Expert Report on the Cost of Capital and Certain Accounting Issues EB-2024-0063

Prepared for the Electricity Distributors Association

July 19, 2024

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List of Acronyms

Acronym	Description
APO	Annual Planning Outlook
AUC	Alberta Utilities Commission
BCA	Benefit-Cost Analysis
CAPM	Capital Asset Pricing Model
CORRA	Canadian Overnight Repo Rate Average
D/E	Deemed Debt Ratio
DCF	Discounted Cash Flow
DER	Distributed Energy Resources
DSTDR	Deemed Short-Term Debt Rate
DVA	Deferral and Variance Account
EDA	Electricity Distributors Association
Fed	U.S. Federal Reserve Bank
FEI	Framework for Energy Innovation
FPC	Federal Power Commission
FRM	Formula Rate Making
FRS	Fair Return Standard
GAAP	Generally Accepted Accounting Principles
IAS	International Accounting Standards
IESO	Independent Electric System Operator
IFRS	International Financial Reporting Standards
LCBF	Long Canadian Bond Forecast
LEI	London Economics International
MRP	Market Risk Premium
NAICS	North American Industry Classification System
NCP	Non-Coincident Peak
NWA	Non-Wires Alternatives

NYSE	New York Stock Exchange
OEB	Ontario Energy Board
OTC	Over the Counter
P/E	Price Earnings ratio
PBR	Performance Based Regulation
REV	New York "Reforming the Energy Vision" initiative
ROE	Return on Equity
S&P	Standard & Poors
TSX	Toronto Stock Exchange
VEI	Vertically Integrated Utility
WACC	Weighted Average Cost of Capital

I. Executive Summary

The Ontario Energy Board (OEB or Board), in Case Number EB-2024-0063, has launched a generic proceeding to consider the methodology for determining the values of the cost of capital parameters and deemed capital structure to be used to set rates for Ontario electricity transmitters, electricity distributors, natural gas utilities, and Ontario Power Generation Inc.

The OEB last reviewed its cost of capital methodology in 2009 through its Report of the Board on the Cost of Capital for Ontario's Regulated Utilities, December 11, 2009 (EB-2009-0084) (the 2009 Board Report).

Nexus Economics LLC (Nexus Economics) has been retained by the Electricity Distributors Association (EDA) to address certain issues identified on the Issues List and to analyze and prepare a response to the London Economics International (LEI) report "Independent Expert Report for the Generic Proceeding on the Cost of Capital and Other Matters (EB-2024-0063)" (or LEI Report) prepared on behalf of OEB staff.

A. The OEB Issues List

The OEB identified 22 issues in this proceeding. This report addresses 9 of these issues. The issues that we address are listed in Table 1 below.

Table 1 – Issues Addressed in this Report

Issue Number	Issue Description
2	What Risk Factors Should Be Considered When Determining the Cost of Capital
3	Regulatory and rate-setting Mechanisms
8	Treatment of Capital Acquisition Transaction Costs
10	Methodology to Estimate a Return on Equity
11	Perspectives of Debt & Equity Investors

12	Capital Structure / Equity Thickness
14	On-going Monitor indicators to test the reasonableness of the results generated by the capital methodology
15	How should the OEB regularly confirm that the FRS continues to be met
17	Mechanics of Implementation - Timing of Cost of Capital Updates

Other issues that the OEB identified are not addressed in this report, either because we were instructed that they were not relevant to the EDA membership or we had no significant criticisms to the LEI conclusions. However, the absence of an opinion on any issue should not be construed as support of the LEI analysis about that issue.

The issues which we do **not** explicitly address are listed in Table 2 below:

Table 2 - Issues Not Addressed in this Report

Issue Number	Issue Description
1	Should the approach differ based on the source of capital or ownership structure
4/5	Short-term Debt Rate
6/7	Long-term Debt Rate
9	Implications of differences between actual and deemed capital structure
13	Electricity transmitters – single vs. multiple assets
16	What should be the timing of the annual cost of capital parameters updates
18	How changes should be implemented - one-time basis upon rebasing or gradually over a rate term

19	Should changes in the cost of capital parameters be implemented in the middle of an approved rate term?
20 / 21	Prescribed Interest Rates
22	Cloud Computing Deferral

B. The Fair Return Standard

In preparing its response to this Proceeding, Nexus Economics is guided by the imperative that its proposed methodology and rate of return on equity comply with the Fair Return Standard (FRS). The Board has phrased the requirements for a fair return as:

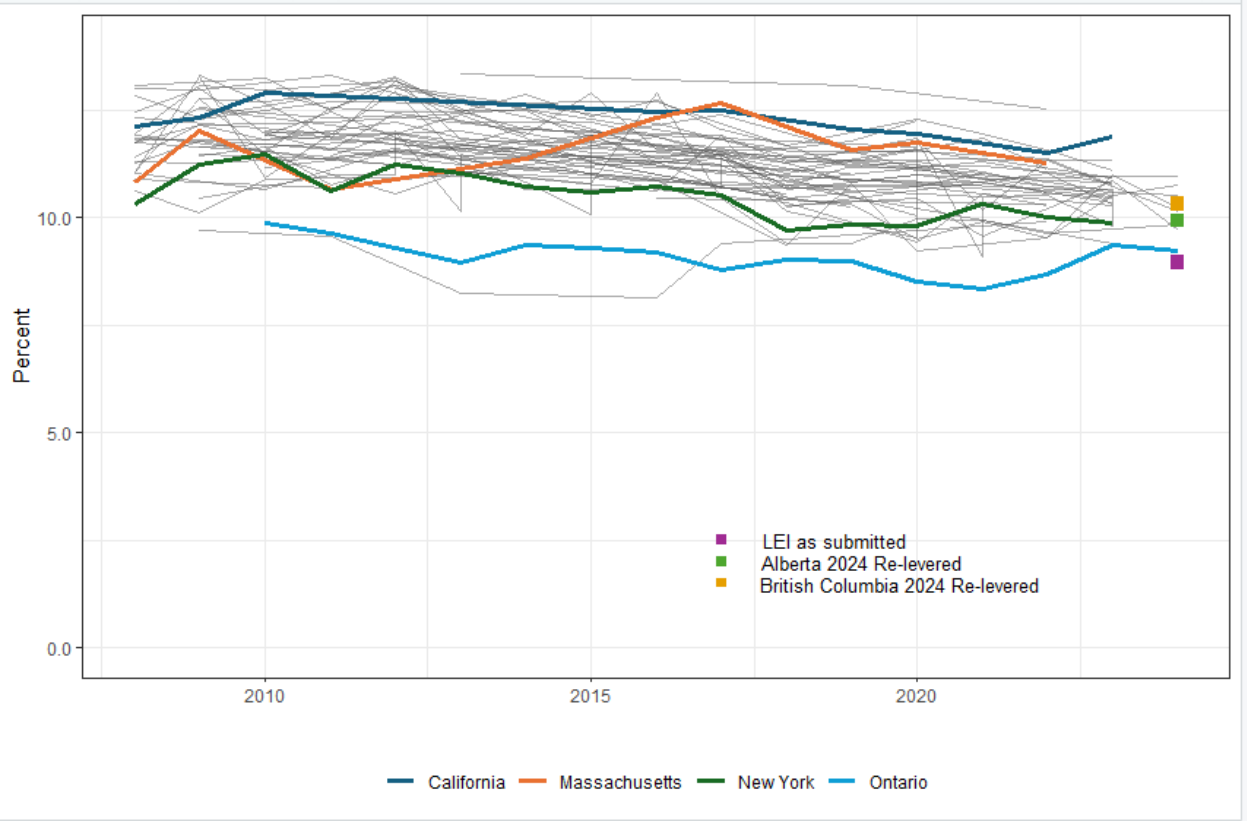
- Be comparable to the return available from the application of invested capital to other enterprises of like risk (the comparable investment standard);
- Enable the financial integrity of the regulated enterprise to be maintained (the financial integrity standard); and
- Permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (the capital attraction standard).

The FRS is the legal standard that must be met in establishing a utility's rate of return. Chapter II details the legal underpinning of the FRS in Canada.

C. Benchmarking of Authorized Return on Equity

One of the bedrock requirements of the FRS is that a fair return must be comparable to the return available from the application of invested capital to other enterprises of like risk. Therefore, we reviewed recently authorized ROEs for jurisdictions similar to Ontario. This comparison reveals that under the OEB's existing ROE methodology, ***Ontario ROEs for many years have been and are significantly below peer jurisdictions***. The results of this analysis are illustrated in Figure 1 below:

Figure 1 – Comparison of Ontario Authorized ROEs to Canadian and U.S. Peers (Levered to 60:40)[1]



The coloured lines and dots in Figure 1 represent the comparator states and provinces selected by Nexus Economics and described in Chapter III (Benchmarking). The grey "spider web" in Figure 1 represents the other US states.[2] We provide these states to illustrate that our recommendation is not due to a *post-hoc* selection of peers.[3] Notice also that the methodology proposed by LEI yields an ROE of 8.95 percent that is even lower than these peer ROEs. Chapter III (Benchmarking) further describes Nexus Economics' benchmarking analysis and conclusions.

The ROEs set by the OEB and proposed by LEI are nowhere near the return available from the application of invested capital to other enterprises of like risk. Neither meets

[1] Alberta and British Columbia references recent decisions in those jurisdictions.
[2] The grey line below Ontario during the 2012-16 period is Arkansas, which had a formular rate.
[3] We re-levered all of the US states to the Deemed Debt Ratio of 60 percent and most US states use a 50:50 ratio. We also added "re-levered" Alberta and British Columbia returns since these jurisdictions use a 55 percent Debt capital structure (more equity than is currently the case in Ontario). We adjusted all of these ROEs up to their financial-risk equivalents using the leveraging formula detailed later in this Report.

the legally required FRS. They are also likely, now and over time, to result in a situation where Ontario utilities are unable to attract capital on reasonable terms. This situation must be corrected going forward to bring ROE regulation in Ontario into compliance with the FRS.

D. Return on Equity

As noted, the FRS requires (*inter alia*) that a reasonable return be comparable to the return available from applying invested capital to other enterprises of like risk (the comparable investment standard) and be able to attract capital in a competitive market (the capital attraction standard).[4]

In this report, we present a recommended return on equity methodology consistent with the FRS's opportunity cost foundation (i.e., a marginal investor will sell a lower-yielding investment and buy a higher-yielding investment of like risk if the prices differ) and its corollary, the law of one price (i.e., in an equilibrium market, everyone pays the same price for the same good or service—such as for capital).

Our approach involves applying multiple methodologies (i.e. Capital Asset Pricing Model (CAPM), Discounted Cash Flow, and Risk Premium) to arrive at our ROE recommendation. These are approaches that the Board considered and used in its 2009 consultation and Report. As a result of our independent analysis, to meet the FRS, ***we recommend a fair return on equity be established at 11.08 percent***. This result includes 50 basis points for transaction costs associated with acquiring the equity, which is a continuation of existing OEB policy.

We explain in detail in Chapter VII (Return on Equity - Issue 10) how we compute this recommended return. As noted, we use multiple methodologies (CAPM, Discounted Cash Flow, and Risk Premium) and data from numerous public sources (Yahoo Finance, Zacks, Multpl.com, S&P's CapIQ, and StockAnalysis.com). These sources are data aggregators and we describe the underlying sources for their data. The 11.08 percent

[4] 2009 Board Report, p. 18 (citing to the National Energy Board in RH0202004 Phase II Decision).

recommendation is the overall average from our analysis. We compute this overall average by weighting the estimates made from all of our methodologies or sources. Since we are computing numbers across a cross-section of companies, some of the results are tightly clustered and others are more dispersed. The tightly clustered results get a higher weight than the dispersed results. In all cases, we adjust for differences in leverage to the Deemed Debt Rate of 60 percent. In this way, we put the results on the same financial risk footing as Ontario. We believe that our methodology is fairly and consistently implemented in compliance with the FRS to present the Board with a reasoned and reasonable cost of equity estimate as well as an indication of our confidence in the estimate, as expressed by the weighting methodology and our presentation of statistical confidence intervals.[5]

In contrast, LEI proposes a ROE of 8.95 percent, which does not meet the FRS. LEI reaches this result based on what it claims are only incremental changes to the current approach to calculating ROE established in the 2009 Report. Nexus Economics disagrees with LEI's assertion that it makes only incremental changes. Rather, LEI's proposed approach differs significantly from the analysis in the OEB's 2009 Report. The differences include:

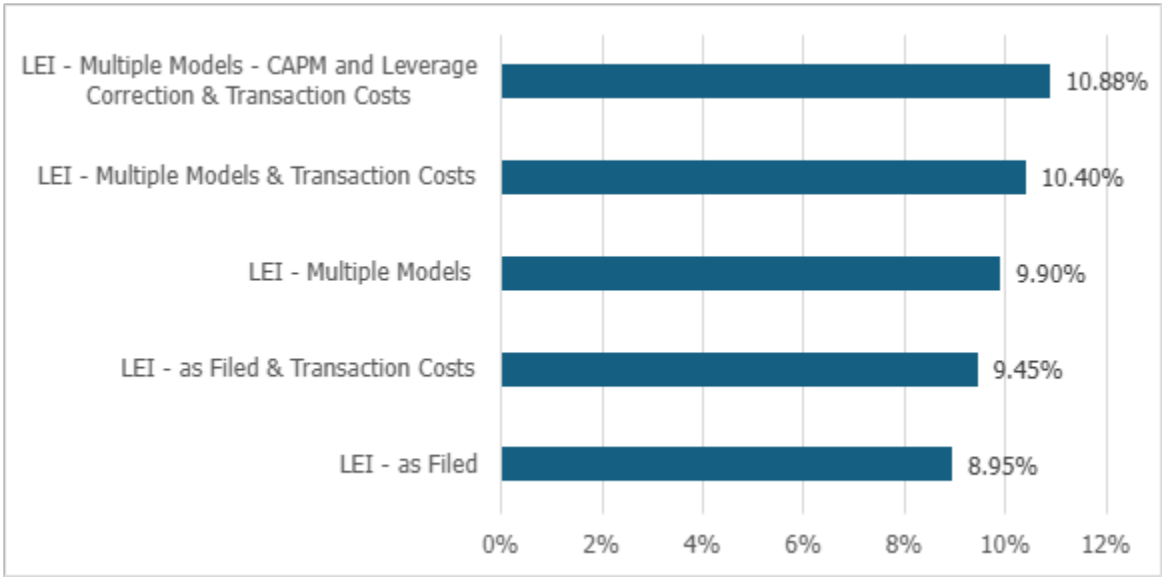
- The OEB's 2009 Report (and the Nexus Economics approach) used multiple models to calculate ROE, while LEI proposes to use only a single model, the Capital Asset Pricing Model. Adopting LEI's own results from the different models it considered, but decided not to use to reach its final conclusions, substantially increases LEI's proposed ROE.
- LEI proposes that Transaction Costs be excluded from the ROE and instead be expensed, thereby disregarding IAS and IFRS accounting rules. Adopting approaches consistent with IAS and IFRS pronouncements, as Nexus Economics instead proposes to do and as the OEB did in the 2009 Report, increases the deemed ROE by 50 bps; and

[5] Whereas the average is the point estimate of an unknown parameter ("truth"), the confidence interval is an interval estimator for that unknown parameter. We cannot know the cost of equity with complete certainty (parameter value) and so we provide the best estimate (mean) and an interval estimate (confidence interval) for that estimate. See Chapter VII (ROE), Section D.5 for a more thorough discussion.

- LEI made a conceptual technical error in its CAPM calculation, which incorrectly implies a country risk premium of 87 basis points exists for U.S. capital markets compared to Canadian capital markets.

Figure 2 below illustrates the impact on LEI's proposed ROE of correcting these three points. With all three corrections (multiple models, transactions costs, error in CAPM) and putting the risk premium results on the same Debt-to-Equity ratio as Ontario (60:40), LEI's resulting implied ROE result of 10.88 percent lands within our confidence interval.[6] To produce these results, we accepted uncritically all of the other underlying assumptions and data used by LEI to produce its results, other than the adjustments noted. In other words, ***once the errors in LEI's approach are corrected, its analysis yields a result approaching our recommended result***, demonstrating the reasonableness of our analysis.

Figure 2 – Impacts of Corrections to the LEI ROE Calculation



Chapter VII (Return on Equity – Issue 10) addresses Nexus Economics' disagreement with LEI's approach as well as its independent ROE analysis and recommendation.

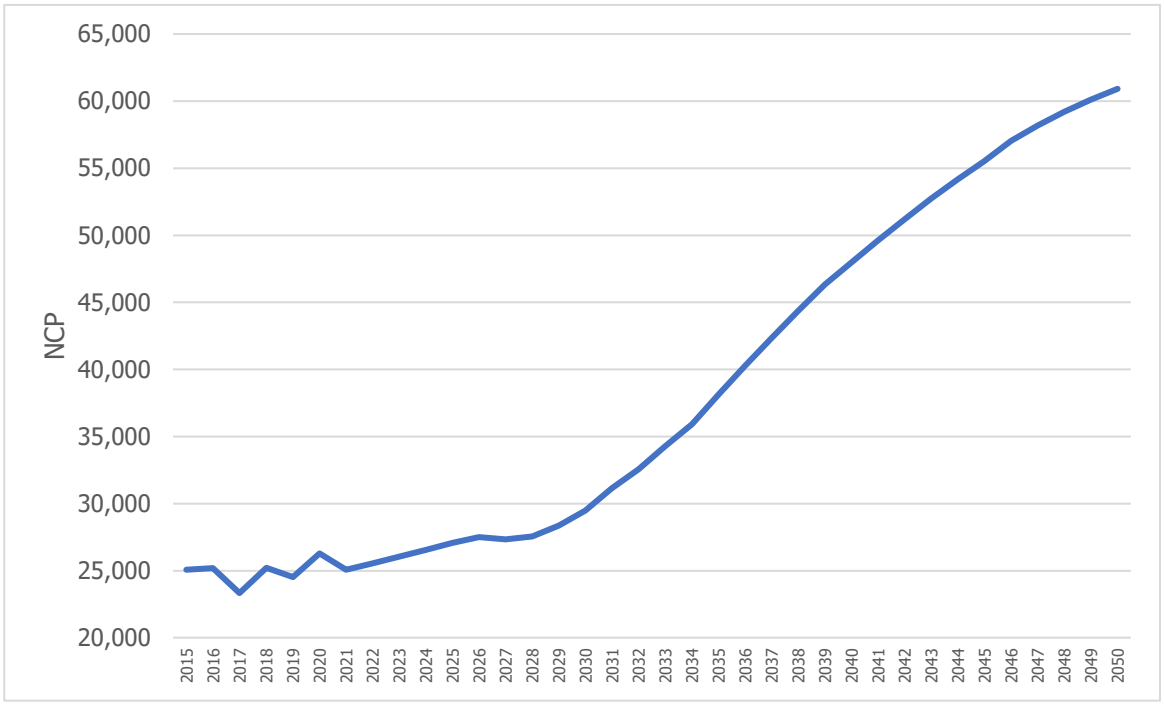
[6] As noted in 5, the confidence interval provides an indication of uncertainty in statistical estimation. We describe it in more detail in Chapter VII (Return on Equity – Issue 10).

E. Risk Factors Impacting Distributors

Changes in the electric utility market influence the level of risk to which the distributors are exposed, thus impacting the ROE which the utility is required to receive. Distributors in Ontario are facing significant risks associated with the energy transition and other events. As a result of these risk factors, capital spending is expected to increase markedly, triggered by significant load growth, grid hardening, and cyber-security investments. These risk factors can result in a required return on equity greater than those of its would-be peers. These risk factors are difficult to quantify with any certainty, and, for this reason, we did not add any increment to account for them in our estimate of ROE. We therefore conclude that our own estimate may be low relative to the going-forward requirements of the utilities. This recognition of uncertain times ahead informs our recommendation that the Board revisit the ROE issue within a 3-year period rather than the current 5-year period. History demonstrates that 15 years is excessive and should not be allowed to occur in the future.

While there are several risks facing Ontario utilities, there can be none more fundamental than the imminent energy transition, sometimes also referred to as "electrification." Currently, the electric power industry is facing an energy transition that has not been experienced in the past half-century. Ontario's embrace of decarbonization is triggering electrification and growth in significant demand. Figure 3 shows the projected NCP growth for the province based on projections developed by the Independent Electricity System Operator (IESO).

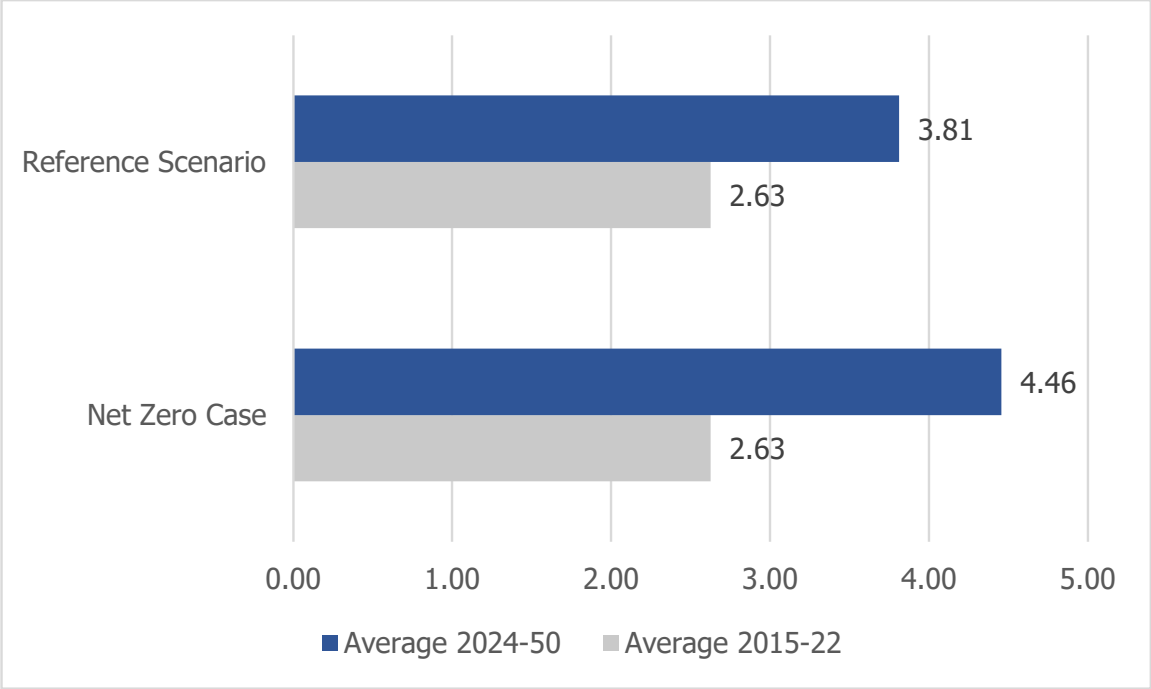
Figure 3 – Ontario's Projected NCP Growth



From 2016 through 2023, the Non-Coincident Peak (NCP) Demand grew annually at 0.2 percent per year. However, projections for the 2025 through 2050 period have NCP Demand growing at 3.3 percent per year, which would more than double peak demand from today's levels. To meet the anticipated demand, the distributors essentially must build a second infrastructure, as well as maintain and update existing infrastructure. The following Figure 4 illustrates the EDA's projections of distribution infrastructure investment trajectory in the IESO's reference scenario and net-zero scenario.[7]

[7] The Reference and the Net-Zero Scenarios were developed by the EDA based upon load forecasts developed by the IESO. These IESO reports referenced for the development of these forecasts were the 2024 Annual Planning Outlook and the Pathways to Decarbonization Report.

Figure 4 - Projected Annual Infrastructure Investments by Ontario Distributors – Billion 2023$s



In both the Reference Scenario and the Net Zero Case the level of distribution investments is anticipated to increase significantly. Historically, distributors have been required to make annual distribution investments of $2.63B. Annual distribution investments for the Reference and Net Zero cases are projected to be an average of $3.81-4.46B between 2024 and 2050. The net zero scenario increases annual capital by 70 percent compared to historical spending. This last point is crucial, because the investment required by the energy transition is not far off in the future: substantial investment is required in under 5 years.

The energy transition introduces significant risks to the electricity distributors in Ontario. Nexus Economics is of the view the Board should consider energy transition in this proceeding as a factor influencing the risk level not captured in historical data. To the extent the Board is faced with a range of proposed ROEs, the Board should not limit itself to the lower end of the range and thereby fail to account at all for energy transition risk. We disagree with LEI that these risks are addressed in the existing regulatory mechanisms provided to distributors because the electric power environment is changing so significantly from the status quo, as further discussed below.

Chapter IV (Risk Factors – Issue 2) addresses the energy transition and other risk factors.

F. Regulatory and Rate Setting Mechanisms

This proceeding is limited to cost-of-capital issues. However, LEI has identified a number of elements of the Board's regulatory mechanisms that they believe reduce risk for distributors (including energy transition risk). However, the risk mitigation LEI believes exists in Ontario is not as strong as LEI suggests.

The current Incentive Rate Mechanism was developed in a different environment in the electric power industry. Demand was stagnant or decreasing, and infrastructure innovation was much smaller than in the current environment. The dramatic changes in the electric power industry will impact the operational and cost environment of the distributors. We suggest that the Board open an investigation into revisions in the regulatory mechanisms used in Ontario.

Evidence contradicting LEI's claim that Ontario's regulatory mechanisms reduce risk is its own Figure 19, which illustrates that, on average, a group of 54 Ontario distributors are not earning their deemed return. The systematic underearning does not support the claim that the regulatory environment in Ontario is as safe as LEI claims.

Chapter V (Key Regulatory Mechanisms – Issue 3) addresses the regulatory mechanisms that LEI presents and why these are inadequate to mitigate the risk associated with the energy transition.

G. Timing of Cost of Capital Updates

The cost of capital has not been examined thoroughly and publicly in a forum such as this since 2009. The 2009 Report provided for annual ROE updates based upon changes in Canadian Bonds Rates, which therefore consider changes in some financial market conditions. However, the annual updates do not address the effects of more fundamental industry changes or those changes that are reflected in economic variables other than the risk-free or corporate bond rates. The 2016 review of the 2009 Report was flawed in that it failed to update models or parameters used to estimate the ROE (e.g., Capital Asset Pricing Model, Discounted Cash Flow or Risk Premium).

Nexus Economics suggests:

- An interval of fifteen years between public formal reviews for a matter as important as the cost of capital is excessive; and
- A significant loss of institutional knowledge has occurred, which challenges all parties in proceedings addressing a highly complex set of issues.

Therefore, Nexus Economics recommends that a review of the cost of capital occurs every 3 years. Interim adjustments in the intervening years can be made using an interest rate-based adjustment mechanism.

Chapter XII (Mechanics – Issue 17) addresses Nexus Economics' recommendations with respect to the timing of cost of capital updates.

H. About the Authors

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Dr. Francis X. (Frank) Pampush provides expert analysis, economic and financial studies, and models that are used to address complex business decisions and disputes. Dr. Pampush's experience includes the analysis of network industries such as communications / Internet, electricity production/transmission/distribution, and oil and gas pipelines.

Dr. Pampush's specialties are economic valuations, damages assessments, cost of capital, and data analytics. He has developed or managed the development of discounted cash flow valuation models and damages analyses for the oil exploration and production industry in Latin America, the telecommunications equipment and services industries in the U.S. and Japan, the U.S. wholesale electric power market, and beverage bottling industries in Latin America. He has statistically analyzed credit rating determinants for investor-owned and public power corporations. He has provided expert reports and/or testimony on the cost of capital, discount rates, and country risk before the Federal Energy Regulatory Commission (FERC), the Regulatory Authority of Bermuda, the Puerto Rico Energy Commission, and to the Israel Electric Corporation. He has served as the expert in wholesale electric power contract price negotiations and for the cost of capital. Dr. Pampush earned a BA in Economics from Miami University (Ohio) and a PhD in Economics from the University of North Carolina. Dr. Pampush is also a CFA Charter Holder (1993).

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Mr. Zarumba is an economist with 39 years of experience specializing in the regulation of public utilities and electric system planning. He has extensive experience assisting Ontario utilities, trade associations, and the OEB. He has advised clients on regulatory strategy, innovative pricing and cost-of-service analysis, securitization, calculation revenue requirements, electric transmission pricing, cost-of-service issues, valuation of damages, market price forecasting, merger/acquisition/divestiture of assets, and other related

services. He has taught advanced electric power pricing and DER Compensation at Michigan State University and the University of Missouri.

Mr. Zarumba has appeared as an expert witness before the U.S. FERC, the Alberta Utilities Commission, the Ontario Energy Board, the New Brunswick Energy and Utility Board, the Nova Scotia Utility and Review Board, the Bermuda Regulatory Authority, and the state regulators in Illinois, Indiana, Kansas, Massachusetts, Minnesota, Montana, New Jersey, New Mexico, New York and the Commonwealth of Puerto Rico. Outside of his North American work, he has advised clients in thirteen other countries.

Mr. Zarumba holds a B.S. in Economics from Illinois State University and an M.A. in Economics from DePaul University.

II. Fair Return Standard

A. General Principles

We are instructed by counsel that the FRS frames the discretion of the Board by setting out three requirements that must be satisfied in any cost of capital determination. These are mandatory legal requirements described by the Supreme Court of Canada as an "absolute" obligation.[8]

All of our analyses have been conducted with a view to the FRS and ensuring that the methodology we propose is compliant with it.

A fair return on capital must allow "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."[9] More recently, the Supreme Court of Canada has commented:

> *"[T]he utility must, over the long run, be given the opportunity to recover, through the rates it is permitted to charge, its operating and capital costs ("capital costs" in this sense refers to all costs associated with the utility's invested capital).* ***The required return is one that is equivalent to what they could earn from an investment of comparable risk****. Over the long run, unless a regulated utility is allowed to earn its cost of capital, further investment will be discouraged and it will be unable to expand its operations or even maintain existing ones. This will harm not only its shareholders, but also its customers."* [emphasis added][10]

A fair return must:

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[8] 2009 Board Report, p. 18, citing *British Columbia Electric Railway Co. Ltd. v. Public Utilities Commission of British Columbia et al,* [1960] S.C.R. 837, at p. 848.

[9] *Northwestern Utilities Limited v. City of Edmonton*, [1929] S.C.R. 186. Other seminal statements of the FRS come from *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia et al*., [1923] U.S.S.C. 160;, and *Federal Power Commission v. Hope Natural Gas Company*, 320 US 591 (1944)

[10] *Ontario (Energy Board) v. Ontario Power Generation Inc.*, 2015 SCC 44, para. 16

- Be comparable to the return available from the application of 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).[11]

All three standards or requirements must be met, and none ranks in priority to the others.[12] In 2009, the Board specifically commented that "that focusing on meeting the financial integrity and capital attraction tests without giving adequate consideration to comparability test is not sufficient to meet the FRS."[13]

B. Application of Fair Return Principles

We note several characteristics of a fair return that are relevant to our proposed methodology and our critiques of the LEI report:

- The FRS expressly refers to an opportunity cost of capital concept, meaning it is prospective rather than retrospective;[14]
- A fair return is determined by applying the principles described in this section, not "conducting a simple mathematical calculation using a single formula-based model."[15] In 2009, the Board agreed that no single test is, by itself, sufficient to ensure that all three requirements of the fair return standard are met.[16] The British Columbia Utilities Commission has acknowledged the same principle in its recent rate-setting proceeding;[17]

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[11] 2009 Board Report, p. 18, citing National Energy Board. RH-2-2004, Phase II Reasons for Decision, TransCanada PipeLines Limited Cost of Capital. April 2005. p. 17.

[12] 2009 Board Report, p. 19.

[13] 2009 Board Report, p. 19.

[14] 2009 Board Report, p. 19.

[15] *Liberty Utilities (Gas New Brunswick) LP, as represented by its general partner, Liberty Utilities (Gas New Brunswick) Corp. v. New Brunswick Energy and Utilities Board*, 2022 NBCA 29, para. 26, citing *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia et al.*, [1923] U.S.S.C. 160; *TransCanada Pipelines Ltd. v. National Energy Board*, 2004 FCA 149; and the 2009 Board Report.

[16] 2009 Report, p. 26.

[17] British Columbia Utilities Commission Generic Cost of Capital Proceeding (Stage 1) Decision and Order G-236-23 dated September 5, 2023, p. 64.

- While a fair return should not see consumers "paying more than is required to maintain safe, reliable and economic service"18, the effect of rate changes on consumers is not itself a determining factor in assessing whether a proposed return meets the FRS. The Federal Court of Appeal has been clear that the rate of return on equity must be determined solely on the basis of a company's cost of equity capital and that "the impact of any resulting toll increase is an irrelevant consideration in that determination;"[19]
- The capital attraction standard, indeed the FRS in totality, will only be met if the cost of capital determined by the Board is sufficient to attract capital on a long-term sustainable basis given the opportunity costs of capital. It is not satisfied merely by being "non-confiscatory" or allowing the utility to avoid bankruptcy;[20] and
- When identifying comparator jurisdictions and entities for the purpose of assessing whether the return is comparable to the return available from invested capital in other enterprises of "like risk" (i.e., the comparable investment standard), comparators are not required to be identical. They must merely share similarities and empirical analysis must be performed to determine if they are "like".[21]

[18] Alberta Utilities Commission Report dated October 9, 2023, "Determination of the Cost-of-Capital Parameters in 2024 and Beyond", Decision 27084-D02-2023, para. 24, citing Decision 22570-D01-2018.

[19] *TransCanada PipeLines Ltd. v. National Energy Board*, 2004 FCA 149, paras. 35-43. The Court caveats this comment that the reviewing body can have regard to rate shock and preferring to incorporate changes over time, as long as the utility is ultimately compensated in time and the delay can be implemented without economic loss.

[20] 2009 Board Report, p. 20.

[21] 2009 Board Report, p. 21.

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]

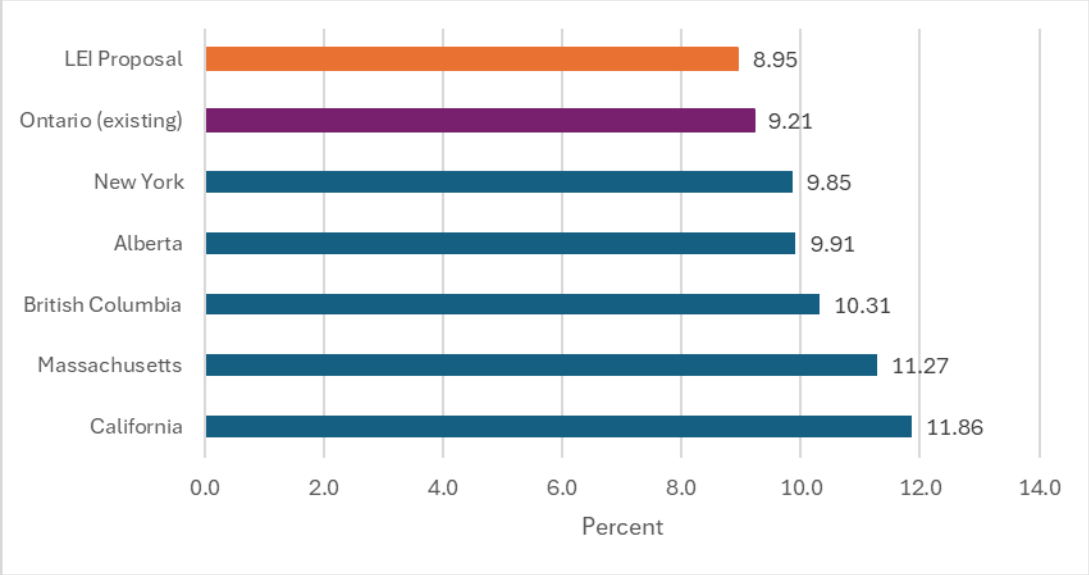


Figure 5 demonstrates that the authorized ROE proposed by LEI of 8.95 percent is significantly below those of Ontario's peers. The next lowest authorized ROE is New York in 2023, 90 basis points above LEI's proposed rate for Ontario and 60 basis points above the current Ontario ROE. The simple average 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.

IV. Risk Factors to Be Considered When Determining the Cost of Capital (Issue #2)

Issue 2: What risk factors (including, but not limited to, the energy transition) should be considered, and how should these risk factors under the current and forecasted macroeconomic conditions be considered in determining the cost of capital parameters and capital structure?

A. Summary

Various risk factors exist for electric distributors. These risk factors change over time. In some cases, the industry could be relatively low-risk. Conversely, at other times, the level of risk could increase due to exogenous factors that are uncontrollable by the utility. As a result of the changes in the level of risk, the ROE of the utility should also be adjusted to reflect these factors. This Chapter will address some of the risk factors that electric distributors are exposed to in Ontario.

B. Current Policy

No specific risk factors were identified in the 2009 Report.

C. LEI Response

LEI suggests that the risk factors considered in recent equity thickness proceedings are sufficient.

- Business risk assessment can be performed based on changes in volumetric, operational, regulatory, and policy risks (including energy transition risk). LEI further discussed proceedings where specific risk factors such as energy transition risk, volumetric risk, regulatory risk, and policy risk were referenced;[25] and
- Financial risk assessment, often measured by leverage and coverage ratios, can focus on the utility's ability to continue attracting debt and equity financing at reasonable terms, primarily relying on assessing key credit metrics and their potential impact on credit ratings. The current policy of considering the impact of

[25] LEI Report, pp. 54-55.

risk factors when there is a significant change in business/financial risks is a reasonable approach and is recommended to be retained.[26]

- The current policy of considering the impact of risk factors when there is a significant change in business/financial risks is a reasonable approach, which LEI recommends be retained.

D. Nexus Economics Evaluation and Recommendation

LEI has identified business and financial risks in its report. However, given the changes in industry structure occurring due to decarbonization and electrification efforts, Nexus Economics has also identified a category of risk that LEI ignores: *strategic risk*. Strategic risk is the risk that distributors are subjected to as they face increasing uncertainty regarding the direction of the industry and the significant investments that they will be required to make despite the uncertain future. Therefore, Nexus Economics considers that LEI fails to recognize the magnitude of the changes the distributors likely will encounter now and in the coming years.

The electric power industry today is in a transition that it has not faced since the 1970s. The 1970s introduced new challenges to the industry, including:

- Increases in fuel prices (primarily petroleum): Significant petroleum price increases triggered by the oil embargoes of the early 1970s significantly increased electricity prices for end-users. The increase in fuel prices triggered the adoption of new technologies, including nuclear power;
- Load growth uncertainty: The 1970s were characterized by significant load growth uncertainty. The rate of increases in load growth significantly declined during this period as a result of increasing prices and reduced economic activity. For example, the construction of nuclear-generating units in the United States in the 1970s and 1980s was triggered by historically significant load growth. Also, load growth in the 1960s averaged 7.3 percent. Load growth tapered to 4.7 percent in the 1970s and 2.9 percent in the 1980s.[27] The declines in load growth during the construction of these nuclear plants led to a number of regulatory and policy challenges, increasing utilities' risk.

[26] LEI Report, p. 62.

[27] U.S. Energy Information Administration, U.S. Commercial nuclear capacity comes from reactors built primarily between 1970 and 1990, June 30, 2011.https://www.eia.gov/todayinenergy/detail.php?id=2030

The electric power industry in Ontario in the 2020s and 2030s is characterized by similar challenges triggered by uncertainties related to the energy transition discussed above, including the increasing rate of adoption of electric space heating, electric vehicles, and new loads such as data centers.

The electric power industry is undergoing a significant transition which is exposing the distributors to not only the normal risk associated with utility operations, but uncertainty regarding the future of the electric distribution business model. As a result of this transition:

- A significant increase in the level of capital spending is expected to be driven by electrification policies adopted by the Province of Ontario;
- Prior policies adopted by the OEB to facilitate policy goals and reduce the risk faced by distributors have become obstacles to adopting new goals. For example, in the past several years, the OEB adopted residential fixed distribution charges (i.e., no volumetric component of the tariff) to address the declining residential average usage problem and facilitate the adoption of DERs. However, the adoption of electrification policies would presumably reverse the trend of decreasing average usage and thus limit revenue growth to distributors;
- Uncertainty regarding load growth. Table 3 provides the trajectory of load growth in peak demand projected by the IESO. Nexus Economics observes the following. First, projected peak load growth is significantly greater than historical load growth. Second, IESO projections are based on a reference scenario and a "net zero" scenario that differ significantly. Therefore, a significant amount of uncertainty exists regarding the level of loads that distributors must serve in the future;

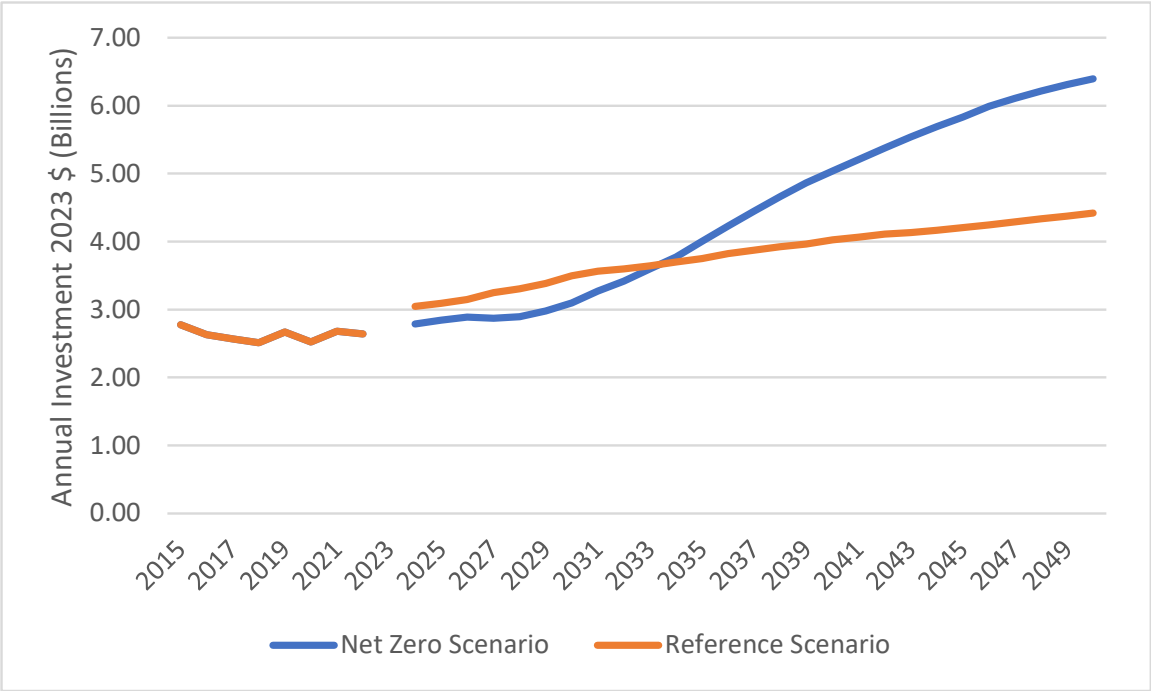
Table 3 – Historical and Projected Annual Average Growth in Non-Coincident Peak Demand

Time Period	Annual Average Peak Demand Growth Rate
2016-23	0.2%
2025-2050	3.3%

- Uncertainty regarding the quantity of capital investments. As decarbonization policies are implemented, the quantity and cost of new capital investments will be

highly uncertain for the next several decades. Figure 6 provides the projected capital requirements associated with the infrastructure that distributors must construct. An EDA commissioned report quantified average capital additions for Ontario distributors in 2015-22 of $2.632B ,stated in 2023$.[28] However, the projected average annual capital additions through 2050 are $3.81B in the Reference Scenario and $4.46B in the Net Zero Scenario. The significant growth in capital additions driven by uncertain energy policies suggests that the distributors in Ontario are being subjected to significant incremental risk.

Figure 6 – Annual Average Investments by Ontario Distributors



Source: Solving Grid-Lock: Our Vision for a Customer-Centric Energy Transition

This situation is analogous to the uncertainty of nuclear plant construction programs of the 1970s and 1980s. Whether or not the demand projections ultimately prove accurate, a risk exists that assets will need to be constructed based on policy initiatives, with uncertain outcomes. Projections of long-term load growth have historically been

[28] Electricity Distributors Association, "Solving Grid-Lock – Vision for a Customer-Centric Energy Transition", 2024.

inaccurate and, in some cases, triggered unneeded construction of assets or increased costs.

Other jurisdictions embracing carbon reduction and electrification policies have amended their regulatory mechanisms recognizing that the trajectory of capital spending may be uncertain. The absence of these policy changes in Ontario increases the risk to which distributors are exposed.

E. Conclusion

Distributors in Ontario have been facing significantly higher levels of uncertainty than ever since the industry transformation in the late 1990s. Their role in the energy industry may significantly change in the next twenty years, serving increasing load triggered by new end-uses such as EVs and increasing space heat saturation. However, the increases and associated capital investments are not associated with any historical data series; they are forecasts based upon expected changes in behavior, which are untested. Although we cannot at this point quantify the uncertainty due to the industry changes with enough precision to adjust the recommended ROE, we can nevertheless conclude that the volatility and associated increases in risk support higher ROEs than are proposed by LEI and, especially, a more frequent update of the ROE (i.e., every three years) to determined how capital costs have changed. An "autopilot adjustment", such as the annual adjustment mechanism, might be useful when the status quo is anticipated for the industry. But an autopilot is less useful when there are obvious significant changes on the horizon—even if the risk effects of these changes are at present not quantifiable with sufficient accuracy to justify an adjustment to the ROE. This uncertainty underscores our recommendation that the Board revisit the issues in this proceeding every 3 years rather than every 5 years.

V. Key Regulatory and Rate Setting Mechanisms (Issue #3)

Issue 3: What regulatory and rate-setting mechanisms impact utility risk, and how should these impacts be considered in determining the cost of capital parameters and capital structure?

A. Summary

The regulatory and rate setting resetting mechanisms offered by a jurisdiction can influence the risk to which the utility is exposed. Therefore, the ROE which utilities operate under within a specific jurisdiction can vary reflecting different rate setting mechanisms under which they operate.

B. Current Policy

There are several regulatory and policy programs that the OEB has enacted since 2006, which they claim will impact cash flow in the future and, thus, impact the level of risk that the distributors face. These programs include:

- Electric Distributors DVA Review initiative;
- Renewed regulatory framework for electricity;
- Rate design for electricity distributors[29];
- Rate design for commercial and industrial customers; and
- Framework for energy innovation: distributed resources and utility incentives.

LEI also identifies several specific deferral and variance programs, which include:

- Customer Choice Initiative;
- Broadband deferral;
- Getting Ontario Connected; and
- Low-Income Energy Assistance Program.

LEI further addresses the different regulatory options available to distributors, which include:

[29] Nexus Economics discloses that the project director at Navigant Consulting who assisted the OEB in this matter was Mr. Zarumba, one of the authors of this report.

- Price Cap IR:
- Custom IR; and
- Annual IR Index.

LEI also discusses the OEB's "Framework for Energy Innovation" (FEI) consultation in 2021. The FEI focused on creative solutions such as Non-Wires Alternatives (NWA). The FEI was followed by the Benefit-Cost Analysis (BCA) framework for DER Solutions.

C. LEI Recommendation

LEI argues that any regulatory mechanism that can significantly impact the stability of future cash flows must be considered for review as part of regulatory risks.

- The current policy of considering the impact of risk factors on request when there is a significant change in business/financial risks (including regulatory risk) is a reasonable approach, which LEI recommends be retained; and
- In addition, LEI recommends proactive impact assessments following material regulatory changes.

D. Nexus Economics Evaluation and Recommendation

Nexus Economics agrees with LEI that regulatory mechanisms impact the level of risk to which a utility is exposed. If the risk level of risk is reduced, it can be argued that the ROE authorized for that jurisdiction should be reduced. However, Nexus Economics does not agree with LEI that the regulatory environment offered in Ontario is significantly safer than its peers and, therefore, should be provided with a lower ROE.

Ontario has a highly sophisticated regulatory system. However, distributors are still exposed to a significant amount of risk because:

- The multi-year rate plan does not provide for adjustments to the deemed return once the rebasing is established. Therefore, the utility is exposed to financial market risk and can only request a re-opening of the proceeding if its ROE drops below 300 BPs of what was authorized;
- Utilities in Ontario have an option to request additional cost recovery through the Incremental Capital Module (ICM). Two of the jurisdictions in the peer analysis (Alberta and Massachusetts) have approved the superior k-bar, which is formula-based and does not require an application to the regulator; and

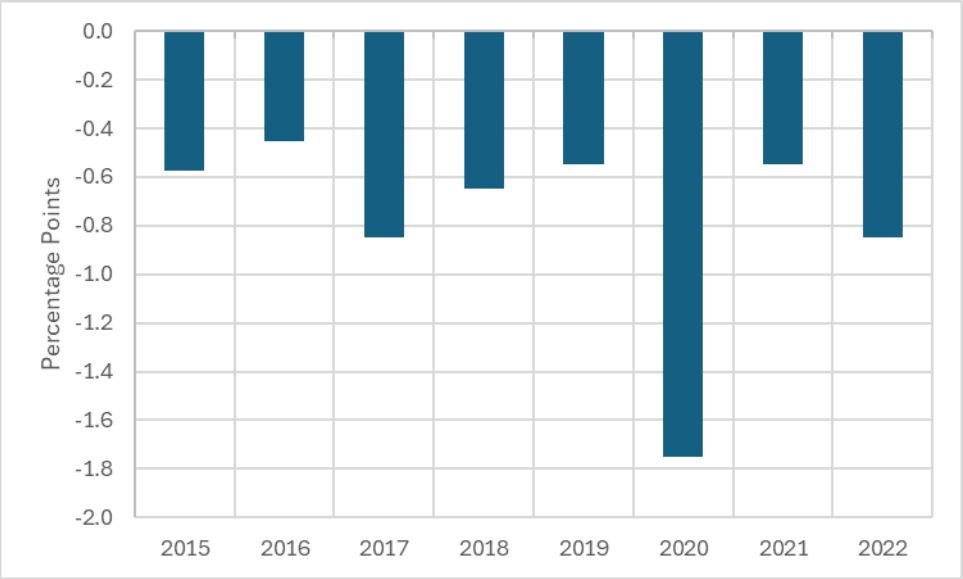
- Many of the mechanisms referenced by LEI (e.g., Customer Choice Initiative, Broadband deferral, Getting Ontario Connected) are valuable programs but relatively immaterial. These programs have a very marginal impact on the level of risk which the distributors are exposed.

An analysis of risk indicates that some shortcomings may exist, and changes in the electric power industry will require changes to the existing regulatory mechanisms.

Additionally, Nexus Economics notes again that it has reviewed the programs listed and concluded that similar mechanisms are generally available to the peer utilities identified in Chapter III (Benchmarking) of this report. We are unconvinced that Ontario's regulatory mechanisms materially change the risk level compared to peer utilities.

The risk associated with the regulatory mechanisms in Ontario is characterized in Figure 19 (pg. 75) of the LEI Report, which is recreated below in a somewhat different format in our Figure 7. This Figure shows the deemed ROE and the actual ROE earned, on average, by 54 Ontario electricity distributors for the period 2015-22. During that period, the average distributor did not earn the deemed ROE in any year. An outcome where distributors as a group are consistently under-earning for multiple years indicates the regulatory mechanisms adopted by the Board may still leave substantial residual risk. The expected outcome for a distributor operating prudently should produce an outcome where that distributor earns its deemed ROE. The existing off-ramp mechanism, which triggers a regulatory review if earnings fall outside a deadband of +/- 300 bps provides little comfort to investors.

Figure 7 –Average Earned Return on Equity for Ontario Distributors less Deemed ROE



Source: LEI Report, p. 75.

E. Conclusion

Nexus Economics' review of similar jurisdictions referenced in Chapter III (Benchmarking) provides a number of regulatory mechanisms that limit electric distributor risk. Inasmuch as each jurisdiction crafted mechanisms that address local circumstances, similarities exist in the overall design of these mechanisms. For example, mechanisms addressing uncontrollable costs occurring during multi-year rate cycles are similar to the Z-factor mechanism.

Many of these mechanisms are currently unavailable in Ontario or are offered on a more limited basis, so do not lower Ontario's risks relative to its peers. Most importantly, there is uncertainty involving new load and associated capital investments. For example, Alberta and Massachusetts offer k-factor adjustments addressing increased capital spending, and California provides true-ups for capital spending.

The introduction of alternatives that Ontario distributors will consider in the future, such as NWA, adds complexity to the business model for the distributors. Programs of this type are potentially valuable, but they do not decrease the risk of the utility. The NWA program

is similar to Energy Efficiency in the 1980s. At that time, energy efficiency was a new initiative in the industry. However, Energy Efficiency programs often underperformed.

Nexus Economics cannot conclude that the regulatory environment offered in Ontario is significantly safer than its peers and, therefore, should be provided with a lower ROE.

VI. Treatment of Capital Acquisition Transaction Costs (Issue #8)

Issue 8: How should transaction costs incurred by utilities be considered when setting the long-term debt rate?

A. Summary

Procuring debt or equity capital is not itself without cost. Some of the costs are direct, such as reimbursements or payments to lenders, underwriters, investment banks, or rating agencies. Other costs are indirect, as in the case of an equity issue that would dilute the value of existing shares. Issue 8 asks specifically about these transaction costs with respect to debt. In this Chapter, we discuss both debt and equity because the principles are the same: the costs are legitimately incurred as part of acquiring debt or equity capital, and the utility must have the opportunity to recover them under the FRS.

B. Current Policy

The current policy is for utilities to amortize the transaction costs associated with debt by including them as interest expense and hence in the cost of debt rate.[30] The proposed Deemed Debt Rates do not include an adder for transaction costs.

With regard to transaction costs for equity, the 2009 Report included a 50 basis point adder to the base authorized ROE.

C. LEI Recommendation

With regard to debt-related transaction costs, LEI recommends that the utility expense them as they occur, on a cash basis, rather than recover them through amortization over the life of the debt. According to LEI, debt transaction costs fluctuate from year to year,

[30] LEI Report, pp. 93, 95. "[T]he OEB can continue to consider transaction costs associated with debt issuance based on actual costs (as an interest expense)."

and this fluctuation makes it "more suitable" for the costs to be booked as they are incurred.[31]

With regard to transaction costs for equity issuance, LEI recommends treating these costs as operating costs for "similar reasons [to the debt transactions costs]."[32] According to LEI, "Equity issuances do not happen with predictable regularity, which makes it more suitable to recover such costs as and when the utility incurs expenses."[33]

D. Nexus Economics Evaluation and Recommendation

Both debt transaction costs and equity transaction costs are the same economic phenomenon: they are both legitimately incurred in the procurement of a loan or equity and should be recoverable under the FRS.[34]

1. Debt Transaction Costs

As noted by LEI, debt transaction costs are episodic. LEI concludes (without explaining) that this makes recovering fluctuating costs more suitable as operating costs. LEI's position is inconsistent with cost recovery principles in utility rate making, where lumpy costs are recovered over time.

Because the transaction costs for debt and for equity are incurred only when the utility actually obtains new debt or equity, if the transaction costs for debt occurs between Board reviews, this legitimate, quantifiable, and known expense would not be recovered. This is contrary to the Fair Return Standard because it does not provide an opportunity for the utility to earn its authorized return. Accordingly, for a utility, transaction costs associated with debt should be amortized over the life of the debt. Not only is this consistent with the FRS, but it also helps align utility rates with the cost of debt.

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[31] LEI Report, p. 96.
[32] LEI Report, p. 122.
[33] LEI Report, p. 122.
[34] A regulatory mechanism whose design obstructs the recovery of legitimate costs will not provide for the opportunity for the utility to earn its authorized return, which we (as non lawyers) view as violating the Fair Return Standard.

Another criticism of the LEI proposed treatment of transaction costs is that they do not align with the accounting of these costs. The accounting treatment of transaction costs amortizes these costs over the life of the financial instrument. The LEI proposed treatment of expensing them as occurred introduces a "mismatch" of the accounting treatment of these costs and the time period of the utility of the transaction costs. Therefore, LEI's proposal is contrary to the prescribed accounting treatment and should be rejected.

2. Equity Transaction Costs

Like debt transaction costs, equity transaction costs are incurred in acquisition by the utility of equity capital from the marketplace.[35] These costs are associated with any type of equity acquisition. If they are expensed as operating costs but not actually recoverable, the result will be underperformance of the utility with regard to its potential return. Expensing these costs, absent some sort of adder to customer bills, means that the expenses will not be recovered.

Typically, analysts consider two types of costs: direct, such as payments made to investment bankers, and indirect, such as dilution, which is the negative impact on share price as additional shares hit the market. Those costs, when quantified, can be recovered in a number of ways, and the Board has decided to collect them over the life of the equity (which is to say infinity). A finite cost can be converted to an infinite stream by multiplying the cost by the cost of equity:

$$Annual\ Cost = PV(Transaction\ Costs) \times k_e$$

Adding an increment enabling the collection of Transaction Costs to the Authorized Return permits the collection of that annual cost. What is important to realize is that transaction costs have been spread over an infinite time horizon. Accordingly, these costs incurred in the past continue to be recovered. To now halt the transaction cost allowance that was granted in 2009 would be a confiscation because the utility has not been given the

[35] See, e.g., Roger A. Morin, NEW REGULATORY FINANCE. (2006) (Public Utilities Reports, Inc), at Chapter 10.

opportunity to recover the cost that was amortized over infinity. The 2009 Report determined that adding 50 basis points to the Authorized Return would compensate the utility for these costs, and so they must continue today. We do not recommend any change from the existing 50 basis points for transaction costs.

In our analysis of ROE (Chapter VII (Issue 10)), we break out the transaction cost adder so that there is neither the possibility of double-counting nor lack of recovery in violation of the FRS.

Another criticism of the LEI proposed treatment of transaction costs is that for equity instruments, IAS 32 states these costs should be accounted for as a deduction from equity proceeds. IFRS 9 addresses transaction costs related to a debt instrument and directs firms to treat transaction costs as part of the effective interest rate, which effectively amortizes them over the life of the instrument. Therefore, LEI's proposal contradicts the prescribed accounting treatment and should be rejected.

E. Conclusion

LEI proposes a change to the treatment of transaction costs but offers no reasonable argument for the change in this policy. Transaction costs should be recovered over the life of the instruments, as they have been, and for equity should be reflected as a continued 50 basis points addition to the base authorized ROE.

VII. Methodology for Return on Equity (Issue #10)

Issue 10: What methodology should the OEB use to produce a return on equity that satisfies the Fair Return Standard?

A. Summary

This Chapter discusses Issue 10, regarding the return on equity that satisfies the FRS.

Our goal in this Chapter is to identify and quantify the opportunity cost of equity capital that can be applied to a risky asset, namely a distribution electric utility in Ontario. The FRS is described in Chapter II, and we adhere to this Standard in our analysis and discussion. In this Chapter we comment on LEI's recommendation to the Board in this proceeding and independently offer our own analysis and recommendations. Nexus Economics addresses the following issues in this Chapter:

- First, we evaluate the **relevant capital market** for Ontario. Our analysis and conclusions inform our selection of risk comparables. Our conclusions also allow us to evaluate LEI's implementation of its base rate of return and its recommended annual adjustment mechanism. We conclude that benchmarking Ontario to North American electric utilities' authorized ROEs is reasonable because Ontario and US electric service providers compete in the same market for capital;
- Second, we review **LEI's approach to estimating base ROE** and discuss its flaws and shortcomings with regard to the 2009 Report and the Fair Return Standard. In so doing, we address the numbers shown in Table 4;
- Third, we provide **Nexus' alternative independent analysis of ROE** that is based on several methodologies and that is consistent with the Fair Return Standard, and address the numbers in Table 5; and
- Fourth, we evaluate LEI's **annual adjustment formula** and propose a correction.

We include in this Summary two tables that underscore Nexus' recommended rate of return on equity of 11.08%. Table 4 shows the impact of our corrections of the errors

and issues that we describe regarding the LEI proposed approach to determining ROE.[36] Table 5 shows the results of Nexus' analysis based on three methodologies and multiple data sources. Our own recommendation of 11.08 percent is similar to the 10.88 percent LEI result, once LEI's results have been corrected. In this Chapter, we discuss how these numbers were developed.

Table 4 - LEI Results as Filed and as Adjusted

		LEI as Reported*	Note	Corrected	Re-Levered	Comments
[1]	CAPM	8.95%	[a]	9.82%	9.82%	No leverage adjustment since LEI used Hamada to re-lever.
[2]	DCF	10.53%	[b]		10.53%	IOUs generally have Debt ratios of 60%, so no leverage adjustment was made.
[3]	rp	10.22%	[c]		10.80%	Leverage adjustment from 50% debt to 60% debt since most regulated electric service providers have 50% debt ratios. Removed 50bps to prevent 2x counting of transaction costs.
[4]	Simple Average	**9.90%**			**10.38%**	
[5]	Transactions Cost	**0.50%**			**0.50%**	
[6]	Total	**10.40%**			**10.88%**	
* LEI displayed its CAPM and DCF results as noted in [a] and [b] below. Risk Premium is calculated as per [c].						
[a] LEI, Figure 41. Corrected by subtracting out the utilized Canadian LCBF of 3.19% and inserting rf (30-year US Treasury forecast for 2025) of 4.06%.						
[b] LEI, Figure 38 for T&D utilities.						
[c] LEI, Figure 69. Computed using rf of 4.06% (forecast for 2025) and Moody's Baa of 5.78% (as of June 25, 2024).						

[36] In this exercise, our adjustments are limited to using a 2025 forecast of the US 30-year Treasury bond yield of 4.06 percent as the risk free rate instead of the 3.19 percent forecast of the 30-year Canadian Treasury bond and re-levering the results (where applicable) to the Debt-to-Capital ratio of 60 percent under the assumptions described in the notes to the table. Using the contemporary (as of July 16, 2024) US risk-free rate of 4.37 percent would produce a CAPM of 10.13 percent rather than the 9.82 percent, which arguably is the best estimate of the cost of equity as of July 16.

Table 5 - Nexus Economics Cost of Equity Results

		Lower Confidence Limit	Average	Weight [b]	Upper Confidence Limit
1	Single Stage DCF	9.92%	10.92%	**38%**	11.93%
2	Growth Rates - Yahoo Finance	9.76%	10.69%	12%	11.63%
3	Growth Rates - Zacks	9.27%	10.11%	14%	10.95%
4	Growth Rates - CapIQ	10.37%	11.86%	5%	13.36%
5	Growth Rates - StockAnalysis	11.08%	12.22%	8%	13.37%
6	CAPM	9.73%	10.19%	**49%**	10.65%
7	Risk Premium (Authorized Returns)	10.19%	11.09%	**13%**	11.98%
8	**WEIGHTED AVERAGE [b]**	9.86%	**10.58%**	100%	11.31%
9	Transactions Costs	0.50%	0.50%	100%	0.50%
10					
11	Total	10.36%	**11.08%**		11.81%

[a] Results are relevered to a Debt-to-Equity Ratio of 1.50 and taxes of 26.5%.
[b] Weights are determined by the inverse of the standard deviation of the mean result.

1. The Board's Existing Approach to Return on Equity

There are two facets to the Board's existing approach to the appropriate authorized rate of return on equity in Ontario. The first is the determination of the base cost of equity and the second is the formulary annual update for the authorized return.

The base rate of return on equity was determined in the 2009 proceeding based on multiple methodologies. The formulaic annual update mechanism was also specified to adjust the authorized return using the base rate of return and changes in interest rates. As we demonstrated in Figure 7, the Board's current regulatory methodologies have produced earned returns on equity that are substantially below cost and thereby violate the FRS.

2. LEI's Proposed Changes to the Existing Approach Are Flawed

LEI's proposal makes two substantive changes to the Board's existing approach to estimate ROE as set in the 2009 Report. Both of the proposed LEI changes are flawed and should be rejected.

The first flaw is LEI's proposal that the Board rely solely on the CAPM to evaluate the cost of equity in its update and to ignore the results using other methodologies. As noted, in its 2009 Report, the Board concluded, and, indeed, devoted Section 4.2.2 to the topic,

that using a variety of methods and data sources is "a superior approach to informing its judgment than reliance on a single methodology."[37] We agree with the Board's 2009 conclusion regarding the need for multiple methods. Neglecting the results of its own ROE methods in producing a recommendation, LEI commits an error of omission. This omission of other methodologies by LEI is meaningful. We show in Table 4 that LEI's average return on equity would be substantially higher if LEI were to apply the results of its other methodologies.

The second flaw is that LEI also commits a methodological implementation error in its CAPM analysis. LEI uses US data to estimate the parameters of its CAPM (betas and Market Risk Premium (MRP)) and then substitutes into the CAPM equation its prediction of Canadian 30-year predicted bond yields. The impact of this error is shown in Table 4. We will explain why this substitution is improper and violates the opportunity cost principle, the law of one price, and the FRS.

LEI also recommends a flawed replacement for the Board's existing 2009 annual update formula, based on a formula that is informed by LEI's econometric analysis, but is implemented incorrectly. In its 2009 Report, the Board used a 50:50 weighting of interest rate changes (risk free, and risk spread). LEI computes an econometric model that revises the weights. LEI's approach may be useful, but only if it is implemented with a correction to the error whereby LEI (again) incorrectly swaps Canadian bond yields in place of the US bond yields that were used to determine the model parameters in the first place.

3. Nexus Economics Response to LEI

Nexus Economics prepared an independent analysis of the cost of capital in Ontario based on three methodologies and multiple data sources, resulting in its proposed ROE of 10.58% plus transaction costs, for a combined ROE of 11.08%. Our approach is consistent with the FRS and the 2009 Report because it is not constrained by the

[37] 2009 Board Report, p. 36.

limitations of a single approach. Instead, it uses basic economic cost-of-equity models that are common in regulation, investments, and valuations; it is prospective where possible rather than based on historical data; and it does not incorrectly attribute a country risk premium to the US versus Canada.

We turn first to the issue of the relevant market for capital for Ontario service providers, insofar as this informs the entirety of our analysis as well as our criticism of LEI's CAPM analysis.

B. The Canadian and US Capital Markets are Integrated into a Single North American Capital Market

1. Explanation of the Issue and Why it is Important to this Proceeding

We conclude that capital relevant to the Ontario electric service providers ultimately comes from a single, integrated North American capital market. This conclusion is important for two reasons. First, the conclusion that the markets are integrated provides the basis for our selection of risk-comparable firms from the pool of North American electric utilities. Second, the conclusion is the basis for determining that LEI errs in its application of the CAPM to its base cost of equity result and to the annual adjustment mechanism.

Our conclusions regarding capital market integration are consistent with the 2009 Board Report, which concluded that Canada and the US capital markets were one-and-the-same, and accepted the use of selected US electric utilities as firms of comparable risk ("comparables") to the target firms.[38]

Ontario electricity distributors must raise capital funds from somewhere and it is important to understand how scarce funds are allocated in the market.

[38] 2009 Report, p. 22 accepting the Concentric Economics approach to winnowing the field of US-based electric service providers.

As we have discussed, the FRS is important here because the FRS correctly recognizes the economic principle of opportunity cost. In this context, the notion of opportunity cost is that a firm's cost of equity will equal the cost of equity of its risk-comparable firms in an integrated market. Accordingly, the analysis must determine what the costs are for these firms and then apply that result to the target firm. Any proposed adjustment that is due to crossing a border must be evaluated in terms of market (dis)integration and undiversifiable differences in country risk. Absent these two conditions, the result for the comparable firms must be applied to the target firm under the opportunity cost concept, which is fundamental to the FRS.

2. Analysis of the North American Capital Market

Defining the relevant market is an important issue in regulation. Markets generally are defined in two dimensions: product and geography.[39] The relevant product here is capital, and the relative fungibility of money[40] means that from the user's point of view capital is capital. In a simple example involving gasoline, the relevant market definition question is whether a significant, non-transitory price increase at the pump would result in sufficient number of drivers moving to another gas station so as to make the initial price increase unprofitable.[41] The analogy applied here is whether a Canadian firm facing overpriced capital in Canada reasonably would raise capital in the US instead.[42] The answer is unambiguously yes. The product is similar enough that capital from US exchanges is equivalent to capital from Canadian exchanges.

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[39] See, e.g., Federal Trade Commission. Market Power Handbook, p. 61.

[40] We say "relative fungibility" because Canada and the US use different currencies and there is always exchange rate risk that must be either borne or hedged against.

[41] The US antitrust analysts also apply the so-called S-SNIP test to determine if a small but significant non-transitory increase in the price would result be unprofitable due to customer movement to another alternative in the market. See, e.g., HORIZONTAL MERGER GUIDELINES. (2010). US Federal Trade Commission, §4.1.1.

[42] MARKET POWER HANDBOOK, COMPETITION LAW AND ECONOMIC FOUNDATIONS. (2nd ed.) 2012. American Bar Association. Available at Market Power Handbook. Competition Law and Economic Foundations. Second Edition - ABA Antitrust Library - Books and Journals (vlex.com). Hereafter Market Power Handbook.

Fortis (for example) trades on the NYSE, as do over 100 other Canadian firms.[43] BCE, the Canadian telephone company, raised $1.45 billion in debt in the US, with about half of that long-term (30-year) debt at about 1.2 percentage points over US Treasuries,[44] despite the fact that US 30-year Treasury bonds were over a percentage point higher than Canadian 30-year Treasury bonds at that time.[45]

As for the geographic dimension of markets, geographic distances do not exist in any practical way for capital moving between Canada and the US.

The relative scale of the US and Canadian capital markets illustrates why the capital markets are homogenized. The NYSE and NASDAQ are about 14 times the size of the Toronto exchange. Indeed, Nvidia alone (NASDAQ) has a greater market capitalization than the entire Toronto exchange.[46] As noted, many larger Canadian companies are listed on US exchanges.

There is also a high degree of economic integration between Canada and the US, which would be related to capital market integration so that these transactions can be financed. 75.36 percent of Canada's exports are to the US[47] and about half of Canada's imports are from the US.[48]

LEI appears to agree that the Canadian and US capital markets are integrated into a single North American capital market. LEI provides evidence that the North American capital markets are integrated in explaining why it would not use Canadian data alone to

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[43] See, e.g., Yahoo Finance regarding Fortis. Over 100 Canadian firms trade on the NYSe and another 100+ on the US NASDAQ. See, "The Complete List of Canada Stocks Trading on US Markets." TopForeignStocks (at The Complete List of Canada Stocks Trading on the US MarketsTopForeignStocks.com).

[44] Chunzi Xu and Esteban Duarte. "BCE borrows $1.45 billion from U.S. debt market." February 2, 2024. Financial Post. Available at, https://financialpost.com/telecom/bce-borrows-1-45-billion-us-debt-market.

[45] Canadian Treasury Bonds from Marketwatch (TMBMKCA-30Y). US Treasury bonds from St. Louis Federal Reserve (FRED). Both evaluated February 16, 2024.

[46] Nvida market cap was $3.22 (2024-06-17) versus Toronto Exchange $2.55 USD.

[47] Canada Exports by country US$000 2017 - 2021 | WITS Data (worldbank.org) and (WITS-Partner-Timeseries.xlsx).

[48] Canada Imports By Country. At Trading Economics. https://tradingeconomics.com/canada/imports-by-country.

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.)

principle of opportunity cost in the Fair Return Standard, and the conclusion that the relevant capital market is the North American market, we describe why LEI's swap is incorrect.

Second, regarding LEI's DCF results, we left them unchanged.[52] We did not make a leverage adjustment because publicly traded US electric utilities generally have (book) Debt-to-Equity ratios around 60:40[53] which is the same as the Deemed Debt Ratio, so there was no need to do so.

Third, regarding LEI's risk premium method, we input a forecasted US debt rate and a contemporary Moody's Baa bond rate into LEI's forecasting equation.[54] We unlevered and relevered the results using the formula that is described later in this report to make the financial risk associated with the DCF and risk premium results more like that of the Ontario electric service providers. US regulated electric service providers generally have authorized Debt-to-Equity ratios of around 50:50. The Ontario Deemed Debt Ratio is 60:40, which implies more equity risk, so we make the adjustment.[55]

2. LEI's Proposal to Limit the Board's Rate of Return Approach only to the CAPM

Equity costs are not directly observable in the marketplace. Consequently, equity costs must be inferred from other market-based evidence. Different economic theories or "models" have been developed to rationalize the inferential process. Since a theory is a simplification of reality, no one theory or model is ever applicable in every real-world circumstance. Practitioners, including us, generally use multiple methods to compute equity costs. In its 2009 Report, the Board recognized the principle of variety. The Board

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[52] LEI Report, p. 116, Figure 38.

[53] The publicly-traded companies generally are holding companies that have multiple assets. The particular regulated utility has an authorized debt ratio (typically around 50 percent). The holding company itself, on average, in the CapIQ data that we reviewed, had debt ratios around 60 percent.

[54] LEI's risk premium forecasting equation is shown in Figure 69. We did not have a forecast of the Moody's Baa rate, so used an existing rate.

[55] We describe the re-levering calculation in detail later in this Chapter.

devoted considerable discussion to this topic in its 2009 Report (at §4.2.2) and concluded:

> *The 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. In particular, the Board is concerned that CAPM, as applied by Dr. Booth, does not adequately capture the inverse relationship between the ERP and the long Canada bond yield. As such, the Board does not accept the recommendation that it place overwhelming weight on a CAPM estimate in the determination of the initial ERP.*[56]

LEI proposes a major change to regulation in Ontario by limiting the scope of the Board's investigation to a single method, the CAPM. The Board specifically rejected such a limitation. Using a single method needlessly inhibits the Board's ability to reach a result that complies with the FRS.[17] We recommend that the Board again reject the one-model-fits-all approach and consider a variety of approaches and datasets to compute costs of equity relevant to the Ontario service.

The use of a variety of approaches and datasets to compute the cost of equity introduces more numbers for the Board to evaluate, but it does not introduce uncertainty into the cost of equity determination. Rather it makes evident a problem that may have been hidden when one uses only a single model, namely that there exists real-world uncertainty about investor expectations, risk aversion, and the required return on an investment which is unlikely to be captured with any confidence by any single forecasting approach.

3. LEI's CAPM Analysis

a) LEI's Application of the CAPM to Determine Base ROE is Incorrect

As we have noted several times, LEI makes a critical error in its calculation of the cost of equity using the CAPM by mixing apples and oranges. Absent this error, LEI's CAPM results would be 9.82 percent. This is still lower than our CAPM estimate of 10.19 percent

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[56] 2009 Board Report, p. 36 (emphasis in the original).

(both figures exclude the transaction cost adjustment) but is within the 95 percent confidence interval[57], whereas 8.95 percent is not.

LEI's Figure 41[58] shows that LEI:

- Computes the MRP by subtracting US 30-year Treasury Bond Yields from US S&P 500 total returns (This step is reasonable, given the caveats of using historical data instead of a forward-looking view);
- Multiplies the MRP by the beta to arrive at the firm's Equity Risk Premium (Also reasonable, as described later in this Chapter); and
- Adds the forecasted rate for Canadian sovereign long bonds to the ERP as computed above. ***This is an apples and oranges error because the MRP is computed on the basis of US returns and US interest rates.***

It is the third step that contains the error. Using the 2025 forecasted Canadian rate of 3.19 percent[59] (for example, as of 6/25/2024, the Canadian yield is 3.295 percent versus the US rate of 4.39 percent)[60] in place of the US rate accounts for the difference. It is incorrect to swap out a US dollar-based rate for a Canadian dollar-based rate when the original data series still exists.

First, this swap violates the law of one price, which says that within a market, the same good has but a single price regardless of the buyer. In our case, the electric service provider is "buying" capital. The essence of opportunity cost is that the price can be determined by the actions of the marginal investor, who, absent frictions, is willing to switch among assets in a market if prices were to vary from one another.

Second, the same data series used to *train* or estimate the model should be used to *predict* new results. Precisely because the capital costs are from a single market, there

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57 See, Chapter VII (ROE), Section D.5 for a description of confidence interval.
58 LEI Report, p. 120.
59 LEI Report, p. 123.
60 Forecasted 30-year US Treasury bond rates for 2024 is 4.542 percent. For 2025, the forecast is 4.058 percent. See, https://econforecasting.com/forecast/t30y. Econforecasting.com is transparent in its forecasting methodology and has a full description available in PDF on its website.

is no valid reason to swap out the US-based *estimation* data with Canadian-based *prediction* data.

LEI partly defends its actions:

> *To reduce reinvestment risk, a practical compromise is to match the cash flows from the investment asset with an equivalent liability issued by the subject entity. As such, LCBF forecasts continue to be a reasonable proxy for risk-free rates.*[61]

This statement conflates three issues and does not meaningfully address LEI's Canadian-for-US swap. The first issue is duration matching, the second (implicit) is swapping out Canadian bonds for US Treasuries, and the third is the use of forecasts.

We agree with LEI that duration-matching (the use of a long-term risk-free rate to apply to a firm with many long-term assets) is correct.

But we do not agree that any long-term rate can be used in an implementation equation when the training phase used US Treasury bonds. Swapping in the LCBF at the *implementation* phase of a modeling project in place of the US data that is used in the *training* or *estimation* phase of the same project introduces an easily avoidable error. The swap violates the FRS's reliance on opportunity cost as its touchstone for equity returns. In a single market, there is but one price for a good.

In its Figure 41, LEI attempts to compute a CAPM ROE using Canadian data but returns a result that LEI recognizes as manifestly useless. LEI concludes that "the CAPM ROE based on Canadian market data (5.14 percent) does not reflect investors' expected equity returns."[62] We concur—and, in fact, this underscores Nexus' view on the single North American capital market as discussed earlier—but we do not agree with LEI's method of addressing the issue by using the US data to *estimate* its model and Canadian data to *implement* its model.

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[61] LEI Report, p. 119.
[62] LEI Report, p. 120.

As to the third part of LEI's point about using Canadian yields, LEI's approach to uncritically accepting the projections of interest rates, while dismissing the projections of earnings growth is, at best, inconsistent. Forecasts made by government or bank economists—whether they are forecasts of LCBF or US yields—may not be accurate, and do not have the benefit of being linked in any obvious way to investor decisions. Yet, LEI is willing to accept uncritically the forecasts of interest rates by bank economists for its CAPM but it rejects totally the value of considering Discounted Cash Flow earnings forecasts of stocks made by investment analysts who plausibly work down the hall from the economists. This is another reason that reliance on the CAPM as a sole methodology is unreliable.

b) LEI's CAPM Lacks Forward-Looking Connections to Actual Capital Markets

One of the limitations of LEI's application of the CAPM, and one that is common, is that the CAPM has little connection to the contemporary marketplace. The CAPM's results depend more on an analyst's (e.g., LEI or our) judgment than on actual capital market conditions.

The CAPM has three components: risk free rate, beta, and Market Risk Premium. All should be forward-looking, as correctly concluded by the Board in 2009.[63] However, often both the Market Risk Premium and betas are computed using historical data, as LEI does in its analysis. The results may or may not be adjusted[64] and the nature of the market (e.g., NYSE, S&P500) against which the stock of interest is compared may vary among applications[65] but the essence is that the analysis is a backward-looking historical average.

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[63] 2009 Board Report, p. 25.

[64] For example, as we discuss in more detail later, Bloomberg computes an adjusted beta as (.67) * Raw beta + (.33) * 1.0. See, e.g., "Bloomberg Guide: Beta" at https://guides.lib.byu.edu/c.php?g=216390&p=1428678.

[65] Value Line uses the NYSE as its market return in the regression equation. Bloomberg uses the S&P500. Bloomberg Guide: Beta.

In LEI's analysis, MRPs likewise are historical averages that substantially depend on the analyst's judgment. LEI considers averages computed from US-based data from 1928 to 2023, 1984 to 2023, 1994 to 2023, 2004 to 2023, 2014 to 2023, and Canadian-based data from 2004 to 2023 (though LEI uses the results from only a subset of these datasets).[66]

LEI's Figure 41 shows CAPM results of 8.23 percent, 8.39 percent, and 10.22 percent. LEI's CAPM result of 10.22 percent (derived from the more recent 2014-2023 US data) is substantially different from the other two CAPM results (derived from the 1994-2023 and 2004-2023 US data) —indeed, it is similar to the DCF results. LEI exercises its own judgment to average the three numbers together.

LEI's argument for using a longer historical window is that today seems more like the 1990s and 2000s in terms of the Fed Funds Rate.[67] LEI notes that "[T]he current macroeconomic environment has more similarities to the macroeconomic environments observed during the 1990s and the 2000s. For instance the prevailing interest rate environment aligns more with the Federal Reserve ("Fed") policy rates observed in the 1990s and 2000s."[28] LEI also says that comparing the present to the past is made complicated by future US Federal Reserve actions regarding interest rate cuts but LEI concludes that the interest rates are not expected to decline to the rates seen in the 2010s.

All of this is improper *post hoc* reasoning for averaging some very different numbers. LEI provides no evidence that the level or rate of change in the US Fed Funds rate provides any predictive power for the Market Risk Premium.

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[66] LEI Report, p. 120. It is not clear whether LEI uses arithmetic or geometric means to compute these averages. Arithmetic means provide unbiased estimates of the mean. LEI computes a cost of equity using the Canadian-based MRP of 5.14 percent, which is only 36 basis points higher than the yield on Canadian investment-grade bonds as of 6/28/2024 of 4.91 percent (https://www.spglobal.com/spdji/en/indices/fixed-income/sp-canada-investment-grade-corporate-bond-index/#overview). LEI does not consider this to be a reasonable cost of equity estimate, and we concur.

[67] LEI Report, p. 121 and Figure 43. "Federal Reserve Effective Rate" refers to the rate at which banks in the US Federal Reserve System lend money to one another in overnight transactions. It is a very short-term interest rate that is highly controlled by the US Fed and may not reflect true capital market conditions.

In LEI's application (and in many others) no investor opinions inform the CAPM model in practice. The beta and MRP are backward-looking. The risk-free rate is the only element that is forward-looking.

4. LEI's Discounted Cash Flow Analysis

LEI conducts a DCF analysis but then dismisses its own DCF results, stating that LEI "prefers to use CAPM".[68] LEI makes several claims about the DCF approach and the reason that the DCF is "poorly suited" for the Board's purposes:[69]

- The DCF "relies on subjective future earnings growth estimates" and these growth estimates are usually wrong to the point where even a random walk model outperforms models based on future growth estimates;
- Earnings forecasts used in the DCF tend to overvalue cost of equity and are constantly overly optimistic; and
- The DCF is used for valuing companies, but not determining ROE.

With regard to the first point, in computing the cost of equity, we are not after perfection or foreknowledge about the future. The Board in 2009 emphasized uncertainty as part of the FRS as it is "forward-looking." The Board noted that "investment returns are inherently uncertain and that ex post, actual returns experienced by investors may differ from those that were expected ahead of time. The cost of capital is therefore an *expected* rate of return."[70] We concur and state that we are after an understanding, bracketed by limits on our confidence, of what marginal investors believe when they make a bet on the future with their own money at stake, as based on market evidence.

LEI claims that relying on analyst-determined EPS growth forecasts is a weakness in the DCF approach when it is actually a strength. Examining analyst-provided future growth

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[68] LEI Report, p. 125.
[69] LEI Report, p. 126.
[70] 2009 Board Report, p. 25 (quoting Dr. Bill Cannon and concluding that this principal (among others) is "relevant to defining and understanding the cost of capital concept" (at p. 24)). (emphasis in original)

rates provides a glimpse into investors' perceptions about the capital markets when they buy and sell what amount to bets on the future.

Investment analysts and portfolio managers are front-line thinkers about capital markets. In some cases, they are fiduciaries who are charged with making decisions about client funds as though they were their own.[71] Even when a stock analyst is not a fiduciary, bad stock picks (based on bad predictions) result in investors withdrawing funds from the analyst's portfolios. In other words, the people who provide the growth estimates have skin in the game. It is true, as LEI notes, that beating the autopilot of index investing is very difficult. It is for this reason why the survivors in the stock-picking industry may be useful to listen to.

In contrast, and as we noted earlier, LEI uncritically accepts the forecasts by government and bank economists of future interest rates in its CAPM analysis.[72] Unlike investment analysts and portfolio managers, government and bank professionals are not placing their own money on some asset as a direct result of their forecasts.[73] As noted, the bank economists may work right down the hall from the securities analysts and it is implausible that the economists are reasonable and acceptable in their forecasts of interest rates but that the stock analysts are unreasonable and unacceptable in their forecasts of earnings growth.

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[71] For example, The CFA Institute Code of Ethics and Standards of Professional Conduct requires duties of care for all of its Members, whether or not they are fiduciaries: "[CFA Members and Candidates have a duty of loyalty to their clients and must act with reasonable care and exercise prudent judgment. Members and Candidates *must act for the benefit of their clients and place their clients' interests before their employer's or their own interests*. The CFA Institute Code of Ethics and Standards of Professional Conduct, Section III (Duties to Clients) A. (emphasis added).

[72] The notion considering the incentives of the producer of information when evaluating data (especially forecasts) has been made by Nassim Nicholas Taleb, SKIN IN THE GAME: HIDDEN ASYMMETRIES IN DAILY LIFE (02-27-2008) (Incerto).

[73] LEI Report, p. 89 notes that "The mix of sources considered (such as retail banks, investment banks, economic advisory firms, and academic institutions) are meant to provide a reasonable picture of investor expectations during the survey." This "mix of sources" reasonably would include the same firms, and possibly the same people, who are forecasting earnings growth rates. Yet, LEI claims that EPS growth rate projections are wrong, optimistic, and unusable whereas the interest rate forecasts are reasonable. LEI's recommendation is to restrict the sources to several Canadian banks. (LEI, p. 90-91.)

With regard to the second bullet point, LEI claims that earnings forecasts tend to overvalue the cost of equity and are constantly overly optimistic. The market has a way of weeding out the chronically-inaccurate forecaster, and short-sellers instill pricing honesty into the market as well by helping deflate bubbles. Moreover, as we noted, all models have shortcomings, including the CAPM. Identifying shortcomings in the CAPM as a less-than-useful financial analysis tool is a cottage industry in academia.[74]

With regard to the third point, LEI claims that the DCF is used for valuing companies but not for determining ROE. That statement is incorrect. The DCF is used to determine a cost-rate or discount rate as the basis for many real-world transactions, though it is sometimes hidden in plain sight. Two examples of the DCF are (1) the so-called Cap Rate used by the real estate industry; and (2) the PE ratio used by investment analysts.

To see this, we can examine the structure of the DCF model and compare it to these popular valuation ratios. The equation for a typical single-stage DCF as used in regulatory proceedings computes a cost of equity using dividends per share as the Expected Cash to Investors, and price per share as the value metric:

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

[74] As noted by Fama and French:

> *The attraction of the CAPM is its powerfully simple logic and intuitively pleasing predictions about how to measure risk and about the relation between expected return and risk. Unfortunately, perhaps because of its simplicity, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications. The model's empirical problems may reflect true failings. (It is, after all, just a model.) But they may also be due to shortcomings of the empirical tests, most notably, poor proxies for the market portfolio of invested wealth, which plays a central role in the model's predictions. We argue, however, that if the market proxy problem invalidates tests of the model, it also invalidates most applications, which typically borrow the market proxies used in empirical tests.*

Eugine Fama and Kenneth French. "The CAPM: Theory and Evidence." (August 2003.) Amos Tuck School of Business at Dartmouth College Working Paper No. 03-26 and Center for Research in Security Prices (CRSP) University of Chicago Working Paper No. 550.

The Cap Rate is a simplified version of the same equation. The cap rate is defined as the income from the property divided by its value:

$$Cap\ Rate = \frac{d}{P}$$

In other words, the Cap Rate is simply the single-stage DCF model's estimate of the cost of equity assuming growth is zero--probably to make the analysis simpler. The Cap Rate is a quick way of evaluating the discount rate applicable to the property.

The omnipresent Price-to-Earnings ratio is another hidden DCF cost of equity metric. The PE ratio is used (*inter alia*) to compare stocks and determine whether the market is over- or under-valued. The inverse of the P/E ratio (E/P) divides income by asset value, the same structure as the Cap Rate. The P/E ratio (or its inverse), like the Cap Rate, is an application of the DCF to measure the discount rate assuming zero growth.

Hence, LEI's claim that the DCF and risk premium methods "are less used by actual investors to estimate ROE outside of regulatory proceedings"[36] is misleading because, first, they are widely used, and second ROE and value are two sides of the same coin. The risk premium method is addressed in the following Section.

As noted, the DCF is used as a tool to value assets from the stock market to commercial real estate by producing an implied discount rate. Whether that means the DCF is a valuation tool, or an ROE tool seems to be a distinction without a difference.

Our view is that all models are simplifications of reality, and all models have flaws, or, maybe more charitably, are not applicable in every conceivable situation. For this reason, strict adherence to a single model risks a failure to meet the FRS as would be the case if LEI's recommendation were followed. It is important that the Board keep an open mind and evaluate different approaches and different data inputs to determine where reality might be located.

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

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[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.

- Risk-premium;
- In the final Subsection we provide an overview of how these methodologies achieved the results displayed in Table 2.

As we noted earlier, LEI's computed equity costs, when corrected for errors as shown in Table 4, are not far from our own results, as shown in Table 5, and are within our 95 percent confidence interval. Likewise, LEI's risk premium analysis produces an average authorized return on equity provided to firms of comparable operating risk, and adjusted to similar financial risk using the Deemed Debt Ratio.

Taken together, the LEI cost estimates corrected and in total present a different picture of equity costs than LEI's recommended ROE of 8.95 percent and suggests both that LEI's recommended ROE is unreasonable, and that Nexus' independent analysis is a reasonable estimate of a fair return on equity.

1. Nexus Economics' Selection of Comparable Firms

Because Canada and the US are integrated economies with an integrated North American capital market, for the reasons set out above, US companies can serve as proxies to Canadian companies. Both compete for capital in the same market, and there is no need to adjust the derived cost of equity based on US companies when applied to Canadian companies resulting from Country Risk.[77]

The Fair Return Standard requires firms of comparable, though not identical, risk.[78] Accordingly, we used the following method to select firms of comparable risk. Our method of selection was as follows.

[77] LEI's derivation of the Annual Adjustment Mechanism is based on US peers.
[78] 2009 Report, p. 21. "'Like' does not mean the 'same'."

As a first pass, we selected all firms with NAICS codes of 2211 and SIC Codes of 4991, 4931, 4911 from the S&P CapIQ database.[79] These industry classification codes are for "Electric Power Generation Transmission and Distribution." The SIC Codes are:

- 4911. Electric Services. "Establishments engaged in the generation, transmission, and/or distribution of electric energy for sale"; and
- 4931. "Establishments primarily engaged in providing electric services in combination with other services, with electric services as the major part though less than 95 percent of the total."

We kept only those firms that traded on North American exchanges (NYSE, NASDAQ, TSX, and OTC). We then examined each of the surviving candidates for special issues that made them inappropriate for comparison. We rejected those that (1) had no operations; (2) no longer existed; (3) were REITs rather than operating companies; (4) had no distribution or transmission (were IPPs, engineering companies, developers, or marketers) (5) only renewables or biogas (too speculative); (6) had considerable negatives in the historical data such as no revenues or no history of positive earnings (too speculative).

Our filters produced 43 candidates, most of which had at least one financial data provider with a beta and an expected earnings-per-share growth rate. The financial services data providers that we examined, CapIQ, Yahoo Finance, Zacks, and StockAnalysis.com had relevant information for somewhat over half of the candidates that could be used in the DCF.

[79] NAICS (North American Industrial Classification System) is used by the US, Canadian, and Mexican agencies to collect business data. NAICS was designed to supersede the Standard Industrial Code system, though both are used. See: "What is a NAICS Code and Why do I Need One" at NAICS Association at What is a NAICS Code and Why do I Need One? | NAICS Association. Note: SIC Code 4991 does not exist but was erroneously assigned to AES Corp in the CapIQ database. For that reason, we retained the "4991" company.

Table 6 – Firms Included in the Nexus ROE Analysis

			DCF					
Ticker	Name	Eligible	Yahoo	Zacks	CapIQ	Stock Analysis	CAPM	Any
TOTALS		43	29	23	20	27	43	43
AEE	Ameren Corp.	Yes	X	X	X	X	X	X
AEP	American Electric Power Co.	Yes	X	X		X	X	X
AES	The AES Corp.	Yes	X				X	X
AGR	Avangrid Inc.	Yes		X	X	X	X	X
ALE	ALLETE Inc.	Yes	X			X	X	X
APTL	Alaska Power & Telephone Co.	Yes					X	X
AQN	Algonquin Power & Utilities	Yes					X	X
AVA	Avista Corp.	Yes	X		X	X	X	X
CEG	Constellation Energy Corp.	Yes					X	X
CMS	CMS Energy Corp.	Yes	X	X	X	X	X	X
CNP	CenterPoint Energy Inc.	Yes	X	X	X	X	X	X
D	Dominion Energy	Yes		X		X	X	X
DTE	DTE Energy Co.	Yes	X	X	X	X	X	X
DUK	Duke Energy Corp	Yes	X	X		X	X	X
ED	Consolidated Edison Inc.	Yes	X	X			X	X
EIX	Edison International	Yes	X			X	X	X
EMA	Emera Inc.	Yes					X	X
ES	Eversource Energy	Yes	X	X			X	X
ETR	Entergy Corp.	Yes	X	X			X	X
EVRG	Evergy, Inc.	Yes	X	X	X	X	X	X
EXC	Exelon Corp.	Yes	X	X	X	X	X	X
FE	FirstEnergy Corp.	Yes	X			X	X	X
FTS	Fortis Inc.	Yes			X		X	X
H	Hydro One Ltd	Yes			X		X	X
HE	Hawaiian Electric Industries	Yes				X	X	X
IDA	IDACORP Inc.	Yes	X		X	X	X	X
LNT	Alliant Energy	Yes	X	X	X	X	X	X
MGEE	MGE Energy Inc	Yes	X				X	X
NEE	NextEra Energy Inc.	Yes	X	X		X	X	X
NWE	NorthWestern Energy Group	Yes	X		X	X	X	X
OGE	OGE Energy Corp.	Yes		X	X	X	X	X
OTTR	Otter Tail Corp.	Yes	X				X	X
PCG	PG&E Corp.	Yes	X		X	X	X	X
PEG	Public Svc Entpr Group Inc.	Yes		X			X	X
PNM	PNM Resources Inc.	Yes		X			X	X
PNW	Pinnacle West Capital Corp.	Yes	X	X	X	X	X	X
POR	Portland General Electric Co.	Yes	X			X	X	X
PPL	PPL Corp.	Yes	X	X			X	X
SO	The Southern Co.	Yes	X	X	X	X	X	X
TA	TransAlta Corp	Yes					X	X
UTL	Unitil Corp.	Yes	X		X	X	X	X
WEC	WEC Energy Group	Yes	X	X	X	X	X	X
XEL	Xcel Energy Inc.	Yes		X	X	X	X	X

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.

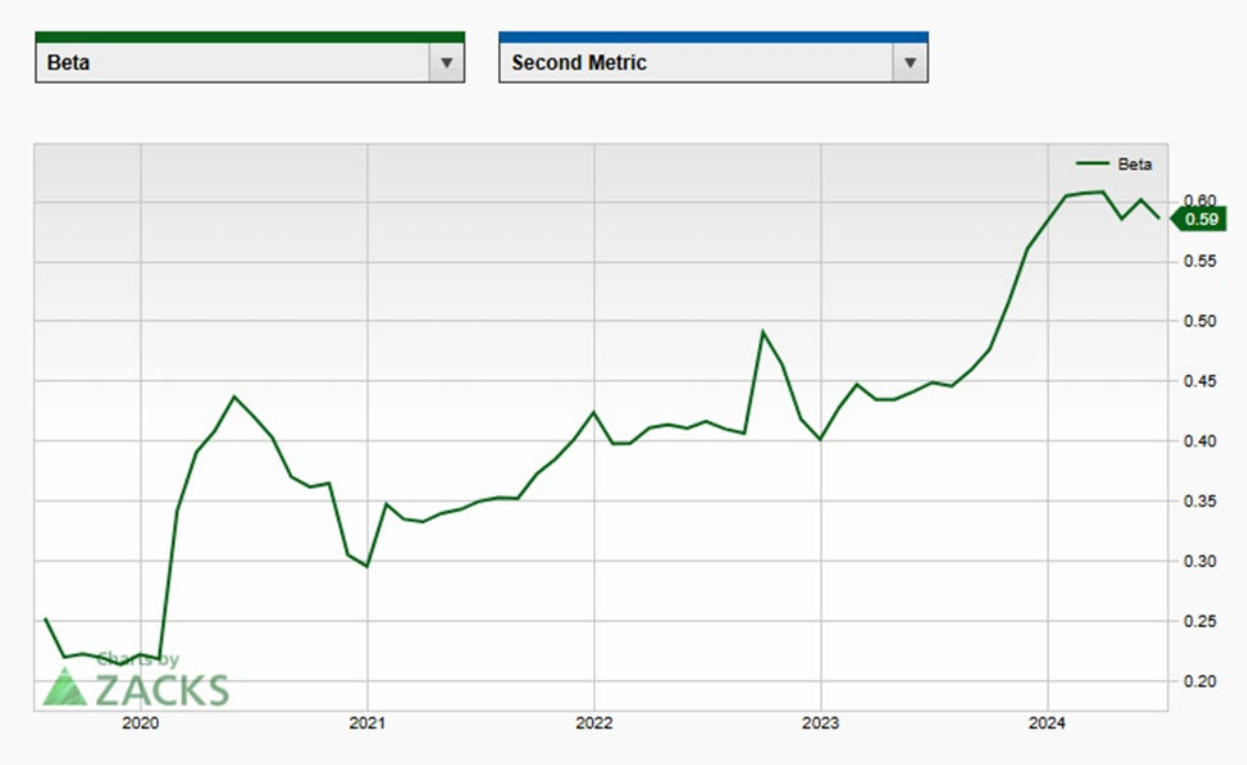
b) Betas

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.

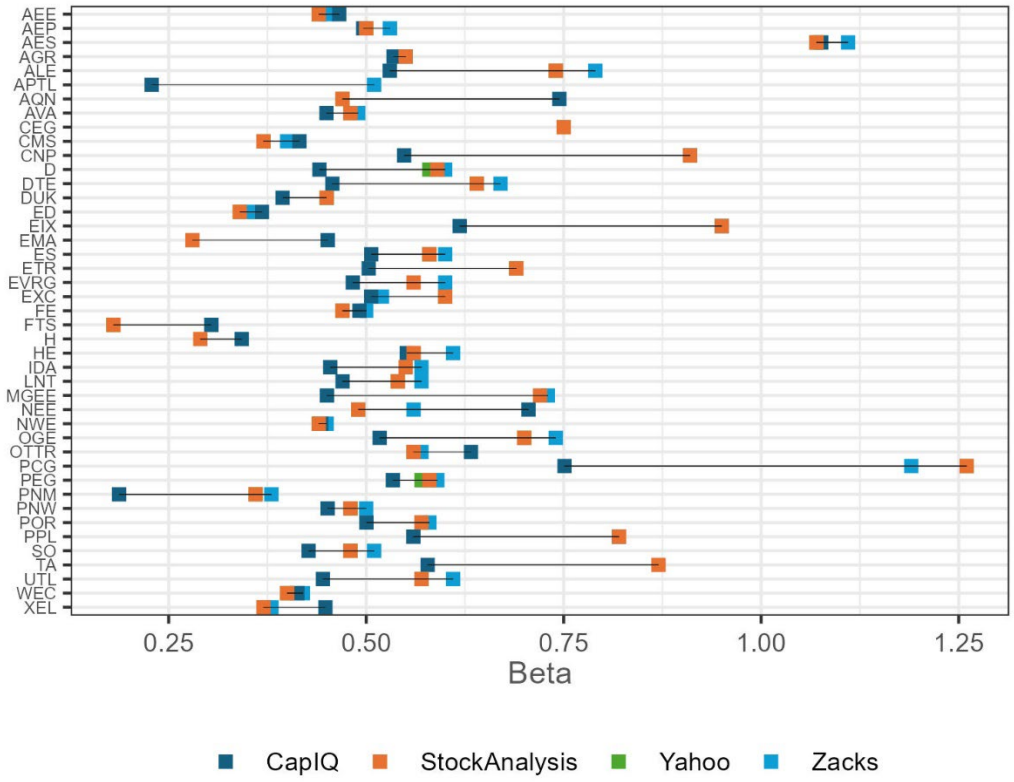
Figure 8 - Evolution of Dominion Energy Beta Since 2020



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

are representative of the firm and the industry and are useful for the Board's purpose of ascertaining the cost of equity relevant to Ontario under the Fair Return Standard.

Yahoo Finance says that its growth estimates (ultimately) are extracted from I/B/E/S.[91] Zacks says that it "receives daily electronic data feeds and printed research reports from over 185 US and Canadian brokerage firms, produced by more than 2,600 analysts amounting to over 500,000 pages of brokerage research."[92] S&P's Capital IQ obtains data feeds from numerous sources. StockAnalysis.com says that it uses Finnhub to obtain EPS growth forecasts.[93] Finnhub is a front-end API provider that pulls data from a variety of sources and makes the data easier to use. Finnhub claims to monitor data quality. Typically, these growth rates are updated quarterly.

In some cases there are substantially divergent predictions about the future. This can make sense if different investors (or analysts) have different beliefs on a binary outcome for the firm: growth if the firm succeeds in clearing a hurdle, and growth if it fails to clear the hurdle. The analyst-provided growth rates for each company in the sample are shown in Figure 10.[94]

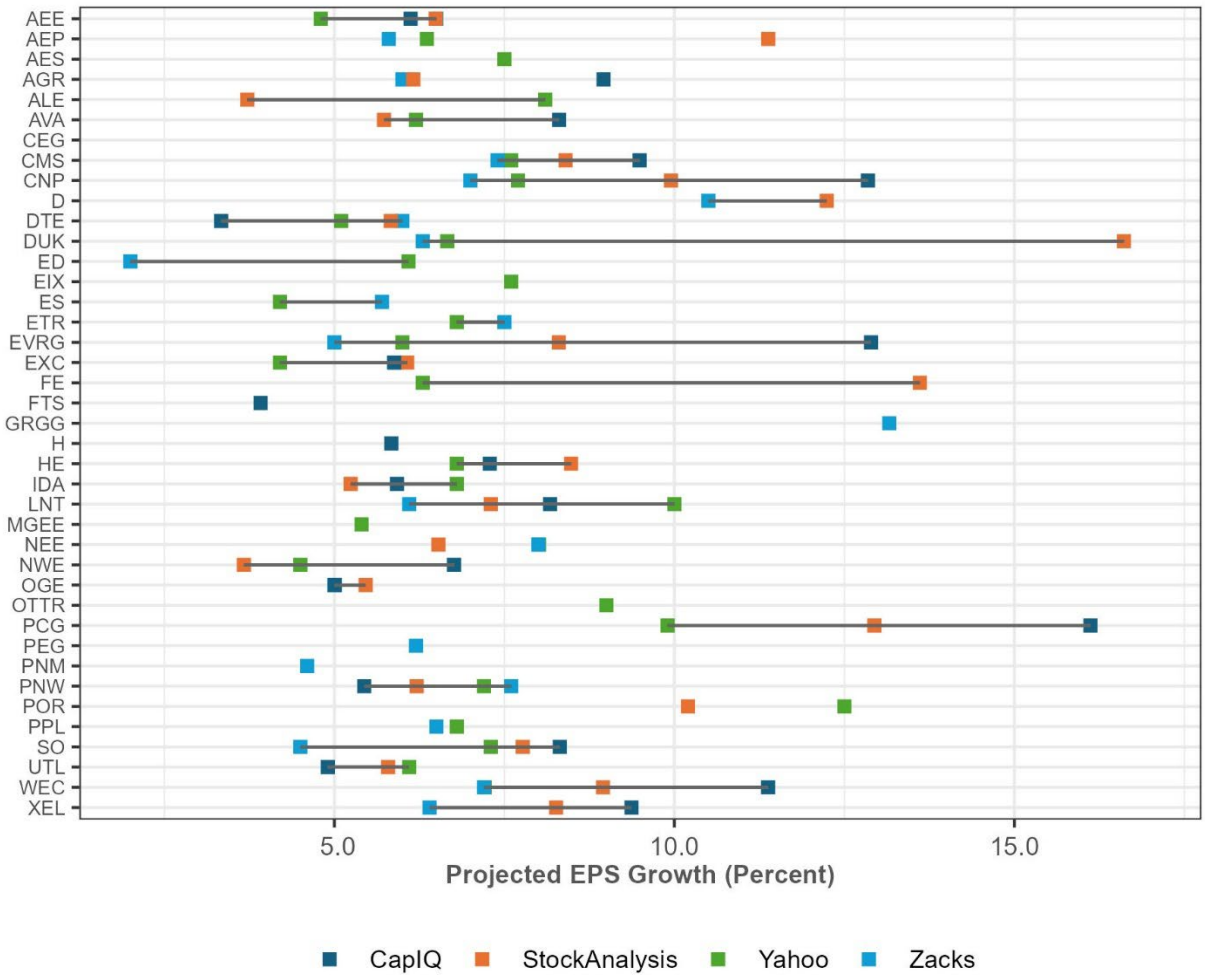
[91] Yahoo Finance's 5 year forward growth estimates are provided by Refinitiv (now named LSEG Data & Analytics), which accesses I/B/E/S (Institutional Broker Estimate System). (See, LSEG I/B/E/S Estimates at I/B/E/S Estimates | Company Data | LSEG). I/B/E/S (Institutional Brokerage Estimation System). Investopedia has a decent description of the service. Will Kenton, "Brokers' Estimate System Explained, Investopedio. April 8, 2024. At, I/B/E/S - The Institutional Brokers' Estimate System Explained (investopedia.com). Yahoo computes an average of the analysts that provide estimates to IBES. Yahoo also notes how many analysts provide a particular growth estimate.

[92] Zacks.com at http://www.zacksdata.com/data/consensus-data/.

[93] StockAnalysis.com at https://stockanalysis.com/data-disclaimer/. Finnhub (Finnhub Stock APIs - Real-time stock prices, Company fundamentals, Estimates, and Alternative data.) creates API keys that downstream firms such as StockAnalysis can use to more easily pull data from a variety of sources. StockAnalysis provide a coherent front end for these different sources. According to Finnhub, users include Google, Coca Cola, The Federal Reserve Bank Board of Governors.

[94] These are long-term growth rates, which typically are 5 years, but sometimes 3 years.

Figure 10 – Investment Analyst EPS Long-Term Expected Growth Rates Obtained from Different Sources



Since there is considerable dispersion in outlooks for earnings growth, we also filter the growth rates to only use those that are within 2 standard deviations of the overall average (95 percent confidence).[95]

Applying our DCF analysis to the data provided by Yahoo, Zacks, CapIQ, and Stock Analysis produces a weighted average DCF cost of equity result of 10.92 percent shown

[95] Standard deviation of the mean (or standard error) is computed as the overall standard deviation divided by the square root of the number of observations. This produces a screened range of growth rates of 1.54 percent to 17.33 percent.

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.

5. Computation of Low, Average, and High Cost-of-Equity Results in Table 9

Throughout this analysis, we have described our weighted averages as well as our "low" and "high" figures. We average the results of the various methodologies (and datasets) together because no one methodology is likely to be perfect. All methodologies suffer from limitations. It is therefore useful to determine whether and to what extent the computed numbers are coalescing around a useful average.

Table 9 –Nexus Economics Cost of Equity Results (Table 5 Reproduced for Convenience)

		Lower Confidence Limit	Average	Weight [b]	Upper Confidence Limit
1	Single Stage DCF	9.92%	10.92%	**38%**	11.93%
2	Growth Rates - Yahoo Finance	9.76%	10.69%	12%	11.63%
3	Growth Rates - Zacks	9.27%	10.11%	14%	10.95%
4	Growth Rates - CapIQ	10.37%	11.86%	5%	13.36%
5	Growth Rates - StockAnalysis	11.08%	12.22%	8%	13.37%
6	CAPM	9.73%	10.19%	**49%**	10.65%
7	Risk Premium (Authorized Returns)	10.19%	11.09%	**13%**	11.98%
8	**WEIGHTED AVERAGE [b]**	9.86%	**10.58%**	100%	11.31%
9	Transactions Costs	0.50%	0.50%	100%	0.50%
10					
11	Total	10.36%	**11.08%**		11.81%

[a] Results are relevered to a Debt-to-Equity Ratio of 1.50 and taxes of 26.5%.

[b] Weights are determined by the inverse of the standard deviation of the mean result.

Table 9 shows our results based on different methodologies and data sources.[98] Each approach examines multiple firms using multiple datasets, so we seek here to provide ranges of reasonableness. We do so by computing a 95 percent confidence interval on our computed average. In contrast to the mean (or average), which is a point estimate of the unknown parameter value (in this case, the "true" cost of equity), the confidence interval quantifies an interval estimate around that value. The 95 percent confidence interval basically states that if one were to run the experiment multiple times and compute the average in each experiment, and then computed the standard deviation of all of these

[98] Not every data provider offered information on the same firms.

means, the true mean would be within the interval so produced 95 times out of 100 experiments. The 95 percent confidence interval is standard for statistical analysis and would provide the Board with the confidence that the high and low results were not unreasonably high or low.

We also used a *weighted average* to compute ranges by method and data source and to average together the results from the various methods and data sources.[99] According to our weighting scheme (which is the inverse of the variance of the results),[100] results that are tightly clustered and have low variance receive a higher weight than those whose results across companies in the sample are more dispersed.

The Weighted Average approach has the merits of: (1) being objective and non-judgmental; and (2) being more reasonable than simply picking minimums and maximums. However, this weighting approach does not factor in whether the method itself properly accounts for investor expectations. Other than variances, all methods are viewed as equally good or bad. The CAPM has a tighter confidence interval than does the DCF because history is known with more certainty (less dispersion) than is the future and so the CAPM receives a higher weighting, even though the DCF arguably better reflects investor perceptions about the investment opportunity and so should receive a higher weight.[101]

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[99] The weights in the weighted average are the inverse of the variances. Let's say that a cost-of-equity model applied to 40 companies results in an average of 10.00 percent. We compute a standard deviation using Excel's STDEV.S() function, and we divide those results by the square root of the number of observations to get the standard error of the mean. The average ± 2standard errors provides us with a 95 percent confidence interval of the mean.

[100] Whereas the average of a distribution is the measure of location, the variance of a distribution is a measure of dispersion. For a given set of data, the more dispersed the data, the higher its variance (*ceteris paribus*). The inverse of the variance is $1/_{variance}$. By using the inverse of the variance as our weighting mechanism, the higher the variance (the more dispersion in the data) the lower the weight. Hence, if our ROE results are widely dispersed, the method and data source that produces those estimates is given less weight than a method that produces less dispersed ROE results.

[101] Moreover, with the CAPM, the only variable in our analysis that has any volatility is the beta. This is because we only use a single estimate of the Market Risk Premium. In real life, the MRP is not known with certainty, and it

The data used to develop Table 9 and as used as inputs to our DCF and CAPM calculations are from publicly traded North American (Canadian and US) electric utilities,[102] which are often holding companies as described above. The risk-premium method examines authorized returns on equity from regulators as applied to a particular utility. These utilities typically have Debt-to-Equity ratios of about 50:50. However, the publicly traded companies used in the CAPM and DCF have debt-to-equity ratios of about 60:40, the same as the current OEB Deemed Debt Ratio. Table 2 adjusts all methods and outputs to a 60:40 ratio and also to a tax rate of 26.5 percent (versus US 21 percent). The adjustment formula works similarly to the way the more-familiar Hamada adjustments works on the beta of the CAPM.

We first compute the raw cost of equity. We then unlever (i.e., Debt-to-Equity of 0.00 percent) using the following formula:[103]

$$ROE_u = \frac{ROE_{Lev} + \frac{D}{E}(1-\tau) \times r_f}{1 + \frac{D}{E}(1-\tau)}$$

The D/E ratio is the actual D/E (book) ratio for the particular firm, the tax rate is the US Federal marginal corporate tax rate of 21 percent, and the risk-free rate is the same as that used in our CAPM calculations. After recovering the unlevered ROE, we relever to the Deemed Debt ratio using the formula:

$$ROE_{Lev} = ROE_U + D/E\ (1-\tau)(ROE_u - r_f)$$

would be useful to establish a confidence interval around this estimate as well and incorporate both sources of uncertainty (and possibly even the future risk-free rate) into the results.

[102] Of the 46 companies that survived our screens, two of them (Fortis and Hydro One) are Canadian. Fortis trades on the NYSE (as well as on the Toronto exchange). Indeed, there are over 100 Canadian companies that trade on the NYSE and around 100 more that trade on the NASDAQ. Hydro One trades on the Toronto Exchange.

[103] Ian Giddy, "Leverage and Equity Returns". 2006. Available at Giddy | Leverage and the required return on equity (nyu.edu).

Where D/E is the Deemed Debt Ratio and τ is the Canadian Federal corporate tax rate of 26.5 percent. Table 5 / Table 9 report the relevered DCF and risk-premium results.

For the CAPM, we used the Hamada adjustment to the beta coefficient. The Hamada adjustment[104] unlevers the beta (zero debt, sometimes called the asset beta):

$$\beta_u = \frac{\beta_{lev}}{1 + (1 - \tau) \times {}^{D}/_{E}}$$

Where β_{lev} is the raw (levered) beta, τ is the tax rate (if the utility is in the US, it is 21 percent), and ${}^{D}/_{E}$ is the company's existing book Debt-to-Equity ratio. To relever the beta,

$$\beta_{relev} = \beta_u \times (1 + (1 - \tau) \times {}^{D}/_{E}$$

Where β_{relev} is the beta levered to a 60:40 Debt-to-Equity ratio, τ is the new tax rate (26.5 percent for Canada), and ${}^{D}/_{E}$ is the Deemed Debt Ratio of 60:40. Table 10 provides some hypothetical numbers to illustrate the equivalency between the Hamada adjustment, which only works for the CAPM, and the more generalized adjustment that can be applied to results from the DCF or risk premium method. Each is designed to put financial risk on an equivalent basis. Each has hidden assumptions regarding the future path of dividends, debt, and so forth.

[104] Robert Hamada, "The Effect of the Firm's Capital Structure on the Systemic Risk of Common Stocks." (May 1972.) Journal of Finance.

Table 10 – Demonstration that the Generalized Leverage Adjustment is the Same as Hamada

		Hamada Adjustment		General Adjustment	
[1]	MRP	[input]	0.0860		
[2]	USrf	[input]	0.0458	0.0458	
[3]	Raw Beta	[input]	0.6600		
[4]	Existing Debt Equity Ratio	[input]	1.0000	1.0000	
[5]	Existing Tax Rate	[input]	0.2100	0.2100	
[6]	Unlevered Beta	[3]/(1+(1-[5])*[4])	0.3687		
[7]	New Debt Equity Ratio	[input]	1.5000	1.5000	
[8]	New Tax Rate	[input]	0.2650	0.2650	
[9]	Relevered Beta	[6]*(1+(1-[8])*[7])	0.7752		
[10]	Old Ke	[2]+[3]*[1]	0.1026	0.1026	[same]
[11]	Unlevered Ke	[2]+[6]*[1]	0.0775	0.0775	([10]+[4]*1-[5])/(1+[4]*(1-[5]))
[12]	New Ke	[2]+[9]*[1]	**0.1125**	**0.1125**	[11]+[7]*(1-[8])([11]-[2])

* Data are for expository purposes only.

The column of Table 10 labeled Hamada adjustment provides an example where an ROE is computed on the levered (60:40) basis using the Hamada adjustment to the beta coefficient. Because the DCF and Risk Premium approaches do not have betas, the Hamada adjustment cannot be used. However, these results should likewise be relevered so as to eliminate financial risk as a cause for differentiation among cost of equity estimates. The adjustment, proposed by NYU Professor Ian H. Giddy shows how this can be done, and we adopt Dr. Giddy's approach. Table 10's column labeled General Adjustment shows how an ROE computed from any method (including CAPM) can be un-levered and re-levered to the Deemed Debt Ratio of 60:40 and arrive at the same result that would be computed using Dr. Hamada's approach.

E. The Annual Adjustment Formula

LEI proposes to modify the annual adjustment mechanism using the output of its risk premium analysis summarized in its Figure 69. LEI estimates the equation shown in Figure 69 based on 30-year US Treasury bonds and Moody's Baa-rated corporate bonds.

LEI then replaces the constant of the regression with its CAPM result of 8.95 percent, and a delta (adjustment factor) based on changes in the Canadian bond rate and the difference between Canadian corporates and Canadian long-term forecasts. The weighting factors for the risk-free rate difference and the corporate bond spread are from LEI Figure 69.

Without repeating our discussion of LEI's CAPM, we note that LEI's error here is the same as in its application of the CAPM. LEI uses US data to *estimate* the regression and Canadian data to *forecast* the results. This is a violation of the apples to apples rule and the results cannot be trusted without validation.

The point is that the application of LEI's proposed formula is incorrect both methodologically and in terms of mixing and matching data within a single capital market. Moreover, the fix is easy: use the same data in predicting as was used in training. The North American capital market covers both countries and there is no economic or statistical reason to swap out one data series for another and introduce unnecessary randomness, and (from the use of the 8.95 percent beginning basis) bias into the results.

We do not offer an independent adjustment formula, noting only that there is some merit to LEI's use of empirical analysis to establish the weights in the interest rate-based formula (using corrected data). Even if properly implemented, we recommend that the Board limit LEI's mechanism to 2 years and then review the cost of capital parameters again in an open forum such as this on the third year.

VIII. Perspectives of Debt & Equity Investors (Issue #11)

Issue 11: Are the perspectives of the debt and equity investors in the utility sector relevant to the setting of cost of capital parameters and capital structure? If yes, what are the perspectives relevant to that consideration and how should those perspectives be taken into account for setting cost of capital parameters and capital structure?

A. Summary

According to the FRS, the perspectives of debt and equity investors are of central importance in the determination of cost of capital parameters.

The Board's current policy toward debt and equity investors is reflected in its base (2009) ROE and in its annual adjustment to the ROE. However, for the majority of distributors, the annual adjustment is not reflected until such time as a rebasing occurs.

Between the years 2015 and 2022 a sample of Ontario distributors on average did not earn their authorized returns. If a distributor is not earning a return established at the FRS it is operating at an economic loss. These distributors, on average, have operated at an economic loss during each of these years. We conclude that the perspectives of equity investors are not represented by the current Board regulatory mechanisms. We therefore recommend a more frequent (every 3 year) full review of the cost of equity parameters to ensure that investor perspectives are being taken into account.

B. Current Policy

The Board's current policy is captured by the combination of (1) its base rate of return; (2) the annual adjustment mechanism; and (3) its price cap overlay. In combination, Nexus Economics concludes these regulatory requirements show that the Board has an inadequate view of the perspectives of the debt and equity investors in the utility sector relevant to setting of cost of capital parameters and capital structure.

C. LEI Recommendation

LEI presents information that focuses primarily on the perspective of debt holders. LEI says that it is "not aware" of OEB-regulated entities facing notable issues in attracting equity and debt capital since 2009 (p. 127).[105] LEI's conclusion is that investor perspectives are adequately represented and that the OEB can modify its reporting requirements to enable better monitoring.[106] This is inadequate because it does not consider the interests of equity holders.

LEI concludes that OEB's existing cost of capital regime (including the determination of the Deemed Debt Ratio) appropriately considers investor perspectives as market data included in the formula and risk assessment and that the approach meets the Fair Return Standard.[107]

D. Nexus Economics Evaluation and Recommendation

The perspectives of both debt and equity investors are the primary determinants in setting the cost of capital parameters. Further, it should be noted that the perspectives of debt and equity investors may overlap but they also differ in material ways. Both debt and equity investors are concerned with the financial health and stability of the firm. However, debt investors are interested in the timely and complete repayment of interest and principal. Equity investors, who are subordinate to debt holders, are concerned with earning at least an economic return.

As we noted above, Ontario distributors have on average failed to attain their authorized return on equity in any of the 8 years between 2015 and 2022. Based on LEI's own analysis (as shown in its Figure 19), Ontario distributors have not earned their cost of equity in any year between 2015 and 2022. Even assuming that the authorized ROE itself met the Fair Return Standard, this reality provides clear evidence that the current Board cost of capital parameters as a whole are inconsistent with the FRS.

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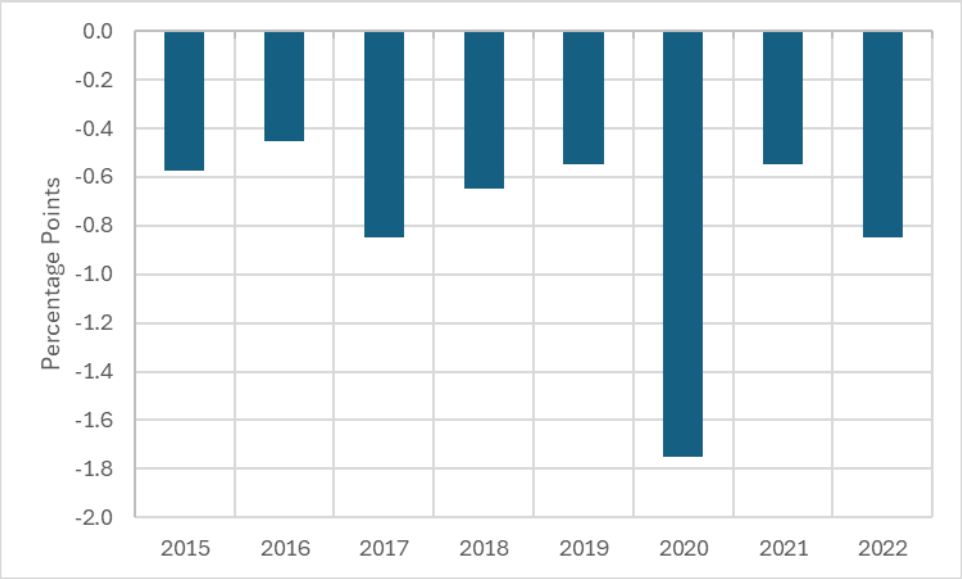
[105] LEI Report, p. 127.
[106] LEI Report, p. 134.
[107] LEI Report, p. 134.

Figure 11 –Average Earned Returns on Equity in Ontario less Deemed ROE (Figure 7 Replicated for Convenience)



Source: LEI Report, p. 75.

The 2009 Report cites to the *FPC v. Hope Natural Gas* case, which specifies that "the return to the equity owner should be commensurate with the returns on investments in other enterprises have corresponding risk."[108] While rate of return regulation cannot and should not guarantee that the required return will be earned, regulation under the Fair Return Standard must provide an opportunity that the return will be earned.

It is implausible to suggest that the average distributor in Ontario, over a period of 8 years, was unlucky or unskilled enough to fail to earn its required return on equity. Moreover, we have already demonstrated in Chapter III (Benchmarking) that the authorized returns on equity under the current Board approach are substantially lower than those of comparables in California, New York, Massachusetts, Alberta, and British Columbia (and indeed nearly all U.S. states). Accordingly, we conclude that the Board's

[108] *FPC v. Hope Natural Gas* 320 U.S. 591 (1944).

current approach (and LEI's recommendations) fail to adequately represent the interests of equity investors.

LEI's discussion in its Section 4.11 regarding investor perspectives has to do primarily with the riskiness of debt. LEI cites to S&P Global Ratings, DBRS Morningstar as classifying Ontario as being "most credit supportive."[109]

Credit rating agencies have a very important place in the discussion of debt capital and debt costs, but these agencies have an overriding objective, and that is to assess the likelihood that lenders will be repaid in full and at the promised time. The utility's opportunity to earn a return on equity that meets the Fair Return Standard is not central to the mission of credit rating agencies. Good credit ratings are the first—but not the last—hurdle that must be cleared to ensure that an authorized return on equity meets the Fair Return Standard.

Accordingly, LEI fails to meet the FRS in its analysis of equity holder. Indeed, LEI provides evidence in its Figure 19 that the current regulatory approach in Ontario neither meets equity investor interests nor adheres to the FRS. Nexus concludes that a 3-year review period is a step toward ensuring that equity holders' interests are represented.

[109] LEI Report, pp. 128-129.

IX. Capital Structure / Equity Thickness (Issue #12)

Issue 12: How should the capital structure be set for electricity transmitters, electricity distributors, natural gas utilities, and OPG to reflect the FRS?

A. Current Policy

The Board has established the distributors' capital structure at 40 percent equity and 60 percent debt.

B. LEI Recommendation

LEI does not recommend any changes to the existing capital structure for electric distributors.

C. Nexus Economics Evaluation and Recommendation

Our proposal is that the Board retain its existing policy for now. Nevertheless, we offer the following observations.

First, a 50:50 Debt-to-Equity ratio for regulated electric utilities is common in the US. Second, Debt ratios greater than 60 percent are fairly rare.[110] Third, Ontario's Deemed Debt-to-Capital Ratio of 60 percent is higher than those of the Comparable states (New York and California) identified by LEI in its report. British Columbia and Alberta have Deemed Debt Ratios of 55 percent.

D. Conclusion

Our proposal is that the Board retain its existing policy for now.

[110] We use the SNL database available from S&P. This has 1,961 separate commission decisions from January 2008 to May 1, 2024. We then filter on service="electric", requested and authorized returns greater than zero, and requested and authorized equity ratios greater than zero (so that we could de-lever the data). We also eliminate cases that are "Limited Issue Riders" and Illinois cases due to specific legal requirements in that jurisdiction. We understand that these states include zero cost of capital items in the capital structure. This means that raw debt ratios of the sort we analyzed would be adjusted to remove the zero cost of capital items and make the debt ratios more comparable. Our point remains, however, that variations from a 50 percent Debt ratio are uncommon, and, in these cases, explainable by other regulatory factors.

X. On-going Monitoring Indicators Testing the Reasonableness of the Results of the Cost of Capital Methodology (Issue #14)

Issue 14: What on-going monitoring indicators to test the reasonableness of the results generated by its cost of capital methodology should the OEB consider, including the monitoring of market conditions?

A. Current Policy

OEB Staff prepares quarterly reports on macroeconomic conditions and their impact on the cost of capital. These reports are not publicly released.

B. LEI Recommendation

LEI recommends that the current practice be continued where the reports are prepared by OEB staff, but not publicly released.

C. Nexus Economics Evaluation and Recommendation

Transparency is the bedrock of sound regulation. The information used to produce these reports is publicly available to the best of our knowledge. There is no good reason not to transparently publish the Board's monitoring reports.

D. Conclusion

A quarterly report should be prepared by OEB staff and made available to all interested parties.

XI. Review Mechanism to Ensure Adherence to the FRS (Issue #15)

Issue 15: How should the OEB regularly confirm that the FRS continues to be met and that rate-regulated entities are financially viable and have the opportunity to earn a fair, but not excessive, return?

A. Current Policy

The OEB Staff prepares annual updates and relies on "experience and informed judgement". [111] The Commission retains the authority to determine the process adopted.

B. LEI Recommendation

LEI recommends the existing approach be adopted and that the Board augment existing processes by monitoring credit rating and the pace of capital injections.

C. Nexus Economics Evaluation and Recommendation

The LEI recommendation avoids the fundamental question about compliance with the FRS – does the ROE provided to Ontario distributors offer a return equal to that of comparable risk. We suggest that the deemed ROEs provided in Ontario be compared to peer jurisdictions similar to the benchmarking analysis we provide in Chapter III (Benchmarking).

D. Conclusion

The OEB should include a benchmarking analysis of ROEs in addition to the existing processes.

[111] LEI Report, p. 148

XII. Defined Interval to Review the Cost of Capital Policy (Issue #17)

Issue 17: What should be the defined interval (for example, every three to five years) to review the cost of capital policy (including, but not limited to, a review of the ROE formula and the capital structure)? Should the OEB adopt trigger mechanism(s) for a review and if so, what would be the mechanisms?

A. Current Policy

The OEB's 2009 decision established an approach to update the cost of capital policy every five years. The first review in 2014 resulted in a staff report, but no evidence was offered by the parties.

B. LEI Recommendation

LEI recommends that the existing policy be maintained with reviews every five years including trigger mechanisms.

C. Nexus Economics Evaluation and Recommendation

The status quo has effectively resulted in no formal proceeding to review the cost of capital in fifteen years. Annual updates have been prepared based on changes in bond interest rates, which has previously been discussed. However, these changes need to capture many of the other variables critical to an accurate calculation of the cost of capital. As a result, the current ROE provided by the OEB to distributors is significantly below that of peers (as shown in Figure 1).

D. Conclusion

Nexus Economics recommends that a litigated cost of capital proceeding occurs every three years. Our recommendation for the three-year interval is consistent with the Auditor General's recommendation. The increased frequency of a litigated proceeding provides the following advantages: it (i) maintains the ROE at a rate dictated by financial markets; (ii) establishes a level of institutional knowledge; and (iii) address uncertainty about energy policy and the impact of energy policy on cost of capital issues.