35	
Total Capital	100.00	%
American Water Works Company, Inc.		
Long-Term Debt	59.29	%
Preferred Stock	0.02	
Common Equity	40.70	
Total Capital	100.00	%
California Water Service Group		
Long-Term Debt	44.39	%
Preferred Stock	0.00	
Common Equity	55.61	
Total Capital	100.00	%
Essential Utilities Inc.		
Long-Term Debt	54.99	%
Preferred Stock	0.00	
Common Equity	45.01	
Total Capital	100.00	%
Middlesex Water Company		
Long-Term Debt	43.33	%
Preferred Stock	0.29	
Common Equity	56.37	
Total Capital	100.00	%
SJW Group		
Long-Term Debt	57.39	%
Preferred Stock	0.00	
Common Equity	42.61	
Total Capital	100.00	%
Average		
Long-Term Debt	49.67	%
Preferred Stock	0.05	
Common Equity	50.27	
Total Capital	100.00	%

Source of Information
Annual Forms 10-K

Dylan W. D'Ascendis
Partner

Summary

Dylan is an experienced consultant and has been awarded the professional designations of Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). Dylan joined ScottMadden in 2016 and is a leading expert witness with respect to cost of capital, capital structure, and valuation. He has served as a consultant for investor-owned and municipal utilities and authorities for 15 years. Dylan has testified as an expert witness on over 150 occasions regarding rate of return, cost of service, rate design, and valuation before more than 40 regulatory jurisdictions in the United States and Canada, an American Arbitration Association panel, and the Superior Court of Rhode Island. He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured. Dylan holds a B.A. in economic history from the University of Pennsylvania and an M.B.A. with concentrations in finance and international business from Rutgers University.

Areas of Specialization

- Expert Witness Testimony
- Rates and Regulation
- Return on Equity
- Valuation
- Utility Regulations
- Rate Case Planning, Management, and Support
- Utility Benchmarking

Recent Articles and Speeches

- "Decoupling, Risk Impacts, and the Cost of Capital." Co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. The Electricity Journal. March 2020
- "Decoupling Impact and Public Utility Conservation Investment." Co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. Energy Policy Journal. 130 (2019), 311-319
- "Establishing Alternative Proxy Groups." Presentation before the Society of Utility and Regulatory Financial Analysts: 51st Financial Forum. April 4, 2019. New Orleans, LA
- "Past Is Prologue: Future Test Year." Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit. May 2, 2017. Savannah, GA
- "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model." Co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley. The Electricity Journal. May 2013
- "Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks." Presentation before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum. April 17-18, 2013. Indianapolis, IN

Recent Assignments

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the city
- Co-authored a valuation report on behalf of a large investor-owned utility in response to a new state regulation which allowed the appraised value of acquired assets into rate base

Sponsor	Date	Case/Applicant	Docket No.	Subject
Regulatory Commission of Alaska				
Alaska Power Company	08/23	Alaska Power Company	Docket No. TA 909-2 / U-23-054	Capital Structure
ENSTAR Natural Gas Company	08/22	ENSTAR Natural Gas Company	Docket No. TA334-4	Rate of Return
Cook Inlet Natural Gas Storage Alaska, LLC	07/21	Cook Inlet Natural Gas Storage Alaska, LLC	Docket No. TA45-733	Capital Structure
Alaska Power Company	09/20	Alaska Power Company; Goat Lake Hydro, Inc.; BBL Hydro, Inc.	Tariff Nos. TA886-2; TA6-521; TA4-573	Capital Structure
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
Alberta Utilities Commission				
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	02/23	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	Proceeding ID. 27084	Determination of Cost-of-Capital Parameters
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	01/20	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	2021 Generic Cost of Capital, Proceeding ID. 24110	Rate of Return
Arizona Corporation Commission				
Foothills Water & Sewer, LLC	10/23	Foothills Water & Sewer, LLC	Docket No. WS-21182A-23-0292	Rate of Return and Fair Value Rate Base
Arizona Water Company	12/22	Arizona Water Company – Eastern Group	Docket No. W-01445A-22-0286	Rate of Return
EPCOR Water Arizona, Inc.	08/22	EPCOR Water Arizona, Inc.	Docket No. WS-01303A-22-0236	Rate of Return
EPCOR Water Arizona, Inc.	06/20	EPCOR Water Arizona, Inc.	Docket No. WS-01303A-20-0177	Rate of Return
Arizona Water Company	12/19	Arizona Water Company – Western Group	Docket No. W-01445A-19-0278	Rate of Return
Arizona Water Company	08/18	Arizona Water Company – Northern Group	Docket No. W-01445A-18-0164	Rate of Return
Arkansas Public Service Commission				
Summit Utilities Arkansas, Inc.	01/24	Summit Utilities Arkansas, Inc.	Docket No. 23-079-U	Rate of Return
Southwestern Electric Power Co.	07/21	Southwestern Electric Power Co.	Docket No. 21-070-U	Return on Equity
CenterPoint Energy Resources Corp.	05/21	CenterPoint Arkansas Gas	Docket No. 21-004-U	Return on Equity
California Public Utilities Commission				
San Gabriel Valley Water Company	05/23	San Gabriel Valley Water Company	Docket No. A23-05-001	Return on Equity
Colorado Public Utilities Commission				
Atmos Energy Corporation	08/22	Atmos Energy Corporation	Docket No. 22AL-0348G	Rate of Return
Summit Utilities, Inc.	04/18	Colorado Natural Gas Company	Docket No. 18AL-0305G	Rate of Return
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Rate of Return
Commission of the Canada Energy Regulator				
Trans-Northern Pipelines Inc.	11/22	Trans-Northern Pipelines Inc.	Docket No. C-22197	Cost of Capital
Delaware Public Service Commission				
Artesian Water Company, Inc.	04/23	Artesian Water Company, Inc.	Docket No. 23-0601	Rate of Return
Delmarva Power & Light Co.	12/22	Delmarva Power & Light Co.	Docket No. 22-0897 (Electric)	Return on Equity
Delmarva Power & Light Co.	01/22	Delmarva Power & Light Co.	Docket No. 22-002 (Gas)	Return on Equity
Delmarva Power & Light Co.	11/20	Delmarva Power & Light Co.	Docket No. 20-0149 (Electric)	Return on Equity
Delmarva Power & Light Co.	10/20	Delmarva Power & Light Co.	Docket No. 20-0150 (Gas)	Return on Equity

Sponsor	Date	Case/Applicant	Docket No.	Subject
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
Public Service Commission of the District of Columbia				
Washington Gas Light Company	04/22	Washington Gas Light Company	Formal Case No. 1169	Rate of Return
Washington Gas Light Company	09/20	Washington Gas Light Company	Formal Case No. 1162	Rate of Return
Federal Energy Regulatory Commission				
LS Power Grid California, LLC	10/20	LS Power Grid California, LLC	Docket No. ER21-195-000	Rate of Return
Florida Public Service Commission				
Tampa Electric Company	04/24	Tampa Electric Company	Docket No. 20240025-EI	Return on Equity
Peoples Gas System, Inc.	04/23	Peoples Gas System, Inc.	Docket No. 20230023-GU	Rate of Return
Tampa Electric Company	04/21	Tampa Electric Company	Docket No. 20210034-EI	Return on Equity
Peoples Gas System, Inc.	09/20	Peoples Gas System, Inc.	Docket No. 20200051-GU	Rate of Return
Utilities, Inc. of Florida	06/20	Utilities, Inc. of Florida	Docket No. 20200139-WS	Rate of Return
Hawaii Public Utilities Commission				
Launiupoko Irrigation Company, Inc.	12/20	Launiupoko Irrigation Company, Inc.	Docket No. 2020-0217 / Transferred to 2020-0089	Capital Structure
Lanai Water Company, Inc.	12/19	Lanai Water Company, Inc.	Docket No. 2019-0386	Cost of Service / Rate Design
Manele Water Resources, LLC	08/19	Manele Water Resources, LLC	Docket No. 2019-0311	Cost of Service / Rate Design
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. 2016-0363	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
Illinois Commerce Commission				
Aqua Illinois, Inc.	01/24	Aqua Illinois, Inc.	Docket No. 24-0044	Rate of Return
Ameren Illinois Company d/b/a Ameren Illinois	01/23	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 23-0082 (Electric)	Return on Equity
Ameren Illinois Company d/b/a Ameren Illinois	01/23	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 23-0067 (Gas)	Return on Equity
Utility Services of Illinois, Inc.	02/21	Utility Services of Illinois, Inc.	Docket No. 21-0198	Rate of Return
Ameren Illinois Company d/b/a Ameren Illinois	07/20	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 20-0308	Return on Equity
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
Indiana Utility Regulatory Commission				
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
Kansas Corporation Commission				
Atmos Energy Corporation	07/19	Atmos Energy Corporation	19-ATMG-525-RTS	Rate of Return
Kentucky Public Service Commission				
Bluegrass Water Utility Operating Company	02/23	Bluegrass Water Utility Operating Company	2022-00432	Return on Equity
Atmos Energy Corporation	07/22	Atmos Energy Corporation	2022-00222	PRP Rider Rate
Water Service Corporation of KY	06/22	Water Service Corporation of KY	2022-00147	Rate of Return

Sponsor	Date	Case/Applicant	Docket No.	Subject
Atmos Energy Corporation	07/21	Atmos Energy Corporation	2021-00304	PRP Rider Rate
Atmos Energy Corporation	06/21	Atmos Energy Corporation	2021-00214	Rate of Return
Duke Energy Kentucky, Inc.	06/21	Duke Energy Kentucky, Inc.	2021-00190	Return on Equity
Bluegrass Water Utility Operating Company	10/20	Bluegrass Water Utility Operating Company	2020-00290	Return on Equity
Louisiana Public Service Commission				
Utilities, Inc. of Louisiana	05/21	Utilities, Inc. of Louisiana	Docket No. U-36003	Rate of Return
Southwestern Electric Power Company	12/20	Southwestern Electric Power Company	Docket No. U-35441	Return on Equity
Atmos Energy Corporation	04/20	Atmos Energy Corporation	Docket No. U-35535	Rate of Return
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc.	Docket No. U-32848	Rate of Return
Maine Public Utilities Commission				
Northern Utilities, Inc. d/b/a Unitil	05/23	Northern Utilities, Inc. d/b/a Unitil	Docket No. 2023-00051	Return on Equity
Summit Natural Gas of Maine, Inc.	03/22	Summit Natural Gas of Maine, Inc.	Docket No. 2022-00025	Rate of Return
The Maine Water Company	09/21	The Maine Water Company	Docket No. 2021-00053	Rate of Return
Maryland Public Service Commission				
Washington Gas Light Company	05/23	Washington Gas Light Company	Case No. 9704	Rate of Return
FirstEnergy Service Company	03/23	Potomac Edison Company	Case No. 9695	Rate of Return
Washington Gas Light Company	08/20	Washington Gas Light Company	Case No. 9651	Rate of Return
FirstEnergy Corporation	08/18	Potomac Edison Company	Case No. 9490	Rate of Return
Massachusetts Department of Public Utilities				
Unitil Corporation	9/23	Fitchburg Gas & Electric Co. (Elec.)	D.P.U. 23-80	Rate of Return
Unitil Corporation	9/23	Fitchburg Gas & Electric Co. (Gas)	D.P.U. 23-81	Rate of Return
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Elec.)	D.P.U. 19-130	Rate of Return
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Gas)	D.P.U. 19-131	Rate of Return
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	D.P.U. 15-75	Rate of Return
Minnesota Public Utilities Commission				
Northern States Power Company	11/01	Northern States Power Company	Docket No. G002/GR-21-678	Return on Equity
Northern States Power Company	10/21	Northern States Power Company	Docket No. E002/GR-21-630	Return on Equity
Northern States Power Company	11/20	Northern States Power Company	Docket No. E002/GR-20-723	Return on Equity
Mississippi Public Service Commission				
Great River Utility Operating Co.	07/22	Great River Utility Operating Co.	Docket No. 2022-UN-86	Rate of Return
Atmos Energy Corporation	03/19	Atmos Energy Corporation	Docket No. 2015-UN-049	Capital Structure
Atmos Energy Corporation	07/18	Atmos Energy Corporation	Docket No. 2015-UN-049	Capital Structure
Missouri Public Service Commission				
Confluence Rivers Utility Operating Company, Inc.	01/23	Confluence Rivers Utility Operating Company, Inc.	Case No. WR-2023-0006/SR-2023-0007	Rate of Return
Spire Missouri, Inc.	12/20	Spire Missouri, Inc.	Case No. GR-2021-0108	Return on Equity
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Case No. SR-2016-0202	Rate of Return
Public Utilities Commission of Nevada				
Southwest Gas Corporation	09/23	Southwest Gas Corporation	Docket No. 23-09012	Return on Equity
Southwest Gas Corporation	09/21	Southwest Gas Corporation	Docket No. 21-09001	Return on Equity
Southwest Gas Corporation	08/20	Southwest Gas Corporation	Docket No. 20-02023	Return on Equity

Sponsor	Date	Case/Applicant	Docket No.	Subject
New Hampshire Public Utilities Commission				
Aquarion Water Company of New Hampshire, Inc.	12/20	Aquarion Water Company of New Hampshire, Inc.	Docket No. DW 20-184	Rate of Return
New Jersey Board of Public Utilities				
New Jersey Natural Gas Company	01/24	New Jersey Natural Gas Company	Docket No. GR24010071	Rate of Return
Middlesex Water Company	05/23	Middlesex Water Company	Docket No. WR23050292	Rate of Return
FirstEnergy Service Company	03/23	Jersey Central Power & Light Co.	Docket No. ER23030144	Rate of Return
Atlantic City Electric Company	02/23	Atlantic City Electric Company	Docket No. ER20120746	Return on Equity
Middlesex Water Company	05/21	Middlesex Water Company	Docket No. WR21050813	Rate of Return
Atlantic City Electric Company	12/20	Atlantic City Electric Company	Docket No. ER20120746	Return on Equity
FirstEnergy Service Company	02/20	Jersey Central Power & Light Co.	Docket No. ER20020146	Rate of Return
Aqua New Jersey, Inc.	12/18	Aqua New Jersey, Inc.	Docket No. WR18121351	Rate of Return
Middlesex Water Company	10/17	Middlesex Water Company	Docket No. WR17101049	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
New Mexico Public Regulation Commission				
New Mexico Gas Company	09/23	New Mexico Gas Company	Case No. 23-00255-UT	Return on Equity
Southwestern Public Service Co.	11/22	Southwestern Public Service Co.	Case No. 22-00286-UT	Return on Equity
Southwestern Public Service Co.	01/21	Southwestern Public Service Co.	Case No. 20-00238-UT	Return on Equity
North Carolina Utilities Commission				
Carolina Water Service, Inc.	07/22	Carolina Water Service, Inc.	Docket No. W-354 Sub 400	Rate of Return
Aqua North Carolina, Inc.	06/22	Aqua North Carolina, Inc.	Docket No. W-218 Sub 573	Rate of Return
Carolina Water Service, Inc.	07/21	Carolina Water Service, Inc.	Docket No. W-354 Sub 384	Rate of Return
Piedmont Natural Gas Co., Inc.	03/21	Piedmont Natural Gas Co., Inc.	Docket No. G-9, Sub 781	Return on Equity
Duke Energy Carolinas, LLC	07/20	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1214	Return on Equity
Duke Energy Progress, LLC	07/20	Duke Energy Progress, LLC	Docket No. E-2, Sub 1219	Return on Equity
Aqua North Carolina, Inc.	12/19	Aqua North Carolina, Inc.	Docket No. W-218 Sub 526	Rate of Return
Carolina Water Service, Inc.	06/19	Carolina Water Service, Inc.	Docket No. W-354 Sub 364	Rate of Return
Carolina Water Service, Inc.	09/18	Carolina Water Service, Inc.	Docket No. W-354 Sub 360	Rate of Return
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return
North Dakota Public Service Commission				
Northern States Power Company	09/21	Northern States Power Company	Case No. PU-21-381	Rate of Return
Northern States Power Company	11/20	Northern States Power Company	Case No. PU-20-441	Rate of Return
Public Utilities Commission of Ohio				
Aqua Ohio, Inc.	11/22	Aqua Ohio, Inc.	Case No. 22-1094-WW-AIR	Rate of Return
Duke Energy Ohio, Inc.	10/21	Duke Energy Ohio, Inc.	Case No. 21-887-EL-AIR	Return on Equity
Aqua Ohio, Inc.	07/21	Aqua Ohio, Inc.	Case No. 21-0595-WW-AIR	Rate of Return
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Case No. 16-0907-WW-AIR	Rate of Return
Pennsylvania Public Utility Commission				
Columbia Water Company	05/23	Columbia Water Company	Docket No. R-2023-3040258	Rate of Return
Borough of Ambler	06/22	Borough of Ambler – Bureau of Water	Docket No. R-2022-3031704	Rate of Return
Citizens' Electric Company of Lewisburg	05/22	C&T Enterprises	Docket No. R-2022-3032369	Rate of Return
Valley Energy Company	05/22	C&T Enterprises	Docket No. R-2022-3032300	Rate of Return

Sponsor	Date	Case/Applicant	Docket No.	Subject
FirstEnergy	04/22	Pennsylvania Electric Company	Docket No. R-2024-3047068	Rate of Return
Community Utilities of Pennsylvania, Inc.	04/21	Community Utilities of Pennsylvania, Inc.	Docket No. R-2021-3025207	Rate of Return
Vicinity Energy Philadelphia, Inc.	04/21	Vicinity Energy Philadelphia, Inc.	Docket No. R-2021-3024060	Rate of Return
Delaware County Regional Water Control Authority	02/20	Delaware County Regional Water Control Authority	Docket No. A-2019-3015173	Valuation
Valley Energy, Inc.	07/19	C&T Enterprises	Docket No. R-2019-3008209	Rate of Return
Wellsboro Electric Company	07/19	C&T Enterprises	Docket No. R-2019-3008208	Rate of Return
Citizens' Electric Company of Lewisburg	07/19	C&T Enterprises	Docket No. R-2019-3008212	Rate of Return
Steelton Borough Authority	01/19	Steelton Borough Authority	Docket No. A-2019-3006880	Valuation
Mahoning Township, PA	08/18	Mahoning Township, PA	Docket No. A-2018-3003519	Valuation
SUEZ Water Pennsylvania Inc.	04/18	SUEZ Water Pennsylvania Inc.	Docket No. R-2018-000834	Rate of Return
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No. R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
South Carolina Public Service Commission				
Blue Granite Water Co.	12/19	Blue Granite Water Company	Docket No. 2019-292-WS	Rate of Return
Carolina Water Service, Inc.	02/18	Carolina Water Service, Inc.	Docket No. 2017-292-WS	Rate of Return
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return
Utility Services of South Carolina, Inc.	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
South Dakota Public Service Commission				
Northern States Power Company	06/22	Northern States Power Company	Docket No. EL22-017	Rate of Return
Tennessee Public Utility Commission				
Piedmont Natural Gas Company	07/20	Piedmont Natural Gas Company	Docket No. 20-00086	Return on Equity
Public Utility Commission of Texas				
Southwestern Public Service Co.	02/23	Southwestern Public Service Co.	Docket No. 54634	Return on Equity
CSWR – Texas Utility Operating Company, LLC	02/23	CSWR – Texas Utility Operating Company, LLC	Docket No. 54565	Rate of Return
Oncor Electric Delivery Co. LLC	05/22	Oncor Electric Delivery Co. LLC	Docket No. 53601	Return on Equity
Southwestern Public Service Co.	02/21	Southwestern Public Service Co.	Docket No. 51802	Return on Equity
Southwestern Electric Power Co.	10/20	Southwestern Electric Power Co.	Docket No. 51415	Rate of Return
Texas Railroad Commission				
Atmos Pipeline – Texas, a Division of Atmos Energy Corporation	05/23	Atmos Pipeline – Texas, a Division of Atmos Energy Corporation	Docket No. OS-23-00013758	Return on Equity
Virginia State Corporation Commission				
Aqua Virginia, Inc.	07/23	Aqua Virginia, Inc.	PUR-2023-00073	Rate of Return
Washington Gas Light Company	06/22	Washington Gas Light Company	PUR-2022-00054	Return on Equity
Virginia Natural Gas, Inc.	04/21	Virginia Natural Gas, Inc.	PUR-2020-00095	Return on Equity

Sponsor	Date	Case/Applicant	Docket No.	Subject
Massanutten Public Service Corporation	12/20	Massanutten Public Service Corporation	PUE-2020-00039	Return on Equity
Aqua Virginia, Inc.	07/20	Aqua Virginia, Inc.	PUR-2020-00106	Rate of Return
WGL Holdings, Inc.	07/18	Washington Gas Light Company	PUR-2018-00080	Rate of Return
Atmos Energy Corporation	05/18	Atmos Energy Corporation	PUR-2018-00014	Rate of Return
Aqua Virginia, Inc.	07/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design
Public Service Commission of West Virginia				
FirstEnergy Service Company	05/23	Monongahela Power Company and The Potomac Edison Company	Case No. 23-0460-E-42T	Return on Equity
FirstEnergy Service Company	12/21	Monongahela Power Company and The Potomac Edison Company	Case No. 21-0857-E-CN (ELG)	Return on Equity
FirstEnergy Service Company	11/21	Monongahela Power Company and The Potomac Edison Company	Case No. 21-0813-E-P (Solar)	Return on Equity