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Ontario Energy Board

2024 Review of Cost Capital Parameters and Deemed Capital Structure

IGUA Compendium

Panel 3 – Nexus Economics

GOWLING WLG

estimate a Market Risk Premium. This implies that Ontario service providers compete with the US counterparts for the same capital. As LEI notes:

> *[The Maple 8 pension funds] put 25% of their portfolio to domestic Canadian investments, which indicates that investors are more likely to consider their MRP opportunity costs based on US MRP.*[49]

We concur with LEI that the US-based Market Risk Premium is relevant to Canadian investors, indicating that the Canadian and US capital markets essentially are one. We also examined the 2024 version of Aswath Damodaran's "Country Default Spreads and Risk Premiums" and observed that both US and Canadian country risk is 0.00 percent.[50] What this means is that there is no call for a country adder (or "subtractor") when evaluating capital costs. In an opportunity cost context, this means that the cost of equity incurred by US firms of comparable risk is the same as the cost of equity incurred by Canadian firms, which is the law of one price—all buyers pay the same price for the same product within the market. Within an integrated market, the law of one price prevails: Whatever the other buyer pays for a good or service is what you have to pay. There is no adjustment for differences in interest rates because capital is coming from the same market and has one price (at a given level of risk).

3. Implications of Capital Market Integration

The above analysis of the Canadian and US economies is indicative of a single capital market.

An important implication of the single capital market conclusion is that there should be no adder or subtractor to the cost of capital based on where the firms are located since these firms seek capital from the same source. There will be a single price for risk-free assets, and a single price for risky assets of the same or comparable riskiness. Firms that

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[49] LEI Report p. 120 (footnotes omitted).

[50] Aswath Damodaran, "Country Default Spreads and Risk Premiums," Last Updated January 5, 2024. Available at Dr. Damodaran's website. At the time of the update, both the US and Canada were rated as AAA by Moody's Investor Services. Other agencies have downgraded US Treasury bonds. See, e.g., See, e.g., World Credit Ratings (worldgovernmentbonds.com).

are identified as risk-comparable to the Ontario electric service providers should not be adjusted based on whether the firms are located in a US state or in Canada.

Our conclusion with regard to a single North American capital market supports the use of US (and Canadian) firms in the development of risk-comparables, as was concluded by the Board in 2009.[51] It also supports our assertion that LEI errs in substituting the forecasted 30-year Canadian Treasury rate for a US rate in its specification of the CAPM.

C. Shortcomings of the LEI Approach

In this Section, we discuss shortcomings to LEI's recommendation that the Board look only at the results of the CAPM in determining a rate of return on equity under the Fair Return Standard. In this Section, we discuss the following:

- How we arrived at the numbers that we attribute to LEI's analysis in our Table 4.
- Shortcomings of using only one method to compute a rate of return on equity that is compatible with the Fair Return Standard.
- LEI's application of the CAPM and the error in application;
- LEI's DCF and why LEI's reasons for rejecting the DCF for consideration by the Board are inadequate; and
- LEI's use of its risk-premium analysis to inform the annual adjustment mechanism without considering the implications of that analysis for the base return on equity.

1. How the LEI Results are Adjusted in Table 4

Our Table 4 shows that when all of LEI's methods are included, and when they are adjusted for leverage and taxes, the resulting simple average is close to our own ROE results. For clarity, we describe those adjustments here.

First, with regard to the CAPM we made a single adjustment: swapping out the Canadian forecasted long-term bond rate with a forecasted US 30-year bond rate. Guided by the

[51] See, e.g., 2009 Board Report, p. 23. "The Board is of the view that the U.S. is a relevant source for [risk] comparable data." The Board rejected arguments to limit comparables to Canadian firms (2009 Report, pp. 21-22.)

III. Benchmarking of ROEs to Comparable Jurisdictions

A. Overview

The FRS' comparable investment standard discussed in the previous Chapter states that the utility must have the opportunity to earn a return that is comparable to investments of similar risk. One indicator of whether a regulator is meeting this standard is comparing the authorized returns with jurisdictions that operate under similar circumstances. In this Chapter, Nexus Economics provides an analysis of the authorized return that the local regulator has authorized for distributors in the following jurisdictions:

- Alberta;
- British Columbia;
- California;
- New York; and
- Massachusetts.

We conclude that the current authorized ROE in Ontario, and ROE proposed by LEI, are far below the ROE in what we consider to be appropriate peer jurisdictions. Figure 5 below demonstrates this failure.

B. Nexus Economics' Analysis of Jurisdictions

In this section, we discuss our reasons for selecting the above jurisdictions as reasonably comparable to Ontario, as well as the results of our review.

The above jurisdictions were chosen based on several criteria.

1. Jurisdictions Operating in the Canadian / U.S. Financial Market

Only peers operating in the Canadian / U.S. financial markets should be included in the Board's comparable analysis. Firms operating in other financial markets, including the UK and Australia, operate under different legal, institutional, and macroeconomic circumstances which could influence utility ROEs.

Nexus Economics rejects LEI's proposed inclusion of the United Kingdom and Australia because they operate outside of the Canadian / U.S. Financial Market. Further, we added Massachusetts to the peers as an instructive peer jurisdiction.

2. Limited or No Generation Services

Ontario is a retail open-access jurisdiction. All comparable jurisdictions listed above, except for California and British Columbia, are also retail open access jurisdictions. California can best be characterized as a hybrid-jurisdiction because it allows community aggregation that an outside firm of agency provide generation services to retail customers. Further, certain California customers are grandfathered as retail open access customers. Fortis BC has been included because it has limited electric generation capacity.

3. Jurisdictions Adopting Strong Electrification Policies

As discussed further in Chapter IV (Risk Factors), Ontario is embarking on an electrification policy as a vehicle to reduce greenhouse gas emissions. Embracing electrification policies triggers several outcomes including:

- Significant increases in load;
- Increased capital spending to serve the increases in load; and
- Planning for new or increasing consumptions for electric end-uses**,** including space heating and electric vehicles

The IESO projects peak demand load growth to average 3.3 percent per year in the next 25 years. Jurisdictions that are not proposing electrification are not expected to achieve that level of load growth and are thus not appropriate comparators for assessing a fair return.

Nexus Economics has identified electrification policies in all the peers it proposes.

4. Adoption of Advanced Regulatory Mechanisms

Since the 1990s, Ontario has embraced advanced regulatory mechanisms. The peer jurisdictions have adopted multi-year rate plans and, in some cases, i-X mechanism PBR mechanisms, which adjust prices based on inflation and productivity.

All the peers Nexus Economics proposes operate under some form of IRM or multi-year rate plan. Further, each jurisdiction offers mechanisms for recovery of targeted costs.

C. Jurisdictional Overview

Electric utilities in Ontario operate under a regulatory and policy environment similar to other North American jurisdictions where allowed ROEs are typically higher than in Ontario. The defining features of these regulatory environments include:

- A commitment to decarbonization and the adoption of enhanced, clean electrification and similar net zero policies to Ontario;
- The use of innovative regulatory and ratemaking mechanisms that strengthen utilities' performance incentives and reduce the costs of regulation. These mechanisms include "performance-based" and other types of multi-year rate plans;
- Regulatory provisions that enable companies to undertake necessary capital expenditures that cannot funded by other sources of utility revenues; and
- Provisions for the recovery of unpredictable costs through other regulatory mechanisms (e.g., Z-factor, storm recovery).

Important elements of the five comparable/peer regulatory environments are briefly described below.

1. Alberta

Since implementing its first province-wide incentive regulation plan for energy utilities in 2012, the Alberta Utilities Commission (AUC) has developed an innovative regulatory framework that puts particular emphasis on flexible but efficient capital investment. The second PBR plan included a "k-bar" formula[22], tied to each utility's historical capex, that allowed for automatic revenue adjustments to meet capital spending needs. The second plan also includes a capital recovery mechanism that companies can use to request cost recovery for less predictable capital costs. In the third approved PBR plan, the AUC noted that K-bar revenues do not have to be restricted to capital spending. There has been considerable interest in AUC's capital cost mechanisms in other jurisdictions. Alberta has

[22] A K-Bar mechanism provides recovery certain capital expenditures. For a detailed discussion of K-Bar mechanisms in Alberta see "2024-2028 Performance-Based Regulation Plan for Alberta Electric and Gas Utilities at https://efiling-webapi.auc.ab.ca/Document/Get/794425.

not emphasized energy transition policies as much as some other similar utilities, but the third PBR plan did expand its capital cost recovery mechanisms to include energy transition expenditures.

2. British Columbia

British Columbia has been using incentive-based and multi-year formula rate plans since the 1990s. Its most recent regulatory proceedings for FortisBC allow for separate cost recovery of most projected capital expenditures for both gas distribution and vertically integrated electric power operations. Energy transition issues are also important in Fortis BC's most recently proposed incentive ratemaking plan.

3. Massachusetts

Massachusetts has been the most active U.S. jurisdiction for performance-based regulation since its first approved PBR plan in 1997. About a decade later, the Commonwealth implemented statewide revenue decoupling, and recent legislation has accelerated Energy Transition policies. In 2003, National Grid proposed an incentive-based regulatory mechanism explicitly designed to achieve the Commonwealth's energy transition objectives.

4. New York

In 2015, New York launched a Reforming the Energy Vision (REV) initiative that focused on establishing a "clean, resilient and affordable" energy system for New Yorkers. The REV had separate tracks for encouraging distributed energy resources and implementing innovative ratemaking approaches. The latter emphasized the importance of creating value for customers and achieving policy objectives, which highlighted the energy transition.

5. California

California has adopted various forms of incentive regulation for several decades. The current approach is a multi-year rate plan. Similar to Ontario, the multi-year rate plan is a separate proceeding from the cost-of-capital proceeding.

D. Comparison of Authorized ROEs in the Comparable Jurisdictions

Nexus Economics compared authorized ROEs for Ontario versus its peers. In order to ensure that the results were truly comparable, the ROEs were adjusted for the equity thickness of the firms in each jurisdiction because the equity thickness in the deemed capital structure in Ontario is different from that of the peer jurisdiction.[23] In other words, we made mathematical adjustments in order to facilitate an apples-to-apples comparison.

Figure 5 – Authorized ROEs for Ontario and Peer Jurisdictions (Re-levered to 60:40)[24]

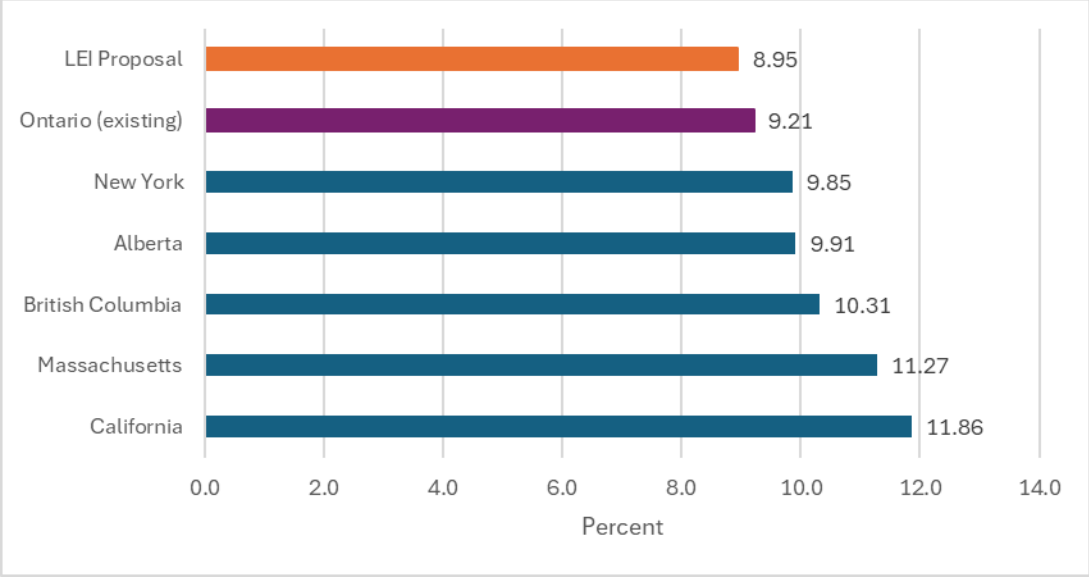

Figure 5 demonstrates that the authorized ROE proposed by LEI of 8.95 percent is significantly below those of Ontario's peers. The next lowest authorized ROE is New York in 2023, 90 basis points above LEI's proposed rate for Ontario and 60 basis points above the current Ontario ROE. The simple average of the peers is 10.64 percent, which is 1.69 percentage points higher than LEI's recommended 8.95 percent ROE. The comparison suggests that the LEI proposal does not meet the FRS in that it is substantially below the

[23] Deemed Debt-to-Capital Ratio in Ontario is 60.0 percent. The average Authorized Debt-to-Capital Ratio for all of the comparables is lower. California is 48.8 percent; New York is 52.0 percent; Massachusetts is 49.7 percent; British Columbia is 55 percent; and Alberta is 55 percent. (Sources are S&P SNL data for US comparables and various Decisions for British Columbia and Alberta.)

[24] US data are from S&P's SNL; Canadian firms are from Orders. All are re-levered from their own authorized debt ratios to the Deemed Debt Ratio of 60 percent debt.

ROEs earned by utilities operating in the peer jurisdictions and would not offer a competitively priced investment.

M3-10-AMPCO/IGUA-31

Reference: On page 40, Nexus includes Table 5, which reports *"Nexus Economics Cost of Equity Results"*.

Questions:

(a) Please explain the justification (and rationale) for Nexus' decision to weight the various Ke estimates according to *"the inverse of the standard deviation of the main result"* as referenced in footnote (b).

Response:

The explanation and justification for choosing this approach is provided in the Report. The method is used in meta studies (comparisons across studies). See, e.g., Cue Hyunkyu Lee, Seungho Cook, Ji Sung Lee, and Buhm Han, "Comparison of Two Meta-Analysis Methods: Inverse-Variance-Weighted Average and Weighted Sum of Z-Scores," (published online), Genomics Inform. December, 2016; 14(4). pp. 173–180. (available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5287121/).

(b) Footnote (a) states that all Table 5 Ke estimates are *"relevered to a Debt-to-Equity Ratio of 1.50 and taxes of 25.5%"*. Please provide the details of how Nexus obtained each of the seven Ke estimates it used to determine its weighted average Ke estimate of 11.08% - including formulae, inputs etc.

Response:

Please see M3-NAICS 2211 v04 (as filed).xlsx for the workpapers that provide the details needed to reproduce these results.

The tab [Ke Analysis] provides the computations as well as the averages and standard deviations of the mean. The summary results (by data provider such as Yahoo, Zacks, etc.) are fed into the tab [Ke DE 1.5 26] at lines 5:7 computes the weights as described in the Report.

(c) Please provide all data and workpapers (in excel format), including all formulae and calculations, used to prepare Table 5.

Response:

Please see M3-NAICS 2211 v04 (as filed).xlsx at tab [Tables 5 & 9] and the supporting worksheets in that file.

(d) Does Nexus agree that;

(i) Regulated operating utilities (such as Ontario utilities) that operate virtual monopolies in well-defined regions with strong regulatory support, low demand risks, and that are able to pass on legitimate costs to consumers

would be considered as being less risky than the average company listed in the stock market?

Response:

Yes, and the betas of our comparables are less than 1.00 (reflecting that they are less risky than the average company listed in the stock market).

(ii) Unlike regulated utilities, average companies listed in the stock market face demand and competitive pressures and input cost risks that they are not able to pass on to consumers, which are risks not faced by regulated utilities?

Response:

We generally agree with the statement. However, the statement is incomplete in its list of risks. In particular, electric utilities have risks associated with the obligation to serve, which non-utilities do not face, and utilities have substantial sunk and irreversible investments and substantial operating leverage, which may not be the case with other companies that can select the markets that they will serve and can withdraw if profitability is not sufficient.

(i) It is widely accepted among finance professionals that utility stocks are commonly referred to as stocks that are suitable for investors with low risk tolerances?

Response:

We agree.

(ii) If Nexus disagrees with any of these assertions, please explain the basis for such disagreement.

Response:

We agree, with the caveats noted in the above individual Responses.

2. Nexus Economics' CAPM Results and Discussion

In a CAPM analysis, a firm or project's cost of equity is equal to the risk-free rate plus a markup that compensates the investor for exposure to systemic or market risk.[80]

The idea behind the CAPM is that in a perfect capital market, idiosyncratic or project-specific risk is diversified away and, therefore, generates no compensation. Only systemic risk (i.e., risk that is correlated with the overall volatility of the market) is compensable.

As discussed earlier, in theory, the CAPM is forward-looking, but in application, the CAPM is mechanical and relies on the analyst (such as LEI or Nexus Economics) rather than on the marketplace. While we have attempted to minimize the impact of this mechanical application in our specific CAPM approach, the reliance on analyst judgment is a nonetheless a disadvantage of the CAPM and a reason that other cost of equity approaches should be considered by the Board.

a) Market Risk Premium

Rather than using an historical average MRP (as LEI does), we compute the MRP based on contemporary data using the DCF.[81] This approach uses, so far as practicable, forward-looking data from the capital markets rather than long-term historical averages. LEI shows in its Figure 42 that the historical market risk premium has been volatile (high

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[80] The CAPM is expressed as the formula:

$$ke_i = r_f + \beta_i(MRP)$$

ke_i is the cost of equity for firm or project i, r_f i is the risk-free rate and β_i, or "beta" measures the degree of exposure of firm i to the overall market risk. Beta is defined as $\beta_i = \frac{cov(r_i, r_m)}{var(r_m)}$, or the ratio of the covariance of the returns of the firm to the market as a whole deflated by the variance of the market. See, e.g., Aswath Damodaran. INVESTMENT VALUATION: TOOLS AND TECHNIQUES FOR DETERMINING THE VALUE OF ANY ASSET (2nd ed.). (2002) (New York) John Wiley., p. 76. The Market Risk Premium (MRP)is defined as:

$$MRP = E(r_m) - r_f$$

Which is the expected return on the market minus the risk-free rate.

[81] The MRP of 8.83 percent using 2025 forecast of 30-year US Treasury bonds. (Forecast from econforecasting.com at https://econforecasting.com/forecast/t30y.) This would be 8.53 percent if rates as of 6/25/2024 were used.

variance). This means that the confidence interval around the mean will be high. Moreover, at best, the historical average provides an indication of what the future average might be. We are more interested in what the MRP is now than we are in some past average. The average might never be relevant in the future. There may only be episodes of higher and lower risk aversion and therefore higher or lower MRPs, but the average itself may simply be a statistical artifact that does not apply on any particular day in the capital markets. In any event, it is our conclusion that a more forward-looking MRP should at least be part of the analysis that the Board considers.

Table 7 - Market Risk Premium

Row	Item	Source		Value
1	ROE	CapIQ: Ratios	LTM	0.1782
2	DPS	CapIQ: Income Statement	LTM	69.87
3	EPS	CapIQ: Key Stats, Income Statement &	LTM	196.70
4	PE	CapIQ Ratios & Multpl.com (2024-06-25)		28.31
5	DPR	[2]/[3]		0.3552
6	g = (br)	(1-[5])*[1]		0.1149
7	Div Yield	[5]/[4]		0.0125
8	Ke	[7](1+[6])+[6]		0.1289
9	30-Year Tbonds	Forecast from econforecasting.com		0.0406
10	**MRP**	[8]-[9]		**0.0883**
Source: S&PCapIQ		CIQ Pro: S&P 500 (^SPX) | Ratios (spglobal.com)		

Because our data sources did not provide investment analyst forecasts of the expected EPS growth rate, we computed the rate using the so-called *br* formula, shown in line 6 of Table 7 above. Both methods may be used and assessed as to differences. The *br* method is fundamental growth, the idea being that a firm can grow without external financing by reinvesting cash that might otherwise be paid out as dividends and generating its average profits (ROE).[82]

[82] The growth rate *g* is computed as (1-Dividend Payout Ratio) x Return on Equity. See, Roger A. Morin, NEW REGULATORY FINANCE. (2006) (Public Utilities Reports, Inc). pp. 303-305. (Hereafter, Morin.) The *br* formula is inappropriate for regulated companies because the *br* formula relies on an equality between earned returns and cost of equity, which arguably is the case for the unregulated market in equilibrium but not for a regulated entity. (Morin, p. 304.)

We compute the MRP two ways: using interest rates prevailing when the other data were downloaded (4.36 percent on June 25, 2024) and also the one-year forecast of 30-year US Treasury bonds (4.06 percent). The use of the forecast versus the then-prevailing rate changes our overall weighted average cost of equity by 3 basis points. We examined the two methods because the June 2024 evaluation provides insight into the MRP relevant to investors, while the forecasted MRP is consistent with the Board's use of forecasted interest rate data in its 2009 Report. We elected to proceed with the forecasted risk-free rate to match with the Board's preferences, but note that forecasts are guesses about the future and may or may not reflect investors' outlooks in the same way that actual market data does.

b) Betas

Beta plays an important role in the CAPM. MRP measures the additional return required by an asset of average market risk over the risk-free rate. Beta reflects the exposure of the specific asset to this risk adder. An asset with the average exposure to market risk has a beta of 1.00. Assets with less exposure have betas less than 1.00. A risk-free asset has a beta of 0.00. Betas typically are computed using regression analysis that measures the historical variability of the asset's returns against a market standard.[83]

Historical betas are not stagnant over time. For the stocks that it covers, Zacks.com provides graphics of a moving window that illustrate how its historical betas can change over time. For example, Figure 8, taken from Zacks.com, shows that the historical beta for Dominion Energy has nearly tripled from about 0.20 in 2020 to 0.59 as of July, 2024. At each point on the line, Zacks computes the beta using the same formula and same length of lookback. It adjusts the dates as it moves forward. This implies that even historical betas can vary across data providers depending upon the historical window chosen as well as the index that is used to represent the market as a whole.

[83] There has been some research on this topic using option pricing. See, e.g., Peter Christoffersen, Jacobs, K., and Vainberg, G. "Forward-Looking Betas". April 25, 2008. SSRN working paper. Available at Forward-Looking Betas by Peter Christoffersen, Kris Jacobs, Gregory Vainberg: SSRN.

5.2.3 Expected Market Returns and Estimating MRPs

The next CAPM input is the Market Risk Premium (MRP), which is measured by the expected long-term return on the equity market less the long-term government bond yield, which measures RF. Table 7 below provides useful guidance in determining a reasonable estimate for expected stock market returns, which in turn can be used to estimate MRPs, or to assess the reasonableness of MRP estimates. It is broken into two categories: (1) historical returns; and, (2) current (i.e., 2022-24) long-term market forecasts from 4 different sources. It is noteworthy that one of the sources of long-term forecasts (i.e., Horizon) provides summary statistics based on extensive surveys of finance professionals, and hence Table 7 provides a comprehensive view of the forecasts of the professional finance community. In particular, Horizon's report is based on the forecasts of 42 investment advisors, which includes prominent advisory firms (e.g., Aon, Mercer, and Willis Towers Watson), several large commercial and investment banks (e.g., Bank of New York Melon, Goldman Sachs Asset Management, J.P. Morgan Asset Management, Merrill, Morgan Stanley, UBS, etc.), and large asset managers (e.g., BlackRock, The Vanguard Group, etc.). As such, it provides a comprehensive representation of the views of finance professionals managing trillions of dollars of wealth.

Sikes (2022) (page 45) verifies the relevance of expected market returns by the financial community, noting "investors' expected market return should effectively set a ceiling on the ROE approved by regulators as utility stock is less risky than the overall stock market." The AUC for example, has also previously noted that such forecasts are informative and reaffirmed this position in the 2018 Alberta GCOC Decision, stating:

> Consistent with its determinations in previous GCOC decisions, the Commission continues to hold the view that return expectations of finance market professionals are germane to the determination of a fair ROE for regulated utilities.[34]

Hence, the AUC believes that such information is relevant, and I agree. In fact, I would argue that the beliefs of professionals who participate in the markets and influence market activity are far more relevant than market expectations determined using unrealistic growth assumptions, such as those I have seen provided by the utilities' experts in previous proceedings. In other words, market participant beliefs represent an important and practical

[34] Decision 22570-D01-2018, 2018 Generic Cost of Capital, page 97, para. 460.

"benchmark," against which any utility ROE estimate must be compared. Table 7 provides Canadian, U.S. and global historical evidence and forecasts; however, since I estimate the CAPM using the Canadian stock market, I focus my discussion on the Canadian evidence; although I would note that the expected U.S market return according to industry professionals of 6.84% is not that far off the Canadian average estimate of 6.1%, both of which are below my final estimate for expected market returns.

TABLE 7

HISTORICAL AND FORECAST EQUITY RETURNS

Source	**Horizon**	**Canada**	**U.S.**	**World / Developed Markets (excl. U.S.)**
HISTORICAL RETURNS				
1. Historical Data (Cleary Evidence, Table 6, Section 4.3.3)	Historical: 1938-2023	Real: 6.1% GA 7.3% AA		
2. Dimson, E., P. Marsh, and M. Staunton, "Long-Term Asset Returns," in *Financial Market History*, CFA Institute Research Foundation, December 2016.[35]	Historical: 1900-2015	Real: 5.6% GA 7.0% AA	Real: 6.4% GA 8.3% AA	Real (World Excl. U.S.): 4.3% GA 6.0% AA
3. "The Real Economy and Future Investment Returns," McKinsey & Company, January 17, 2017.[36]	Historical: 1915-2014		Real: 6.5%	
Average (Range)		**Real: 6.5%** (5.6%-7.3%)	**Real: 7.1%** (6.4%-8.3%)	**Real: 5.2%** (4.3%-6.0%)
FORECAST RETURNS				
4. . Institut québécois de planification financière (IQPF) and Financial Planning Standards Council (FPSC), "Project Assumption Guidelines," April 2024. Source: https://www.fpcanada.ca/docs/default-source/standards/2024-pag---english.pdf[37]	Long-term forecast	Nominal: 6.4%		Nominal: 6.5% (Foreign developed market equities)
5. Horizon Actuarial Services, LLC, "Survey of Capital Market Assumptions," 2023. Source: https://www.horizonactuarial.com/_files/ugd/f76a4b_1057ff4efa7244d6bb7b1a8fb88	Intermed. (<10 years) Long-term		U.S. Large Cap (Nominal) 6.90% (4.8-10.2%) 7.37%	Non-US Dev. Mkts. 7.49% (4.7-10.3%) 7.78%

[35] Appended to this evidence as Attachment AW.
[36] Appended to this evidence as Attachment AX.
[37] Appended to this evidence as Attachment AY.

236e6.pdf[38]	(10-years or more)		(5.6-10.2%)	(6.1-9.8%)
6. Franklin and Templeton Investments, "Capital Market Expectations 2024 and Beyond," December 2023.[39] Source: https://pages.to.franklintempleton.com/rs/848-IAP-939/images/Outlook%202024%20Event_ian.pdf?version=0	10-year forecast	Nominal: 7.2%	Nominal: 7.4%	Nominal: EAFE Equities: 8.6%
7. "Capital Market Assumptions" BlackRock, May, 2024.[40] https://www.blackrock.com/institutions/en-us/insights/charts/capital-market-assumptions	10-year forecast 20-year forecast	Large Cap - Nominal: 4.01% 5.19%	Large Cap – Nominal: 5.42% 6.53%	World excl. Can (in CAD): Nominal: 5.29% 6.39%
Average (Range)		**Nominal: 6.1%[41]** (4.0%-7.2)	**Nominal: 6.84%** (5.4%-7.4%)	**Nominal: 7.14%** (5.3%-8.6%)

The first three sources in Table 7 provide historical long-term real returns for Canadian, U.S. and global stocks over three extremely long time periods (i.e., 86 years, 116 years and 100 years). The Canadian evidence suggests average real returns of 6.5%, with a range of estimates of 5.6% to 7.3%. Combining these figures with 2% expected inflation would suggest expected nominal returns of 8.5%, ranging from 7.6% to 9.3%, based solely on historical results.

The next four sources represent 2023-24 estimated long-term market returns from a number of important and reputable sources with various mandates (i.e., the Financial Planning Standards Council; consulting firms, investment and commercial banks, and other investment management firms). All of these estimates are provided in nominal terms. The Canadian market nominal estimates range from 4.0% to 7.2%, and average **6.1%.** Deducting the 2% expected inflation, this translates to an average *real* return of 4.1%. In other words, most market professionals are of the belief that Canadian stocks are unlikely to earn their historic long-term *real* rates of return in the 5.6-7.3% range over the next 10-20 years.

[38] Appended to this evidence as Attachment AZ.
[39] Appended to this evidence as Attachment BA.
[40] Appended to this evidence as Attachment BB.
[41] This average is determined by taking the average of BlackRock's two forecasts and using it as one of three estimates (i.e., three different sources).

While I do not focus on the U.S. evidence, it is noteworthy that the average expected market return for U.S. stocks is 6.84% - well below its average of the last few decades. This is important to recognize, as it indicates that expected market return (and related MRP) forecasts that rely heavily on recent U.S. stock returns (such as that done by LEI which uses historical averages from five recent U.S. time periods in estimating potential MRPs), will be overly optimistic. In fact, it is well-known that the U.S. stock market has experienced exceptional returns over the last few decades, producing abnormally high real returns relative to its longer term history, and relative to global equity returns in other markets. I have attached an article as Attachment AD, which expands on this matter. The authors note that: "The real return on U.S. stocks from 1950 through 2023 was 7.63 per cent, and 7.16 per cent for the 20 years ending December 31, 2023. A real return above 7 per cent is exceptional even for the U.S. market. From 1900 through 1950, U.S. stock returned a real annualized 5.57 per cent." They further note that "Global real stock returns from 1900 through 2023 were 5.16 per cent annualized" (based on analysis of 38 developed markets). Putting this in perspective, they note that: "The often cited 10-per-cent return for stocks based on the post-1950 period is roughly equivalent to a 7-per-cent real return in the historical data. That is about 2 per cent higher than unbiased estimates of U.S. expected returns, U.S. equity returns before 1950 and global stock returns spanning 1890 through 2023." Similar to the U.S. stock returns forecast by investment professionals reported in Table 8, the authors expect future real returns for U.S. stocks in the 4.25% range, and combine this with 2.5% expected inflation to arrive at an expected U.S. stock market return of 7.24%, much more in line with the nominal forecasts provided in Table 8.

I believe that both historical returns and current expectations of market professionals represent the best sources of information regarding future long-term market returns. Combining the historical results and market forecasts for Canada that are presented in Table 7 and discussed above suggests a range of estimates in the 4.0% to 9.3% range, and the mid-point between historical averages (when adjusted to nominal terms) of 8.5% and the forecast average of investment professionals which is 6.1%, of 7.3%. This is consistent with my usual recent assumptions that an appropriate range for expected long-term Canadian stock market returns is 6-9%, and that the mid-point of **7.5% represents an appropriate point estimate**.[42] This is

[42] This estimate of 7.5% for future expected Canadian market returns is reflective of my analysis of historical market returns and forecasts for future returns from investment professionals discussed above. Attachment BC

well above the consensus view of financial professionals of 6.1% that is estimated in the bottom portion of Table 7, but below historical averages, so it seems reasonable. It is important to recognize that this expected market return of **7.5%** represents an **upper bound** for the cost of equity to regulated utilities (before adding 0.50% for flotation costs), since they are less risky than the average company in the market. This aligns well with my DCF estimate for the market of 7.40% (in Section 5.2.2), but is below my implied CAPM estimate for the market of 8.3% (discussed later in this section).

Figure 11 shows that the world market MRP, as measured by the return on the market less the long-term government bond yield over the 1900-to-2015 period, provided an arithmetic average of 4.1% (geometric mean of 3.2%). These means are lower than the corresponding U.S. figures (5.8% and 4.4%) and slightly below the Canadian figures (4.2% and 3.3%) over that period. The figures for Canada are in line with the differences between the average (and geometric mean) returns for Canadian stock and bond returns over the 1938 to 2023 period, which were 4.97% (4.16%) as previously reported in Table 6. These numbers are also consistent with expected MRPs according to a recent survey of analysts, companies, and finance professors, which were in the 5 to 6% range for most regions. The results for Canada and the U.S. are reported in Figure 12, with 2024 figures of **5.2%** and 5.5% respectively.

provides a July 3, 2024 article (published after I had made this estimate) discussing the iShare S&P/TSX 60 Index ETF (XIU). The article confirms the reasonableness of my estimate, suggesting that: "The average annual total return since inception for XIU is 7.6 per cent. If you invest in big Canadian companies, that's your benchmark for measuring returns over periods of 10 years and longer."

M3-10-AMPCO/IGUA-30

Preamble: On page 39, Nexus includes Table 4, which reports "LEI Results as Filed and as Adjusted."

Questions:

(a) Please confirm that in the CAPM, the risk-free rate (RF) represents the actual existing risk-free asset that an investor can invest in today (without any risk) and earn the risk-free rate of return. If not confirmed, please explain.

Response:

We agree with the statement in (a).

(b) Please explain how a Canadian investor today could buy a 30-year U.S. Government bond promising a "2025 forecast" risk-free rate of return of 4.06%, when available 30-year Canada and U.S. bonds are trading at prices today that do not provide that yield, and given that fluctuations in the Canadian to U.S. dollar exchange rate could impact such a return, if it in fact could be obtained?

Response:

As a factual matter, on August 5, 2024 investors could obtain a yield of 4.06 percent on a 30-year US bond. (This rate has since changed (4.18 percent as of August 6, 2024) and is liable to change with each passing day.)

We acknowledged in our Report that the forecasted rate of 4.06 percent was reasonably similar to the then-existing rate of 4.36 percent (on June 25, 2024) and might remove from contention the use of existing versus what the Board has in the past referred to as forward-looking rates.

(c) Nexus adjusts LEI's CAPM Ke estimate by replacing LEI's RF estimate of 3.19% with Nexus' 2025 forecast for U.S. 30-year Treasury yields, and obtains a "corrected" CAPM estimate that is +0.87% higher than LEI's estimate. Please explain, why a "forecast" of a "U.S." yield (that doesn't exist today), would be a risk-free investment option for a Canadian investor today. Would a Canadian investor not face currency risk for example, not to mention that the "forecast" yield (which is not available today)?

Response:

As we noted, the rate of 4.06 percent as of August 5, 2024 was, in fact, available to investors, and hence there would be no difference in what we stated in our Report. We recognize that the 4.06% as of August 5, 2024 has changed and will continue to change.

We will note that (1) LEI also used a forecasted rate; and (2) it is erroneous to swap in a rate based on Canadian dollars into estimation equations that are based on USDs, which was the primary point of our discussion.

In the context of the CAPM, for the marginal investor, currency risk within an integrated market is a separate and diversifiable risk and therefore is not priced into equity.

(d) Table 4 reports a "re-levered" estimate of LEI's "rp" Ke estimate. Please provide the details of how Nexus obtained this estimate, including all data, formulae, inputs etc.

Response:

Please see the file M3-rp_regression.docx for the R code that produces the rp estimate. Please also see M3-NAICS 2211 v04 (as filed).xlsx at tab [rp] for the results of the analysis as they were collected for reporting purposes. The input files are in the zip file "M3-Fig 01 and rp input data". The R code can be implemented as described earlier in our response to M3-10-AMPCO/IGUA-30. We also provide those files in .csv format for use in Excel, but we did not use Excel.

(e) Please provide all data and workpapers (in excel format), including all formulae and calculations, used to prepare Table 4.

Response:

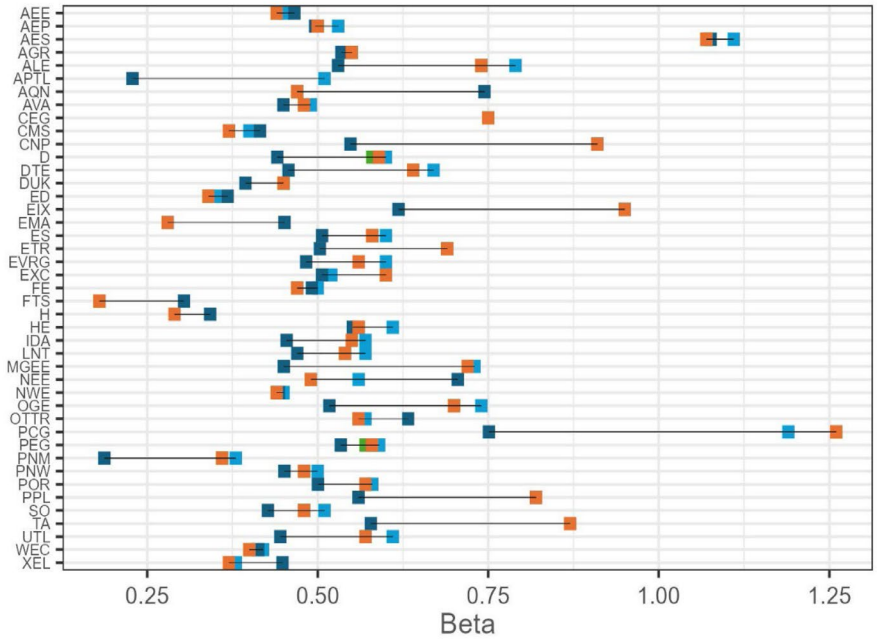
Please see M3-NAICS 2211 v04 (as filed).xlsx at tab [LEI Table 4 and Fig 2].

M3-10-AMPCO/IGUA-34

References: On pages 64-69, Nexus discusses its beta estimate it uses in its CAPM Ke calculations, and its final CAPM Ke estimates.

Page 66 includes Figure 9, which is reproduced below:

Figure 9 – Betas as Obtained from Different Sources



On page 68, Nexus states:

> *The overall average of our relevered (and Blume-Adjusted) betas is 0.7037.*

Evidence supporting the fact that utility betas do not gravitate towards one:

Michelfelder and Theodossiou (2013) show empirically that utility betas do not have a tendency to converge to 1.0 and concluded that the adjusted betas as reported by Value Line are not applicable for public utilities.

- As shown in Appendix B of Exhibit M4 herein (Dr. Cleary's evidence), Sikes (2022) provides a chart in Figure IV of his report that estimates betas for utilities over the 1970-2020 period (i.e., using over 50 years of observations) that leads Sikes to note (on page 48 of his report) that: "It is undeniable based on Figure IV that the Value Line Adjustment is inappropriate. Clearly, utility betas have been consistently below 1.0 and as shown in Exhibit H of the Appendix, the historical sample suggests an average of 0.55." In fact, the line depicting

adjusted betas in Sikes' Figure IV is ALWAYS above the line depicting actual betas – which clearly shows that adjusted beta estimates are upwardly biased.

- Exhibit M4, Appendix B shows that over the historical raw Beta estimates for Canadian Utilities over the 1995-2019 period averaged 0.40 (weekly data) and 0.34 (monthly data), with maximums of 0.71 and 0.62 respectively and nowhere during this 25-year period did the Canadian Utility beta estimates even come close to 1.0.

- Exhibit M4, Appendix B shows that over the historical raw Beta estimates for U.S. Utilities over the 1995-2019 period averaged 0.49 (weekly data) and 0.42 (monthly data), with maximums of 0.84 and 0.85 respectively and nowhere during this 25-year period did the U.S. Utility beta estimates even come close to 1.0.

Questions:

(a) Please confirm whether the beta estimates depicted in Figure 9 are "raw" betas or "adjusted" betas.

Response:

The betas in Figure 9 are "raw" betas.

(b) Please provide the percentage of beta estimates depicted in Figure 9 that are:

(i) Below Nexus' beta estimate of 0.7037

(ii) Below 1.0 (i.e., the beta used in the Blume Adjustment formula)

(iii) Below 0.75

(iv) Below 0.5

Response:

The raw betas are provided in the Excel file M3-NAICS 2211 v04 (as filed).xlsx at tab [beta all]. The distribution of raw betas is as follows (and these figures can be reproduced using the data in the tab [beta all]:

		TOTAL	PCT
TOTAL		43	100.00%
COUNT < 0.7307		37	86.05%
COUNT < 1.0000		41	95.35%
COUNT < 0.75		37	86.05%
COUNT < 0.50		16	37.21%

(c) Please provide all supporting data and worksheets (in excel format), with all accompanying formulae used to construct Figure 9.

Response:

The source code for Figure 9 is available in the Word file M3-Fig 09 Rcode.docx. The input data is pulled from Excel file M3-NAICS 2211 v04 (as filed).xlsx at tab [Betas & Table 8]. The R code is implemented using the steps provided in M3-10-AMPCO/IGUA-26 (b).

(d) Given the evidence cited above that utility betas do not gravitate to one (or that utility sample averages never get close to one) please explain the rationale for Nexus' reliance on upwardly biased adjusted beta estimates.

Response:

Our rationale is not so much linked to a gravitational pull of betas to 1.0 over time as it is to the implication of that hypothesis, which is that, absent the adjustment, the CAPM using historically-based betas makes predictably incorrect predictions about expected returns.

According to Brealey, Meyers, and Allen, this predictable issue with the CAPM has worsened over time. As stated in their college textbook (Principles of Corporate Finance 8th ed. 2006. McGraw-Hill Irwin), BMA note (at p. 195) that "The relationship between beta and actual average return has been much weaker since the mid-1960s." BMA provide a graphic that illustrates this problem with the CAPM (see below).

The figure from BMA shows the actual results of portfolios containing the stocks with different deciles of betas relative to the Market Line, which is where all of the portfolios should lie on if the CAPM were to make correct predictions. The figure shows that low-beta portfolios lie above the Market Line (outperform) while high-beta portfolios lie below the Market Line (underperform).

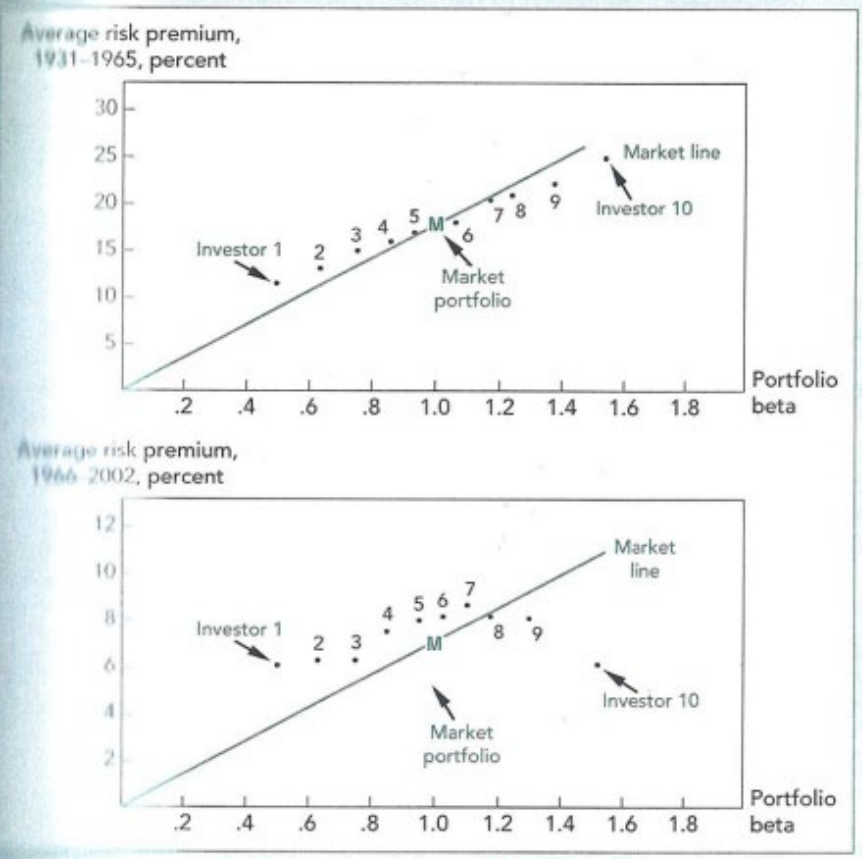


FIGURE 8.10

The relationship between beta and actual average return has been much weaker since the mid-1960s. In particular stocks with the highest betas have provided poor returns.

Source: F. Black, "Beta and Return," *Journal of Portfolio Management* 20 (Fall 1993), pp. 8–18. We are grateful to Adam Kolasinski for updating the calculations.

Applying the Blume adjustment (i.e., Adjusted Beta =2/3 x Raw Beta + 1/3) to the portfolios shown in in BMA Figure 8.10 would move low-beta points on the chart to the right and would move high-beta points to the left.

For example, the point labelled “Investor 1” in the lower panel of Figure 8.10 appears to have a beta of about 0.50. After the Blume adjustment, the beta would be 0.67, or roughly where “Investor 2” appears. The Blume adjustment is not perfect in this example because it does not result in each portfolio landing on the Market Line, where it should lie if the CAPM were a more precise model, but it is an improvement over the unadjusted beta, which is all we ask for in this context.

The second reason for the adjustment is forward-looking and specific to Ontario utilities: Given the expected challenges due to electrification, the adjustment is prudent. (See Nexus Report, pp. 67-68).

We compute the MRP two ways: using interest rates prevailing when the other data were downloaded (4.36 percent on June 25, 2024) and also the one-year forecast of 30-year US Treasury bonds (4.06 percent). The use of the forecast versus the then-prevailing rate changes our overall weighted average cost of equity by 3 basis points. We examined the two methods because the June 2024 evaluation provides insight into the MRP relevant to investors, while the forecasted MRP is consistent with the Board's use of forecasted interest rate data in its 2009 Report. We elected to proceed with the forecasted risk-free rate to match with the Board's preferences, but note that forecasts are guesses about the future and may or may not reflect investors' outlooks in the same way that actual market data does.

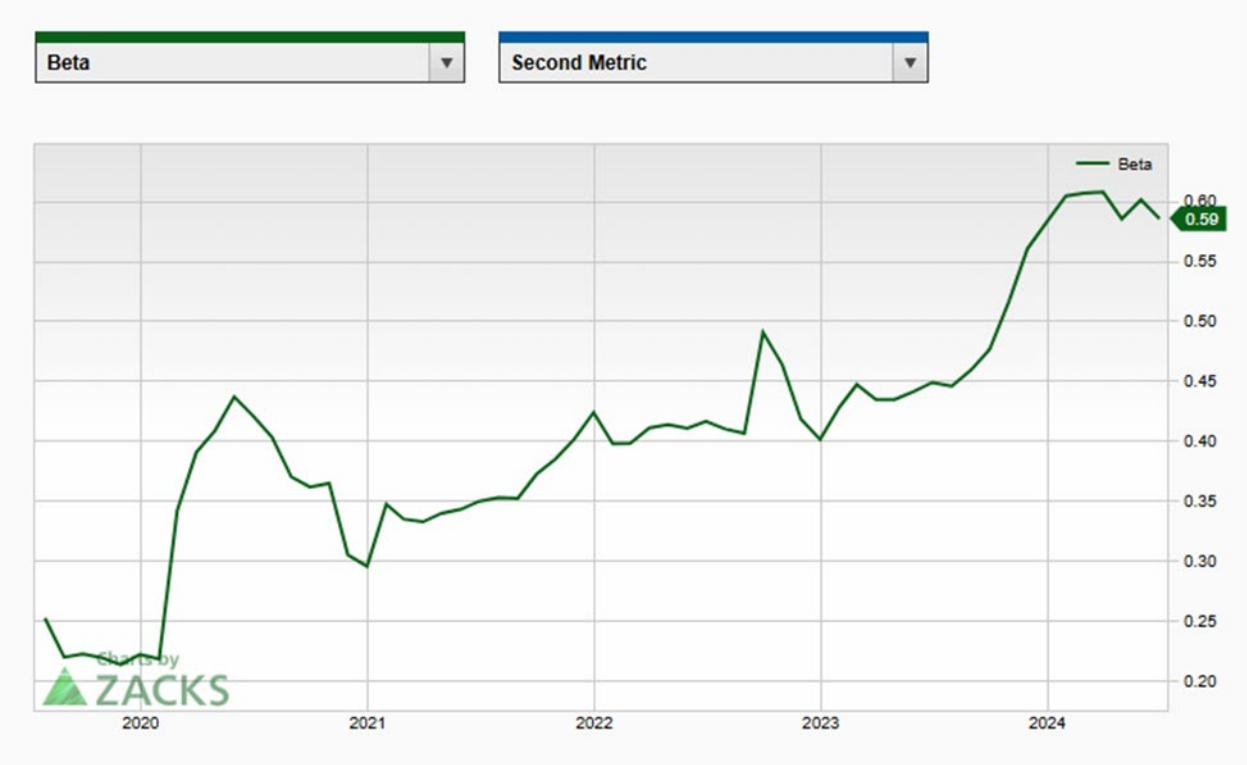
b) Betas

Beta plays an important role in the CAPM. MRP measures the additional return required by an asset of average market risk over the risk-free rate. Beta reflects the exposure of the specific asset to this risk adder. An asset with the average exposure to market risk has a beta of 1.00. Assets with less exposure have betas less than 1.00. A risk-free asset has a beta of 0.00. Betas typically are computed using regression analysis that measures the historical variability of the asset's returns against a market standard.[83]

Historical betas are not stagnant over time. For the stocks that it covers, Zacks.com provides graphics of a moving window that illustrate how its historical betas can change over time. For example, Figure 8, taken from Zacks.com, shows that the historical beta for Dominion Energy has nearly tripled from about 0.20 in 2020 to 0.59 as of July, 2024. At each point on the line, Zacks computes the beta using the same formula and same length of lookback. It adjusts the dates as it moves forward. This implies that even historical betas can vary across data providers depending upon the historical window chosen as well as the index that is used to represent the market as a whole.

[83] There has been some research on this topic using option pricing. See, e.g., Peter Christoffersen, Jacobs, K., and Vainberg, G. "Forward-Looking Betas". April 25, 2008. SSRN working paper. Available at Forward-Looking Betas by Peter Christoffersen, Kris Jacobs, Gregory Vainberg: SSRN.

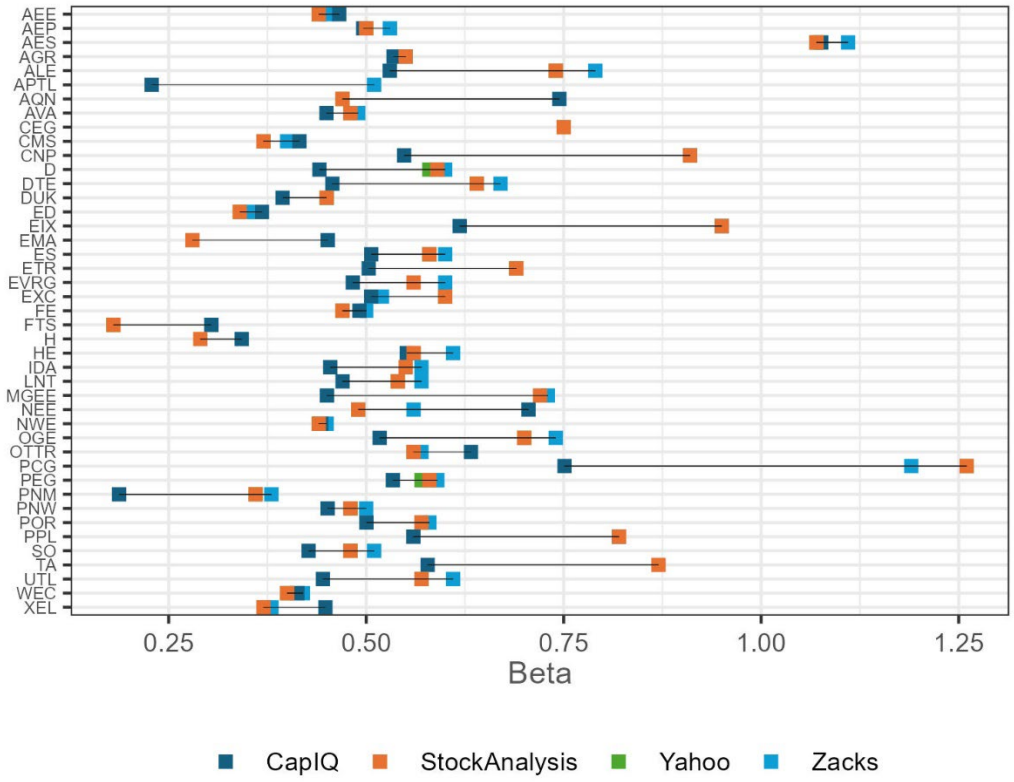
Figure 8 - Evolution of Dominion Energy Beta Since 2020



Zacks computes betas over a 5-year historical window (zacks.com "about beta"). Assuming for a moment that 0.60 is Dominion's true beta, the true beta may already have been in place in early 2020, but it was not observable in the computed beta result until early 2024. This is because low historical return data had to roll out of the Zacks 5-year historical window and be replaced by higher contemporary data. Had Dominion been subjected to a rate case during this hypothetical transition period, a CAPM based on historically derived betas would have produced a lower ROE than is compatible with the FRS. For example, if the MRP were 8.0 percent and the risk-free rate were 4.0 percent, a rate case in 2021 would produce a CAPM result of 6.40 percent, when in fact the true CAPM result should have been 8.80 percent. The result is 240 basis points too low. This is one of the problems with using backward-looking data, especially those with long look-back windows.

We obtained historical betas for the comparator companies identified in Table 6 from Yahoo, Zacks, S&P's CapIQ, and StockAnalysis. These betas are computed from 3 years of monthly price data using the S&P 500 as the market.[84] These are shown in Figure 10.

Figure 9 – Betas as Obtained from Different Sources



We present Figure 9 to illustrate that even historically-derived betas can differ based on underlying assumptions regarding the market that is used as the basis for the analysis (e.g., S&P 500 or the NYSE). The betas can also differ depending on the time window used in the regression, as we discussed in our review of the Dominion beta presented in Figure 8. In other instances, the betas are very similar. Table 8 shows that Yahoo,

[84] See, e.g., https://investexcel.net/how-does-yahoo-finance-calculate-beta/ for a step-by-step process for replicating a beta from the Yahoo Finance website. CapIQ betas are "beta 3-year (country)".

Zacks, and StockAnalysis betas are virtually identical, with correlations with Yahoo of 0.9909 and 0.9999 respectively. The betas shown in the Figure 9 above and analyzed in Table 8 below are unadjusted, raw data from the sources as noted.[85]

Table 8 – Correlations of Betas from Different Sources

	Yahoo	Zacks	CapIQ	Stock Analysis	Avg
Yahoo	1.0000	0.9909	0.6954	0.9999	0.9859
Zacks	0.9909	1.0000	0.7261	0.9907	0.9837
CapIQ	0.6954	0.7261	1.0000	0.6879	0.8023
StockAnalysis	0.9999	0.9907	0.6879	1.0000	0.9821
Avg	0.9859	0.9837	0.8023	0.9821	1.0000

As noted, the betas from Yahoo, Zacks, and StockAnalysis are nearly identical. We tested for statistical differences between the means and found that there was none for any of the raw betas.[86] Accordingly, we computed the average beta for each firm across the four data providers and used this average. This approach ensures that we maximize coverage because, for example, Yahoo might have a beta for a firm that CapIQ does not, as well as differences due to the vagaries of the historical data used in the calculation.

We also follow the practice of adjusting raw betas for mean reversion using the Blume adjustment:[87]

$$\beta_{adj} = \beta_{raw} \times {}^{2}/_{3} + 1.00 \times {}^{1}/_{3}$$

The idea, developed by Marshall Blume, is that historical betas are biased estimates of the future because of reversion to the mean (of 1.00) in the time-series data. For electric

[85] The graphic does not show many Yahoo betas (green) since they are hidden under the StockAnalysis (orange) betas for the most part. Internet research, including discussion pages and personal experience replicating the Yahoo betas confirm that the betas are not adjusted. See, e.g., https://investexcel.net/how-does-yahoo-finance-calculate-beta/

[86] For the leverage-adjusted betas, CapIQ's mean was below that of the other three.

[87] Vendors such as Bloomberg and Value Line offer adjusted betas of this type. See, See, e.g., "Bloomberg Guide: Beta" at https://guides.lib.byu.edu/c.php?g=216390&p=1428678. See, also, Marshall Blume, Betas and Their Regression Tendencies, 30 J. OF FIN. 785, 794 (1975).

service providers, there is also a fundamental, forward-looking reason to anticipate that electric industry betas will move toward 1.00 over time, and that is the additional regulatory and business risk that will be created as the electric service industry implements Net Zero and other regulatory-imposed measures envisioned to reduce the amount of carbon dioxide in the atmosphere.

While other adjustment approaches exist, the Blume adjustment is common and is available to portfolio managers and investors for use in their valuation analyses. It is a commonly understood and widely used approach to determining a more forward-looking estimate from purely historical data.[88]

Since different firms have different capital structures (and therefore different financial risk), we relever each beta to the Deemed Debt ratio of 60 percent debt and 40 percent equity (and a tax rate of 26.5 percent) using the Hamada equation, as LEI did, to apply to our CAPM calculations.[89]

As an independent test of reasonableness of our results, we observe that Damodaran's 2024 industry sector beta showed Utilities with a raw beta of 0.58 and a Debt-to-Equity ratio of 0.8484.[90] Using the Hamada adjustment to unlever and relever the betas to the Deemed Debt Ratio of 1.50 and tax rate of 0.265 produces a beta of 0.71485. The overall average of our relevered (and Blume-Adjusted) betas is 0.7037 which we conclude is reasonably close to the Damodaran relevered (but otherwise unadjusted) industry beta.

Applying the CAPM using a forward-looking MRP and interest rates results in an ROE of 10.19 percent excluding the transactions cost recovery of 50 basis points, or 10.69

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[88] In his book on regulatory finance, Roger Morin notes that neither the historical nor the adjusted beta is optimal, but that the adjusted beta is the better of the two:

> *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. Morin, p. 73.*

[89] We discuss the Hamada adjustment later in this Chapter.

[90] See, Betas by Sector (US). Date of Analysis: Data used is as of January 2024. Available at Betas (nyu.edu).

percent including those costs. Table 5 shows the lower and upper 95 percent confidence limits on the estimate.

3. Nexus Discounted Cash Flow Results and Discussion

The single-stage DCF is based on the fundamental equation of value:

$$Value = \sum_{t=1}^{\infty} \frac{Expected\ Cash\ to\ Investors_t}{(1+k_e)^t}$$

This equation says that the value of an economic asset equals the expected cash paid each period discounted by the relevant risk-adjusted cost of capital. Infinite-lived assets, such as equity, whose cash-to-investors is presumed to grow forever at a constant rate, *g*, can be expressed by a simplified equation as:

$$Value = \frac{Expected\ Cash\ to\ Investors}{(k-g)}$$

As noted earlier, using dividends per share as the Expected Cash to Investors, and price per share as the value metric (in a well-functioning capital market prices equilibrate to value), the Gordon model becomes:

$$k_e = \frac{d_0(1+g)}{P} + g$$

a) Dividend Yield

For the dividend yield, we use contemporary yields (i.e., May 2024, when the dataset was downloaded from CapIQ).

b) Growth Rates

We use growth rates from Yahoo Finance, Zacks, S&P's CapIQ, and Stockanalysis.com. Our goal is to cross-reference data from reputable sources to help ensure that the data

5. LEI Risk Premium Approach

Unlike the DCF and CAPM models, the risk premium approach does not produce a cost of equity *per se*, but it can nevertheless be helpful to the Board. The risk premium approach evaluates the returns to equity authorized by state regulators for electric utilities (typically in the US). The risk premium method typically puts authorized returns on a more equal footing by evaluating how authorized returns vary with interest rates. The risk premium helps the Board compare its potential authorization to return that other firms receive. For this reason, the Board may wish to consider the implications of LEI's analysis in its Figure 69 for its determination of the base rate of return.

In Figure 69, LEI shows authorized returns (or in LEI's terminology, the Allowed Return) as a function of interest rates:

$$Allowed\ ROE = 8.4164 + 0.2590(US\ 30yr\ Treasury) + 0.1288(Moodys\ Baa)$$

That first number in the equation, 8.4164, is called the constant or y-intercept of the regression equation. It is the value that the estimated allowed ROE would take if US 30-year Treasuries and Moody's Baa bonds both had yields of 0.00 percent. This figure tells an important story that LEI ignores. The 8.4164 represents the ante or table stakes for regulated utilities in the US. Yet, it is evident that this figure is close to what LEI recommends as the base rate of return for use in Ontario. This illustrates that LEI's base ROE recommendation is unreasonably low since nominal long-term interest rates are unlikely ever to be at 0.00 percent.

In an interest rate environment where US 30-year Treasuries are over 4.0 percent and Moody's Baa bonds are about 5.80 percent, Ontario electric service providers simply are not in the game at the LEI proposed base rate of return of 8.95 percent, or, indeed, at the current rate of return of 9.21 percent.

Using more contemporary yields on US and Moody's Baa bonds of 4.06 percent (forecast for 2025) and 5.78 percent (as of 6/25/2024) respectively Figure 69 predicts an authorized ROE by US state regulators of 10.35 percent (unadjusted for leverage), which is substantially higher than LEI's recommended return on equity of 8.95 percent. When

adjusted for leverage, LEI's risk premium model produces a return of 10.80 percent (as shown in Table 4 at line [3]), which is similar to, although lower than, our (leverage-adjusted) risk premium results of 11.09 percent, which is shown in Table 5 at line 7.[75] This is additional evidence that LEI's CAPM result of 8.95 percent is incorrect and inadequate.[76]

We recommend that the Board consider the implications of LEI's own risk premium analysis with regard to ROE. We discuss below that if the Board elects to use LEI's risk-premium approach in the adjustment mechanism, its implementation should adhere to the opportunity cost principle that everyone in the same market pays the same price for the same resource. This requires an apples-to-apples principle where the same inputs—namely, US-based yields—that were used to estimate the base equation are used to estimate the annual implementation equation. This means that LEI should use US dollar-based yields in its computation of the adjustment mechanism for any future year, just as it used these US-based rates to estimate the adjustment equation itself.

D. Nexus Economics Evaluation and Recommendation

In this Section, we discuss our independent analysis of equity costs applicable to Ontario electric service providers. We use several theoretical approaches (CAPM, Discounted Cash Flow, and risk premium method) and data sources (Yahoo, Zacks, S&P's CapIQ, and StockAnalysis) in our calculations:

- In our first Subsection we describe how we selected risk-comparable firms to the Ontario electric service providers;
- In the subsequent Subsections, we discuss in turn our results:
  - CAPM;
  - Discounted Cash Flow; and

[75] The authorized Debt ratios in the US are around 50:50 versus the 60:40 that is the current Deemed Debt Ratio in Ontario. In both cases (our risk premium, and our analysis of the LEI risk premium) we remove 50 basis points from the re-levered result under the assumption that all states provide an equity transactions cost (flotation) adjustment of 50 basis points.

[76] Indeed, LEI's recommended 8.95 percent is not within *any* of our 95 percent confidence intervals regardless of methodology applied. LEI's corrected average of 10.51 percent (excluding equity transactions costs) is similar to our own weighted average of 10.58 percent (excluding equity transactions costs). See, Table 5.

in line 1 of Table 9 (below). The 10.92 percent does not include the 50 basis point adder for equity transactions costs. When added in, this brings the average to 11.42 percent. The lower- and upper- 95 percent confidence interval on this average also found on line 1 of Table 9 is 9.92 percent to 11.93 percent, which excluding transactions costs. The 9.92 and 11.93 percent become 10.42 and 12.43 percent respectively when the 50 basis point transaction cost recovery amount is added in (these amounts are not shown on Table 9).

Although we acted independently with the selection of comparable firms and the DCF analysis itself, our resulting weighted average DCF cost of equity of 10.92 percent is reasonably close to the unadjusted 10.53 percent DCF result from LEI that is found on LEI's Figure 38 (at p. 116). LEI's DCF result likewise excludes transactions costs.[96] LEI's DCF results are within our own 95 percent confidence interval for both DCF and overall cost-of-equity results.

4. Nexus Risk Premium Method Results and Discussion

In our analysis, we examine authorized ROEs as a function of interest rates. We used the S&P's SNL Financial data file of US authorized returns on equity.[97] We filtered the data to remove irrelevant data:

- Requested and authorized ROEs greater than zero;
- Requested and authorized debt ratios greater than zero;
- Eliminated cases categorized noted as "Limited-Issue Rider" although these cases tended not to have requested or authorized ROEs in any event;
- Eliminated Illinois cases since these are on formulary rates; and
- This produced 545 observations. We obtained daily interest rate data obtained from the Federal Reserve of St. Louis.

We followed LEI's methodology by computing a linear regression equation that estimated average allowed ROEs as a function of 30-year US Treasury bond yields and Moody's

[96] The comparison excludes transactions costs, except as noted.
[97] S&P and its subsidiary SNL are well-known purveyors of regulated utility financial data.

Baa-rated commercial bond yields. To put the regression equation on an equal risk-adjusted footing, we *unlevered* the authorized ROEs using the unlevering equation discussed earlier. Accordingly, our training equation was:

$$Unlevered\ Authorized\ ROE = \alpha + \beta_1(30\ Year\ US\ Treasury\ Yields) + \beta_2(Moody'sBaa\ Yields)$$

And our prediction equation is:

$$ROE_u = 5.03074 + 0.46903\ DGS30 + 0.12186\ DBaa$$

Using a rate of 4.06 percent (2025 forecast for 30-year US Treasury bonds) and Moody's Baa yield of 5.790 percent produces an unlevered ROE of 7.863 percent, which we then relever to the Deemed 60:40 Debt-to-Equity ratio and a tax rate of 26.5 percent to produce an ROE of 11.59 percent, as reported in Table 2. We then *remove* 50 basis points (for transactions costs) from the risk premium result to produce 11.09 percent. We do this out of a sense of caution. We do not know which US jurisdictions add transactions costs, but we are aware that it is not uncommon to do so. Accordingly, after making our risk premium calculations we reduce the result by 50 basis points in our Table 9 results.

As we noted, our result of 11.09 percent for the risk premium method is similar to the 10.80 percent ROE that LEI's risk premium method produces (when adjusted for leverage and taxes, and also with 50 basis points removed). We also removed 50 basis points from the LEI result, extending this same line of reasoning. The similarity of the results, and the fact that the LEI result is within our 95 percent confidence interval provides additional confidence in the reasonableness of these results.