ONTARIO ENERGY BOARD

COST OF CAPITAL GENERIC PROCEEDING

EB-2024-0063

OEB STAFF COMPENDIUM

PANEL 3 – M3 Nexus

October 2, 2024

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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Nexus Economics

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:

1 *Figure 1 – Comparison of Ontario Authorized ROEs to Canadian and U.S. Peers (Levered to 60:40)[1]*
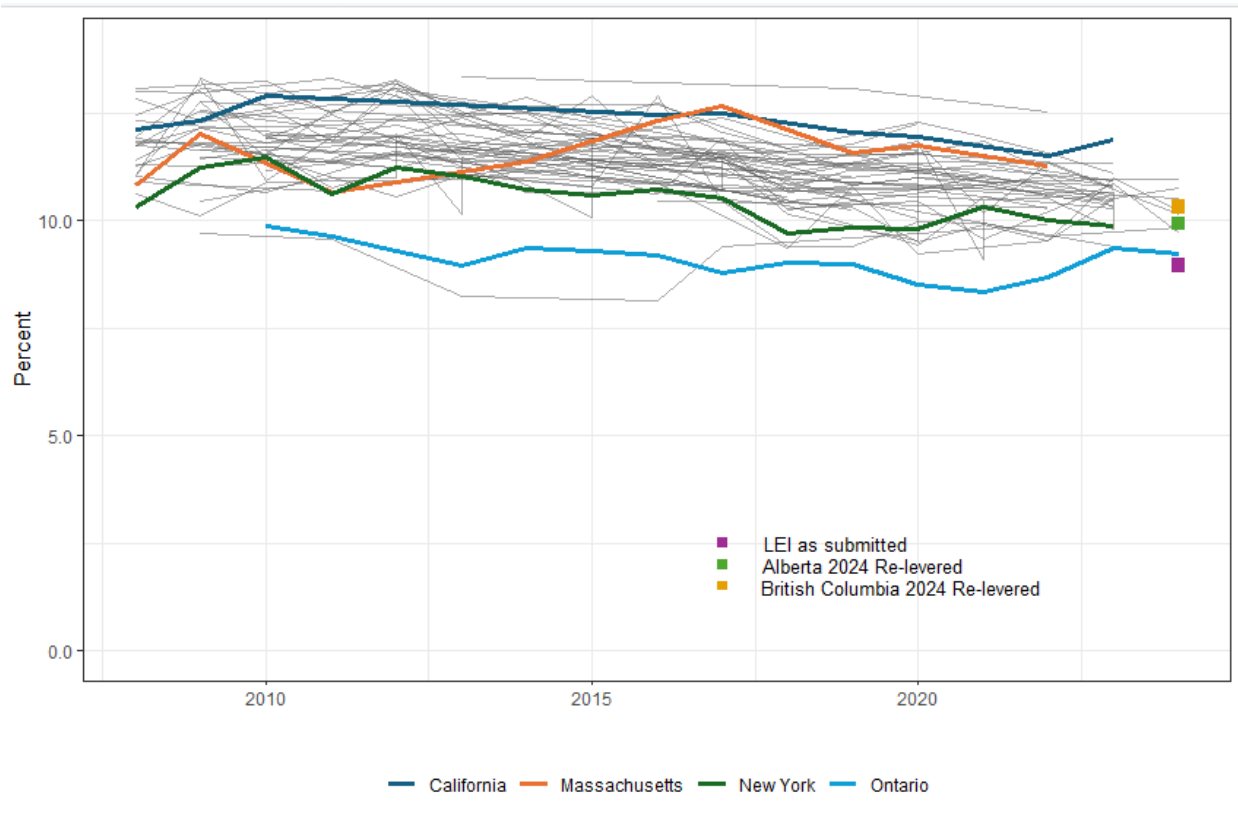
2

3 The coloured lines and dots in Figure 1 represent the comparator states and provinces

4 selected by Nexus Economics and described in Chapter III (Benchmarking). The grey

5 "spider web" in Figure 1 represents the other US states.[2] We provide these states to

6 illustrate that our recommendation is not due to a *post-hoc* selection of peers.[3] Notice

7 also that the methodology proposed by LEI yields an ROE of 8.95 percent that is even

8 lower than these peer ROEs. Chapter III (Benchmarking) further describes Nexus

9 Economics' benchmarking analysis and conclusions.

10 The ROEs set by the OEB and proposed by LEI are nowhere near the return available

11 from the application of invested capital to other enterprises of like risk. Neither meets

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[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.

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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

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1 Another criticism of the LEI proposed treatment of transaction costs is that they do not

2 align with the accounting of these costs. The accounting treatment of transaction costs

3 amortizes these costs over the life of the financial instrument.   The LEI proposed

4 treatment of expensing them as occurred introduces a "mismatch" of the accounting

5 treatment of these costs and the time period of the utility of the transaction costs.

6 Therefore, LEI's proposal is contrary to the prescribed accounting treatment and should

7 be rejected.

8 ## 2. Equity Transaction Costs

9 Like debt transaction costs, equity transaction costs are incurred in acquisition by the

10 utility of equity capital from the marketplace.[35] These costs are associated with any type

11 of equity acquisition.   If they are expensed as operating costs but not actually

12 recoverable, the result will be underperformance of the utility with regard to its potential

13 return. Expensing these costs, absent some sort of adder to customer bills, means that

14 the expenses will not be recovered.

15 Typically, analysts consider two types of costs: direct, such as payments made to

16 investment bankers, and indirect, such as dilution, which is the negative impact on share

17 price as additional shares hit the market. Those costs, when quantified, can be recovered

18 in a number of ways, and the Board has decided to collect them over the life of the equity

19 (which is to say infinity). A finite cost can be converted to an infinite stream by multiplying

20 the cost by the cost of equity:

21 $$Annual\ Cost = PV(Transaction\ Costs) \times k_e$$

22 Adding an increment enabling the collection of Transaction Costs to the Authorized Return

23 permits the collection of that annual cost. What is important to realize is that transaction

24 costs have been spread over an infinite time horizon. Accordingly, these costs incurred

25 in the past continue to be recovered. To now halt the transaction cost allowance that was

26 granted in 2009 would be a confiscation because the utility has not been given the

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

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1 opportunity to recover the cost that was amortized over infinity. The 2009 Report

2 determined that adding 50 basis points to the Authorized Return would compensate the

3 utility for these costs, and so they must continue today. We do not recommend any

4 change from the existing 50 basis points for transaction costs.

5 In our analysis of ROE (Chapter VII (Issue 10)), we break out the transaction cost adder

6 so that there is neither the possibility of double-counting nor lack of recovery in violation

7 of the FRS.

8 Another criticism of the LEI proposed treatment of transaction costs is that for equity

9 instruments, IAS 32 states these costs should be accounted for as a deduction from equity

10 proceeds. IFRS 9 addresses transaction costs related to a debt instrument and directs

11 firms to treat transaction costs as part of the effective interest rate, which effectively

12 amortizes them over the life of the instrument. Therefore, LEI's proposal contradicts the

13 prescribed accounting treatment and should be rejected.

14

15 **E.   Conclusion**

16 LEI proposes a change to the treatment of transaction costs but offers no reasonable

17 argument for the change in this policy. Transaction costs should be recovered over the

18 life of the instruments, as they have been, and for equity should be reflected as a

19 continued 50 basis points addition to the base authorized ROE.

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

3   Throughout this analysis, we have described our weighted averages as well as our "low"

4   and "high" figures. We average the results of the various methodologies (and datasets)

5   together because no one methodology is likely to be perfect. All methodologies suffer

6   from limitations. It is therefore useful to determine whether and to what extent the

7   computed numbers are coalescing around a useful average.

8   *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.

9
10

11   Table 9 shows our results based on different methodologies and data sources.[98] Each

12   approach examines multiple firms using multiple datasets, so we seek here to provide

13   ranges of reasonableness. We do so by computing a 95 percent confidence interval on

14   our computed average. In contrast to the mean (or average), which is a point estimate

15   of the unknown parameter value (in this case, the "true" cost of equity), the confidence

16   interval quantifies an interval estimate around that value. The 95 percent confidence

17   interval basically states that if one were to run the experiment multiple times and compute

18   the average in each experiment, and then computed the standard deviation of all of these

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

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1 means, the true mean would be within the interval so produced 95 times out of 100

2 experiments. The 95 percent confidence interval is standard for statistical analysis and

3 would provide the Board with the confidence that the high and low results were not

4 unreasonably high or low.

5 We also used a *weighted average* to compute ranges by method and data source and to

6 average together the results from the various methods and data sources.[99] According to

7 our weighting scheme (which is the inverse of the variance of the results),[100] results that

8 are tightly clustered and have low variance receive a higher weight than those whose

9 results across companies in the sample are more dispersed.

10 The Weighted Average approach has the merits of: (1) being objective and non-

11 judgmental; and (2) being more reasonable than simply picking minimums and

12 maximums. However, this weighting approach does not factor in whether the method

13 itself properly accounts for investor expectations. Other than variances, all methods are

14 viewed as equally good or bad. The CAPM has a tighter confidence interval than does

15 the DCF because history is known with more certainty (less dispersion) than is the future

16 and so the CAPM receives a higher weighting, even though the DCF arguably better

17 reflects investor perceptions about the investment opportunity and so should receive a

18 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

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IN THE MATTER OF the *Ontario Energy Board Act, 1998*,
S.O. 1998, c. 15 (Schedule B);

AND IN THE MATTER OF a generic proceeding
commenced by the
Ontario Energy Board on its own motion to consider the cost
of capital parameters and deemed capital structure to be
used to set rates

**INTERROGATORY RESPONSES OF
ELECTRICITY DISTRIBUTORS ASSOCIATION
(NEXUS ECONOMICS)**

Francis X. Pampush, PhD, CFA

Ralph Zarumba, MA

August 22, 2024

Reference: On page 4 of its evidence, Nexus includes Figure 1, the title of which suggests that it provides a "Comparison of Ontario Authorized ROEs to Canadian and U.S. Peers (Levered to 60:40)."

Questions:

(a) On page 76, Nexus provides two formulae (copied below):

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

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

In footnote 103 (page 76), Nexus provides a reference for using these formulae; however, that reference (Giddy, 2006) does not make reference to the first equation. Can Nexus please:

(i) Explain the mathematical derivation used to obtain the first equation referenced above, and provide an example using actual numbers it uses in its report as to how it is applied by Nexus.

Response:

The first equation is derived by beginning with the second equation and then solving for RUEu.

A computation comparing the Hamada method (useful for CAPM) with the Giddy method (useful for CAPM, DCF, rp) is shown in Table 10 using example numbers. Please see file M3-Fig 05 Ontario ROE vs Comps (version 3).xlsx at tab [Comps ROE Relev] for a working model that will unlever and relever ROEs. The tab has actual numbers and can be changed by the user.

(ii) Provide an example using actual numbers it uses in its report as to apply the second equation referenced above.

Response:

Please see spreadsheet and tab as referenced in (i) above.

(b) Please provide all data and workpapers (in excel format), including all formulae and calculations, used to prepare Figure 1.

Response:

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Please see M3-Fig 01 Comparison of ROEs R Code.docx for the R code that was used to create Figure 1. The formulas are not available in Excel because Excel lacks the capability to generate the "spider web" graphic.

The R code can be implemented as follows: copy-paste code from Word into RStudio or similar development environment; change the directories to those of your choosing. Put the input data (in this case, the data provided in the zip folder M3-Fig 01 and rp input data)_into your input folder; run the R code.

We used R for Figure 1 because R is widely accepted, open-source software with superior data analytics and visualization capabilities relative to Excel. We are not sure how Figure 1 might be reproduced using Excel. However, we have provided the data files in Excel format.

We have provided the Excel file with the SNL data with Authorized ROEs as well as subsidiary data used to unlever and relever the results. The graphic is reproduceable using the R code provided in M3-Fig 01 Comparison of ROEs R Code.docx. The ROE data for Figure 1 are in:

usSNL.Rdata (also provided as usSNL.xlsx);

caSNL.Rdata (also provided as caSNL.Rdata).

The interest rates used to unlever and relever the ROEs are in: DGS.Rdata (also provided as DGS.xlsx).

Corporate tax rates used to unlever and relever the ROEs are in: CorporateTaxRates.xlsx.

(c) Footnote 3 on page 4 states:

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).

Could Nexus please explain its assertions that the current corresponding implied allowed equity ratios (ERs) in Alberta and British Columbia (B.C.) are 45%.

For example, Figure 27 on page 80 of Concentric's evidence shows the allowed ERs in Alberta and B.C. are 37% and 41% respectively.

If this was an error on Nexus' part, please reproduce Figure 1, as well as the supporting data and workpapers (in excel format) using the correct Alberta and British Columbia equity ratios.

Response:

Concentric is correct that allowed equity ratios in Alberta and British Columbia are 37% and 41%, respectively.

Figure 1 (corrected) is below. We also include the 50 basis point transaction cost adder for BC, which we did not have before, because BC has authorized the utility to apply for it. The Alberta figure already includes transaction costs.
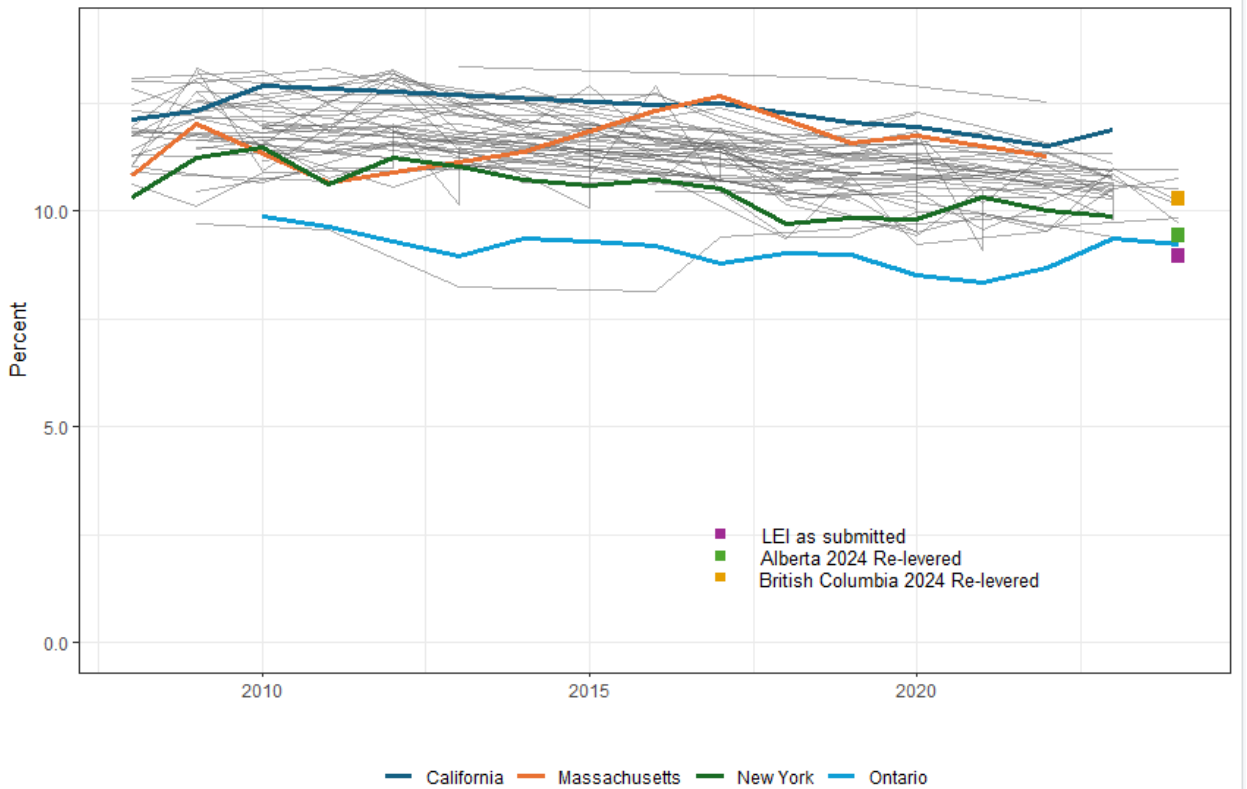
[M3, p.81] Nexus states that "LEI presents information that focuses primarily on the perspective of debt holders. LEI says that it is "not aware" of OEB-regulated entities facing notable issues in attracting equity and debt capital since 2009". Have any of the EDA member utilities had notable issues attracting equity and debt capital? If so, please discuss.

Response:

We have not interviewed EDA members regarding notable issues attracting equity and debt capital since this was not necessary for our analysis or conclusions regarding the cost of equity. EDA has told us that it is unaware of such information, and that, in any event, it cannot reasonably determine the requested information within the proceeding timelines.

In any event, for guidance regarding the evaluation of capital attraction under the Fair Return Standard, we relied on the 2009 Board discussion (at page 20), which discusses the difficulty of ascertaining notable issues attracting capital. According to the Board (emphasis added):

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*[T]here was considerable discussion in the consultation about utility bond ratings. **The ability of a utility to issue debt capital and maintain a credit rating were generally put forth by stakeholders in the consultation as a sufficient basis upon which to demonstrate that a particular equity cost of capital and deemed utility capital structure meet the capital attraction and financial integrity requirements of the FRS. The Board is of the view that utility bond metrics do not speak to the issue of whether a ROE determination meets the requirements of the FRS.** The Board acknowledges that equity investors have, as the residual, net claimants of an enterprise, different requirements, and that bond ratings and bond credit metrics serve the explicit needs of bond investors and not necessarily those of equity investors.*

*Finally, **the Board questions whether the FRS has been met, and in particular, the capital attraction standard, by the mere fact that a utility invests sufficient capital to meet service quality and reliability obligations. Rather, the Board is of the view that the capital attraction standard, indeed the FRS in totality, will 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.** As the Coalition of Large Distributors commented:*

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> *[T]he fact that a utility continues to meet its regulatory obligations and is not driven to bankruptcy is not evidence that the capital attraction standard has been met. To the contrary, maintaining rates at a level that continues operation but is inadequate to attract new capital investment can be considered confiscatory. The capital attraction standard is universally held to be higher than a rate that is merely non-confiscatory. As the United States Supreme Court put it, 'The mere fact that a rate is non-confiscatory does not indicate that it must be deemed just and reasonable'. [footnote 14 omitted]*

We interpret this to mean that capital attraction (and the FRS in totality) is met based on the opportunity cost standard. Hence, in our analysis, and we believe consistent with the Board's interpretation of the FRS, we focused our attention on opportunity cost as determined by the marginal investor -- and not on specific "notable issues" attracting equity and debt capital since there is no notable issues requirement under the Fair Return Standard.

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

Presentation Day Comments

September 5, 2024

Francis X. Pampush, PhD, CFA
Ralph Zarumba, MA

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ROE – Models >> DCF >> Single stage

- **Single Stage**
  - **Understandable**
  - **Minimizes intervention** by the ROE analyst
  - **Useful and insightful**, especially if using forward-looking growth rates by investment analysts
  - Growth
    - Growth of 7% each year based on investment analyst averages
    - Not unreasonable during the adoption of Electrification, Net Zero, AI (to 2050)
      - Capex growth rate for Net Zero is forecast to triple from 1% to 3% (excluding inflation) between now and 2050
    - Provided that Ke > g, a growth rate in excess of GDP growth nevertheless produces **finite valuations** because each year in the future is discounted more and more
  - GDP & inflation estimates after 2050 have wide confidence intervals

Tradeoffs with the single-stage and multi-stage DCF. This underscores why **multiple models are important**.

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2024 REVIEW OF
COST OF CAPITAL PARAMETERS AND DEEMED CAPITAL STRUCTURE

EB-2024-0063

September 5, 2024

Dr. Sean Cleary, CFA
Professor of Finance

MRP Estimates

- **Cleary: 5%** - **Canadian MRP, which is appropriate for Canadian investors (home bias and no F/X risk**). 5% is consistent with common practice (4-6%), as well as LT averages (4.2%), current MRP forecasts (5.2%) and current ERm forecasts of 6.1% (implying MRP = 3%).

- **LEI:** Average MRP of **8.32%** is based on **U.S. historical evidence** over short time periods, and triple weights the most recent period.

- **Concentric:** Historical Canadian MRP of **5.68%** and U.S. of **7.17%** are flawed and inconsistent with historical data to the use of **"income only" bond returns** instead of total yield (which is the appropriate approach and is common practice). Concentric correctly disregards its "forward-looking MRPs which are flawed by the use of unrealistically high growth rates for Index companies in single-stage DCF estimates.

- **Nexus:** Relies on its estimate of a **forward-looking U.S. MRP of 8.83%** using the single-stage DCF Model with an expected long-term growth rate (to infinity) of **11.49%,** which assumes that the expected profits and dividends of North American utilities will grow (to infinity) at rates that are almost triple forecasts of expected nominal GDP growth rates (of approx. 4%).

15