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October 15, 2021

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

Re: British Columbia Utilities Commission (BCUC) Generic Cost of Capital (GCOC) Proceeding – Project No. 1599176

FortisBC (compromised of FortisBC Energy Inc. (FEI) and FortisBC Inc. (FBC)) Information Request (IR) No. 1 on the BCUC Consultant, Dr. Lesser of Continental Economics, Inc. Report

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Attached please find FortisBC's IR No. 1 on the BCUC Consultant, Dr. Lesser of Continental Economics, Inc. Report.

If further information is required, please contact the undersigned.

Sincerely,

on behalf of FORTISBC

Original signed:

Diane Roy

cc (email only): Registered Parties

Topic/Issue: Efficient Market Hypothesis

1.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 4-6

"Thus, under the EMH, the price of a stock today is based on investors' collective expectations of the present value of the stock's future cash flows. Similarly, the current prices and realized yield on bonds reflect investors' expectations about future interest rates because those expectations affect investors' willingness to pay for bonds today

…

Moreover, if one rejects the EMH, then none of the models to be discussed in this report that are used to estimate regulated utilities' cost of equity capital are valid. If markets are not efficient, then it is not possible to establish an allowed return on equity and overall cost of capital that meets the fair return standard; any value selected by regulators will be arbitrary."

Reference: Jonathan A. Lesser (2003); "DCF Utility Valuation: Still the Gold Standard?", Public Utilities Fortnightly, page 6

"First, and foremost, the cost of equity should be determined in consideration of overall market trends, not just a snapshot of current conditions. While the EMH states that today's stock price reflects all expectations about the future, those expectations can change quickly. The more volatile a utility's stock price, the less likely current market expectations will reflect longer-term financial realities going forward."

1.1 Please confirm that Dr. Lesser continues to believe that the above excerpt from his 2003 paper is accurate and valid. If not confirmed, please explain why.

1.1.1 Considering the increased market volatility and market uncertainty during the COVID-19 pandemic, please further confirm that using forecasts, rather than the current prices and yields, is appropriate and consistent with Dr. Lesser's 2003 paper.

1.2 Does Dr. Lesser agree that although, theoretical models for evaluating ROE are premised on an "efficient market," that asymmetry of information does occur, and exceptions do exist?

1.3 Does Dr. Lesser agree that the following occurrences are contrary to the efficient market hypothesis:

1.3.1 Arbitrage opportunities that allow investors to exploit inefficiencies in the market for profit;

1.3.2 High frequency trading and the inability of the universe of market participants to access and act on information at the same time;

1.3.3 Global financial crises prompting speculative traders to exit the market reducing efficiency of price discovery;

1.3.4 Global financial crises prompting investors to invest in "safe" and/or "low risk" securities (flight to quality); and

1.3.5 Sale of order flows (information about user transactions) by discount brokers such as Robinhood to third parties who enact trades with access to user data?

1.4 Please confirm that the efficient market hypothesis requires that all of investors' perceived risks (and not just actuarial risk) are taken into account in the calculation of expected returns.

1.5 Please confirm that in using average daily prices rather than single day's closing price to calculate dividend yield in DCF model, Dr. Lesser is not strictly adhering to the efficient market hypothesis.

Topic/Issue: Model Transparency

2.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, page 23

"Relying on data available only from a proprietary firm (e.g., Bloomberg) can limit intervenors' ability to participate in a proceeding when those intervenors are constrained financially. An important aspect of transparency is relying on data that are publicly available or available at a low cost."

2.1 Does Dr. Lesser agree that investors often use data from commercial firms to keep up-to-date with market developments?

2.2 Please confirm that Dr. Lesser has previously used data from commercial firms such as ValueLine and others in his testimony.

Topic/Issue: Cluster Analysis for Proxy Group Selection

3.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 8-14

"An alternative to the direct approach is to use a statistical approach to determine comparability. One such technique is called *cluster analysis*, which was developed over 80 years ago by the American psychologist Robert Tryon. Cluster analysis has been applied in many fields wherever there is a need to group data. It is not a single statistical technique but encompasses methodologies that can be used to group (i.e., cluster) data meaningfully. The goal of cluster analysis is to create groups that are as internally homogenous as possible while being as externally heterogeneous as possible from all other groups."

3.1 Has Dr. Lesser has ever used the cluster analysis for his proxy group selection in a cost of capital proceeding? If so, please provide the evidence and explain whether the respective regulators have accepted his proxy selection approach.

3.2 Could Dr. Lesser please provide an example, in executable Excel format, with formulas intact, of the use of cluster analysis in selecting a proxy group?

3.3 Could Dr. Lesser please use the format provided in the prior response, in executable Excel format, with formulas intact, to select a proxy group for each FEI and FBC.

Topic/Issue: DCF Model - Earnings Growth Rates and GDP Growth

4.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, page 29

"The rationale for using a multi-stage DCF model is that high short-term growth rates cannot persist forever. As firms increase in size, their markets become saturated, and thus their growth slows. Moreover, if one assumes assumed a firm's earnings could grow rapidly forever, then those earnings alone would ultimately exceed the size of the entire economy, which is impossible."

4.1 Dr. Lesser discusses the relationship between short-term earnings per share growth forecasts from analysts and long-term GDP growth. Has Dr. Lesser conducted any studies, or is he aware of any studies, of utility earning growth rates compared to GDP growth as a basis for measuring this relationship? If so, please provide those studies.

Topic/Issue: **DCF Model - Dividend Yield Calculation**

5.0 Reference: **Exhibit A2-3, BCUC Staff Consultant Report, page 30**

5.1 Dr. Lesser discusses various averaging periods for calculating the stock price in the DCF model. What averaging period does Dr. Lesser prefer?

Topic/Issue: **DCF Model – Sustainable DCF Model**

6.0 Reference: **Docket No. 02-024-U; Initial Testimony of Jonathan A. Lesser on behalf of Arkansas Oklahoma Gas Corporation[1], pages 48-58**

Referring to Professor Morin's comment regarding the weakness of sustainable DCF (ST-DCF) model, Dr. Lesser states he does not recommend the use of ST-DCF model as it "can be easily biased and will tend to be more volatile than other DCF estimates".

6.1 Please confirm or otherwise explain whether Dr. Lesser continues to believe that the "sustainable" DCF model is the weakest form of DCF and can be easily biased.

6.1.1 If confirmed, please explain the major problems associated with "sustainable" DCF model.

Topic/Issue: **DCF Model - Earnings Growth Rates**

7.0 Reference: **Exhibit A2-3, BCUC Staff Consultant Report, pages 31-32**

"Perhaps the most contentious input is the forecast earnings growth rate, *g.* Earnings growth rates are forecast by stock analysts, typically for periods of 3 -5 years. How those analysts develop their forecasts is not known publicly.

One issue that arises is what source(s) for such growth rate forecasts should be relied upon. For example, many regulators rely on published forecasts by Institutional Brokers (IBES), which are available publicly on the website: finance.yahoo.com. Other ROE analysts will rely on publicly available forecasts published by Zacks. Still others rely on the forecasts published by Value Line. Others rely on forecasts from proprietary financial

[1] http://www.apscservices.info/pdf/02/02-024-u_7_1.pdf

sources, such as Bloomberg, Reuters, etc., arguing that these forecasts are more up-to-date than those which are publicly available."

8.0 Reference: Docket No. 02-024-U; Initial Testimony of Jonathan A. Lesser on behalf of Arkansas Oklahoma Gas Corporation, pages 15-16

"Investors as a class must be aware of, or have efficient access to, all publicly available information including bond ratings and ratings agency reports (e.g., Standard & Poor's, Moody's), equity ratings and discussions by ratings agency reports (e.g., Value Line, Zack's), and the various methodologies used to determine the cost of debt and equity as contained in the finance literature. Therefore, to estimate the cost of capital, and especially the COE, it is necessary to account for the results derived by alternate financial models whose treatment of future uncertainty may differ." [Underlining added.]

8.1 Please confirm or otherwise explain whether using alternative growth rate inputs from a variety of experts, as well as using various financial models whose treatment of future uncertainty may differ, can both help regulators better understand and address the inherent uncertainty of estimating investors' opportunity cost.

8.2 Does Dr. Lesser recommend the use of a specific source for forecast earnings growth rates? If so, please identify which source Dr. Lesser prefers.

8.3 Please elaborate on Dr. Lesser's concerns with averaging earnings per share growth rates from more than one source.

Topic/Issue: DCF Model Results in Low Interest Rate Environment

9.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 75-79

In his report, Dr. Lesser takes issue with FERC's opinion that "the DCF methodology is subject to model risk of providing unreliable outputs in the presence of unusual market conditions." … and that, "[t]he fact remains that capital market conditions are anomalous, such that mechanical application of the DCF methodology could produce unreasonable results." Dr. Lesser argues that there are three problems with FERC's statement: (i) there is no accepted empirical definition of an "anomalous" capital market, nor are specific factors that demarcate when capital markets are "anomalous" and when they are "normal", (ii) inconsistency with the Efficient Market Hypothesis, and (iii) how would one estimate the magnitude of the impact? Dr. Lesser states: "To summarize, regulators may wish to be skeptical of unproven claims advanced by cost of capital witnesses that low interest rate environments result in systematic downward bias to DCF estimates."

Reference: Docket No. 02-024-U; Initial Testimony of Jonathan A. Lesser on behalf of Arkansas Oklahoma Gas Corporation, pages 31-33

In his evidence for Oklahoma Gas Dr. Lesser provides quantitative analysis of DCF model weakness when there is significant disparity between market value and book value and concludes: "The greater the disparity between (higher) market value and (lower) book value, the larger the downward bias in the DCF-based COE."

He also states:

"…I believe it is reasonable - and necessary - to evaluate the consistency of any one methodology by comparing results with those of other methodologies. If a different methodology yields comparable estimates to those derived using the DCF methodology, the DCF estimates can be adopted with greater confidence. Alternatively, should other methodologies yield vastly different estimates of the COE, it would then be prudent to further investigate all of the estimates to determine whether there are unique circumstances affecting the validity of a given methodology's results."

9.1 Please confirm or otherwise explain if Dr. Lesser continues to believe that DCF-based ROE estimates can experience downward bias when there is a disparity between market values and book value?

9.2 Does Dr. Lesser agree that a low interest rate environment can lead to elevated price-to-earnings ratio ratios?

9.3 Please confirm or otherwise explain whether one possible way to assess the impact of "model risk" is to compare the results with those of other methodologies.

Topic/Issue: Beta

10.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, page 42

"However, it <u>is</u> an issue because, over the long-run, beta values tend to revert towards the market beta value of one. By regressing the previous period's beta on the current beta, Marshall Blume derived the following formula: $\beta_T = 0.371 + 0.635 \times \beta_{T-1}$, where β_T = the forward-looking beta and β_{T-1} = the historical beta. The Blume adjustment is used by some financial firms, notably Value Line, when reporting beta values, although *Value Line* uses a slightly different formula: $\beta_{ADJ} = (1/3) + (2/3) \times \beta_{RAW}$, where β_{RAW} is the raw beta value." [Underlining in original.]

10.1 Could Dr. Lesser please comment on the appropriateness of beta adjustment methodologies that adjust utility betas to other than the market value of one?

10.2 Does Dr. Lesser see merit in adjusting utility betas to anything other than the market value of one? If so, please explain.

Topic/Issue: Leverage Adjustment

11.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, page 43

"To do this, the levered betas of the proxy group firms are unlevered to remove the financial risk component. The resulting beta values are called *asset betas*. Next, these asset betas are relevered using the capital structure of the regulated utility under rate review."

11.1 Does Dr. Lesser recommend that the BCUC adjust Betas for differences in capital structure? If not, please explain Dr. Lesser's position with respect to unlevered and re-levered betas.

11.2 Could Dr. Lesser please comment on whether a leverage adjustment, similar to that which he proposes for the CAPM using the Hamada equation, is also appropriate when using the DCF methodology, through manipulation of the WACC formula? Please explain the answer.

Topic/Issue: Risk Free Rate

12.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 45-46

"The EMH explains why it is not appropriate to use a forecast of future government bond yields when applying the CAPM. Under the EMH, today's yield on long-term government bonds reflects investors' collective expectations about interest rates."

12.1 What averaging period does Dr. Lesser prefer for the current risk-free rate?

12.2 Does Dr. Lesser agree that investor expectations can quickly change and the cost of equity should be determined in consideration of overall market trends, not just a snapshot of current conditions?

Topic/Issue: Market Risk Premium

13.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 51-54

"Figure 4-4 shows the average MRP, based on the difference between U.S. stock market returns and the income returns on long-term U.S. Treasury bonds from 1926 – 2019."

13.1 Which of the methods for determining the forward-looking MRP discussed in his report does Dr. Lesser prefer?

13.2 Does Dr. Lesser agree that the FERC has determined that the forward-looking MRP should be calculated using the Constant Growth DCF model, not the Multi-Stage DCF model, to compute the total return on the S&P 500 Index?

13.3 Please confirm or otherwise explain that Dr. Lesser uses the income return on long-term bonds and not the total return to calculate the MRP.

Topic/Issue: Single Stage DCF to Calculate MRP

14.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, page 52

"For example, FERC has justified the use of a one-stage DCF model applied to the dividend-paying firms of the S&P 500 to estimate the market return and MRP because: (i) the S&P is updated regularly to remove slow-growing firms; and (ii) that even though an individual company cannot sustain high growth rates forever, a broad market index can do so.

FERC's rationale is based on a misconception. Using the expected returns for the S&P 500 or the TSX represent a <u>proxy</u> for the entire market. Although the composition of the S&P 500 and S&P/TSX change over time as firms are added and dropped, that conclusion cannot apply to the market as a whole. In other words, a firm does not vanish from the "market" simply because it is no longer included in a broad market index. In the case of a merger or acquisition, the acquired firm's assets and business continue to exist, even if the firm is no longer a separate, publicly traded entity in the market. (The same is true for a firm that declares bankruptcy.) In the long run, the market cannot grow faster than the economy as a whole for the simple reason that the market, in effect, is the economy." [Underlining in original.]

14.1 Does Dr. Lesser agree that although the ROE practitioner uses the S&P 500 as a proxy for the market as a whole in deriving an expected market risk premium that the following are true, if not please explain:

i. The S&P is updated regularly to remove slow-growing firms;

ii. That even though an individual company cannot sustain high growth rates forever, a broad market index can do so;

iii. Betas are calculated based on the linear relationship of the subject company and the proxy (i.e., S&P 500, S&P TSX, NYSE) and not the market as a whole; and

iv. The market risk premium measures the expected premium return of the market (as measured by the proxies identified above) over the risk-free rate.

14.1.1 If Dr. Lesser agrees with statements (i) through (iv) above, please explain why it is appropriate to calculate a market risk premium, at a growth rate that is lower than what is expected for the market proxy since it is the market proxy, and not the market as a whole, against which each utility's beta is measured?

Topic/Issue: CAPM and Small Size Premium

15.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 55-56

15.1 Does Dr. Lesser support the use of a size premium for regulated utilities? If so, how should a size premium be determined?

Topic/Issue: Inverse Relationship between Bond Yields and Utility Returns

16.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 62-63

"The ERP estimate can be controversial because it changes over time. Some cost of capital witnesses will claim, and will provide empirical models demonstrating, that there is an observed inverse relationship between bond yields and equity premiums, that is, as bond yields decrease (increase), equity investors' required premium increases (decreases). As such, they argue the risk premium should be adjusted to reflect current or projected bond yields and estimate regressions of allowed returns set by regulators versus utility yields to estimate an appropriate risk premium.

…

Although this approach has often found an inverse relationship between the ERP and bond yields, that has not always been the case. Brigham, et al., (1985), for example, found that in for the period 1966 – 1979, higher bond yields were associated with higher ERP values."

Reference: **Eugene Brigham, et al., "The Risk Premium Approach to Measuring a Utility's Cost of Equity," *Financial Management* (Spring 1985) ; page 42"**1966-1979 Period **During this period, inflation heated up. However, political pressure, combined with administrative procedures that were not designed to deal with a volatile economic environment, led to long periods of "regulatory lag" that caused utilities' earned ROEs to decline in absolute terms and to fall far below the cost of equity. These factors combined to cause utility stockholders to experience huge losses. This led to a widespread belief that utility commissions would provide enough revenues to keep utilities from going bankrupt (barring a disaster), and hence to protect the bondholders, but that they would not necessarily provide enough revenues either to permit the expected rate of dividend growth to occur or, perhaps, even to allow the dividend to be maintained. Because of these experiences, investors came to regard inflation as having a more negative effect on utility stocks than on bonds. Therefore, when fears of inflation increased, utilities' measured risk premiums also increased."**

16.1 Does Dr. Lesser dispute the existence of a statistically significant linear relationship between the utility equity risk premium and bond yields? If so, please explain.

16.2 Please confirm or otherwise explain that semi or fully forward test years and inflation indexing formulas are more common now than 1966-1979 period, leading to less regulatory lag and more timely reflection of actual or expected inflation in utility rates.

Topic/Issue: **Risk Premium Approach**

17.0 Reference: **Exhibit A2-3, BCUC Staff Consultant Report, page 65**

"This approach is simple and easily replicable but suffers from an inherent circularity: The choice of historical allowed returns used in the regression effectively determines the relationship between those returns and corresponding bond yields. Additionally, the approach fails to consider differences in risk associated with those previously established

allowed returns. Hence, the approach will not capture the fundamental relationship between risk and return. And, while allowed returns on similar firms may give an appearance of risk comparability, that will not necessarily be the case. Hence, the resulting RP value may not reflect comparable risk and thus may not meet the fair return standard." [Underlining in original.]

Reference: Docket No. 02-024-U; Initial Testimony of Jonathan A. Lesser on behalf of Arkansas Oklahoma Gas Corporation, pages 4-5 and footnote 2

"I do not believe that any single test should exclusively determine the cost of common equity. All of these tests have their own strengths, weaknesses, and sensitivities to short-term market and business cycle conditions, while the COE is intended to be used as a long-term estimate.[2] (Footnote 2: The importance of recognizing the long-term nature of the COE estimate is especially important in light of the short-term volatility of capital markets and, especially, the unprecedented actions that have been taken by the Federal Reserve Open Market Committee over the last year to stimulate economic growth.)"

17.1 Does Dr. Lesser believe that the risk premium approach with its noted weaknesses has a place in ROE estimation? If so, what is the preferred use and form for the methodology?

17.2 Could Dr. Lesser comment on whether the inherent differences in each estimation methodology may offset weaknesses in another methodology?

Topic/Issue: Flotation Costs

18.0 Reference: Exhibit A2-3, BCUC Staff Consultant Report, pages 82-84

"Finally, some regulators, including the BCUC, add a flotation cost adjustment directly to the estimated ROE value. For example, many regulators, including those in Canada, include a 50 basis point flotation cost adder in base allowed ROE values. However, it can be shown that this approach will almost always overcompensate the utility."

Reference: Exhibit A2-3, BCUC Staff Consultant Report, footnote 97

"Specifically, as long as $f < [D_0 \times (1 + g)/P]$ in equation (8-1), then adding *f* to the calculated ROE will overcompensate the utility. The bracketed term on the right-hand side of the inequality is the adjusted dividend yield, which is likely to be in the 3% - 10% range. As such, *f* would have to exceed 90% of the total issuance value for the inequality not to hold.

Hence, for all reasonable values of dividend yields and issuance cost percentages, simply adding *f* to an allowed ROE will overcompensate the utility."

18.1 Please explain the analysis presented in footnote 97. On what basis does Dr. Lesser conclude that "for all reasonable values of dividend yields and issuance cost percentages, simply adding f to an allowed ROE will overcompensate the utility." Please explain and substantiate the rationale.

18.2 Does Dr. Lesser agree that most Canadian regulators have added 50 basis points to the results of the ROE estimation models to reflect both issuance costs and financial flexibility?

18.2.1 Please confirm that Dr. Lesser's analysis is mainly focused on the issuance cost or otherwise explain how the financial flexibility (dilution impacts, any impact of under-pricing a new issue, etc.) part is addressed in his analysis.