
Michael J. Vilbert
Principal

Re: p. 2, lines 5-8

Dr. Vilbert states, “I testified before the Alberta Energy and Utilities Board (“AEUB”) on behalf of TransAlta Utilities in 1999, and I have filed written evidence before the U.S. Federal Energy Regulatory Commission (“FERC”), the Canadian National Energy Board (“NEB”) and before the AEUB in 2000.

- (a) Please provide Dr. Vilbert’s recommended ATWACCs for TransAlta in his evidence before the AEUB in 1999 and 2000 and in the evidence filed with the National Energy Board.

Response:

The sample estimated ATWACC’s for Dr. Vilbert’s samples in the proceedings identified above are presented in the table below.

Note that in the referenced filings, Dr. Vilbert analyzed several samples and estimated the sample’s average ATWACC as benchmarks for evaluation by Dr. A. Lawrence Kolbe, also of The Brattle Group. The estimates below are the sample average ATWACCs for Dr. Vilbert’s samples in the three proceedings, and his point estimate for TransAlta as an integrated electric utility. The second column is Dr. Kolbe’s recommendation for the specific circumstances in the case. The last two columns show the book equity component of the capital structure and return on equity corresponding to Dr. Kolbe’s recommended ATWACC, using the utility in question’s marginal tax rate at the time of the filing. Note that the last three columns in the table pertain to the part of the business for which the filing was made.

| Recommended ATWACC in Previous Filings in Canada | | | | |
|--|--|--|-----------------------------------|---|
| | Vilbert's Estimated ATWACC and Recommendation | ATWACC Used in the Filing (business line) | Book Equity Percentage | Implied Return on Equity |
| AEUB 1998 (TransAlta) | 6¼ - 6¾ Canadian 7 - 7½ U.S. Electric Range: 6¾ - 7¼ Point Estimate: 7 | 6.9 (Integrated Regulated Utility)* | 42% | 10.8% |
| AEUB 2000 (TransAlta) | 6.7 - 7.4 Canadian 6.9 - 8.4 U.S. Electric 8¼ - 9 U.K. Electric Range: 7 - 7½ Point Estimate: 7¼ | 7 (Transmission for Unbundled Utility) | 40% | 11.08% |
| NEB 2001 (TransCanada) | 6 ½ - 7 Canadian 7 - 7 ½ Gas LDC 7 ½ - 8 Pipelines Range: n/a Point Estimate: n/a | 7 ½ (Mainline) | 40% | 12.52% |
| *Dr. Kolbe actually provided line-of-business ATWACCs for three parts of an integrated, fully regulated utility, the average of which was 6.9 percent. | | | | |

Re: p. 2, lines 5-8

- (b) In each of the three cases referred to in part a) above, please indicate what book value common equity ratio and equity return on book value corresponding to Dr. Vilbert's ATWACC recommendations were included in the companies' rate filings.

Response:

See response to part (a) of this question.

Re: p. 2, lines 5-8

- (c) Please provide a copy of Dr. Vilbert's evidence in the 2000 proceedings before the AEUB.

Response:

A copy of Dr. Vilbert's direct evidence before the Alberta Energy and Utilities Board on behalf of TransAlta Utilities Corporation for approval of its 2001 transmission tariff, May 2000 is attached.

Re: p. 2, lines 5-8

- (d) As an independent expert on cost of capital, does Dr. Vilbert believe Hydro's ATWACC would be significantly different from that which he determined to be reasonable for TransAlta's transmission operations in his 2000 evidence? If so, please explain why and by approximately how much.

Response:

Please see Dr. Vilbert's written evidence page 12, line 12 through page 13 line 4 for Dr. Vilbert's views on the issue of benchmark samples for Hydro. Dr. Vilbert believes that Hydro is less risky than the average company in the sample of Canadian Investor Owned Utilities ("IOU").

Dr. Vilbert was not asked to determine the ATWACC for TransAlta in his 2000 evidence. However, he would note that in the 2000 AEUB proceeding, Dr. Kolbe's value of 7 percent was for an unbundled transmission business in a partially deregulated market for electric power. Dr. Kolbe's value for transmission as a part of an integrated, fully regulated electric utility in the prior year's proceeding for TransAlta was 6 ¼ percent, at a time interest rates were higher than they are today.

Additionally, since Dr. Vilbert was not asked to determine a cost of capital for Hydro in this proceeding, he has not studied how much less the ATWACC for Hydro would be compared to that of TransAlta.

Re: p. 6, lines 8-9

At this reference Dr. Vilbert states, “Although the ATWACC is constant across a broad middle range of capital structures for investor-owned utilities as well as for Hydro, the before-tax weighted-average cost of capital for Hydro is not.”

- (a) Please explain if Dr. Vilbert believes the ATWACC for an investor-owned utility would be the same at 85% debt as at 60% debt.

Response:

If a capital structure with 85 percent debt were outside the broad middle range of capital structures over which the ATWACC is constant, the ATWACC would be higher. In Dr. Vilbert’s experience, investor owned utilities (“IOUs”) that are not in financial distress do not have capital structures with 85 percent debt. No company in Dr. Vilbert’s samples used in his evidence submitted to the National Energy Board (Canadian utilities, U.S. gas local distribution companies or U.S. natural gas pipeline companies) has a capital structure with as much as 85 percent debt. Therefore, the empirical evidence of other utility companies suggests that 85 percent debt would not be in the broad middle range for those utilities, but that conclusion is not definitive for Hydro. Please also see Dr. Vilbert’s written evidence Appendix B page B-37 line 12-17 for a discussion of the impact of business risk on the “broad middle range.” In addition, please refer to pages 28-30 of Dr. Vilbert’s written evidence for the effect of the debt guarantee on Hydro’s capital structure and costs of financial distress. As noted in the written evidence, Hydro is likely to be able to avoid the increase in the ATWACC due to the increased costs of financial distress because of the debt guarantee until higher levels of debt than for an IOU.

Re: p. 6, lines 8-9

- (b) What does Dr. Vilbert believe constitutes a broad middle range of capital structures for a typical Canadian investor-owned utility?

Response:

It is not possible to specify precisely the limits of the “broad middle range of capital structures” but the best evidence for the broad middle range of capital structures over which the ATWACC is constant is the range of market value capital structures of a sample of companies not in financial distress in that line of business. For example, the range of capital structures for the companies in Dr. Vilbert’s sample of Canadian Utilities used in his evidence filed before the National Energy Board is displayed in the table below.

| Capital Structure of the Canadian Sample for Dr. Vilbert’s 2001 NEB Filing | | | | |
|---|--|------------------------|-------------------------------------|--------------------|
| | Common Equity to Market Value | | Debt to Equity Ratio (a) | |
| | 5-year average (b) | Most recent (c) | 5-year average | Most recent |
| B.C. Gas | 37% | 40% | 1.74 | 1.51 |
| Canadian Utilities | 47% | 49% | 1.15 | 1.05 |
| Emera Inc. | 42% | 48% | 1.39 | 1.10 |
| Enbridge Inc. | 47% | 48% | 1.15 | 1.07 |
| Fortis Inc. | 42% | 40% | 1.40 | 1.53 |
| Gaz Metropolitan and Co. | 62% | 62% | 0.62 | 0.61 |
| TransAlta Corporation | 55% | 58% | 0.82 | 0.73 |
| Westcoast Energy Inc. | 30% | 32% | 2.39 | 2.16 |

(a) Preferred Stock is treated as debt in the calculation.

(b) The five-year average is used in CAPM models.

(c) The most recent capital structure is used in DCF models. The most recently available capital structure is for the third quarter of 2000.

Note: Currently, no company has more than 8.2 percent preferred equity but some sample companies used to have more preferred equity in their capital structure (up to 13 percent in 1995).

Re: p. 4, lines 1-4

Dr. Vilbert states, referring to Ms. McShane's evidence, "Note that she makes no adjustment in the return on equity in going from 15.27 percent to 25 percent equity and only a slight adjustment in going to a capital structure with 40 per equity.

- (a) Please specify the return on equity that Dr. Vilbert has concluded that Ms. McShane has estimated at a 40% common equity ratio, and please provide the references relied on in Ms. McShane's testimony for that conclusion.

Response:

Please refer to Ms. McShane's written evidence page 54, lines 1-16 in which she discusses Hydro's stand-alone target capital structure and allowed return on equity. The table on that page computes the return on the rate base using Hydro's embedded cost of debt (8.35%), a capital structure including 40 percent equity and a cost of equity of 9.75 percent. The question on page 54, lines 1-4 is "What approximate level of utility interest coverage is indicated *at your recommended stand-alone target capital structure and allowed return on equity for Hydro* commensurate with that recently allowed other Canadian utilities? [emphasis added]"

Dr. Vilbert interpreted that question and answer including the table to be Ms. McShane's recommendation for Hydro at a 40 percent equity ratio.

Re: p. 4, lines 1-4

- (b) Please provide the references relied on to conclude that Ms. McShane has made any estimate of the return on equity at a 25% equity ratio.

Response:

Please refer to page 21, lines 14-16 of Ms. McShane's written evidence on which she recommends that "in the medium-term, the Company should seek to move its capital structure ratios to approximately 70-75% debt and 25-30% equity." She mentions no adjustment to her recommended return on equity for the change in capital structure in this section of her written evidence.

See also page 14 of Mr. William E. Wells' evidence. Relying on the advice of Hydro's financial experts, he specifies a target "debt/equity ratio of 60/40 and a ROE of 11% to 11.5%." Additionally, the Application, on page 6, paragraph 14, subpart (9), requests that the Board set financial targets of the following:

Return on Equity - 11% to 11.5%,
Debt/Equity Ratio - 60:40 and
Return on Rate Base - 9.5%.

As discussed in Dr. Vilbert's evidence on p. 5, decisions regarding capital structure and the required return on equity may (wrongly) be made separately without recognizing their inherent connection. Hydro's requests cited above seem to validate that concern.

Re: p. 6, lines 11-12

Dr. Vilbert states, “Specifically, the revenue requirement is higher, for higher levels of debt in Hydro’s capital structure.”

- (a) Please confirm that this conclusion is a direct result of Dr. Vilbert’s belief that the ATWACC is constant across a broad middle range of capital structures. If it cannot be confirmed, please explain why not.

Response:

The conclusion is based in part upon the constancy of the ATWACC but also on the procedure adopted to estimate the cost of equity capital for a Crown Corporation and Hydro’s tax status as a Crown corporation. Specifically, the conclusion rests first on the decision to determine the opportunity cost of capital for Hydro’s equity in relation to the return on equity available for comparable risk investor owned companies (“IOUs”). If IOU companies with available market data are accepted as a relevant benchmark for the required return on equity for Hydro, the appropriate level of overall risk and return can be estimated from a sample of such companies as measured by the ATWACC. (As mentioned in Dr. Vilbert’s evidence on page 6, line 20 through page 7, line 19, the standard approach of adjusting the sample companies’ estimated return on equity for differences in capital structure will give the same answer, if implemented properly.) Using the ATWACC method, Dr. Vilbert derives the required return on equity from the constancy of the ATWACC across a broad middle range of capital structures. Finally, the revenue requirement for Hydro increases with increasing amounts of debt because of the tax disadvantage of debt for Hydro relative to equity. Debt is more expensive for Hydro than to an IOU because the IOU can deduct its interest expense from its income taxes. See the response to NLH-27 for a discussion of the tax advantage of equity and the tax disadvantage of debt for Hydro relative to investor owned utilities.

Re: p. 6, lines 11-12

- (b) In light of the conclusion referenced in the preamble, what recommendation would Dr. Vilbert make to the Board with respect to the amount of debt which should be included in Hydro's capital structure?

Response:

Dr. Vilbert has not studied the issue of the optimal amount of debt that Hydro should use in its capital structure, or even whether there is an optimal capital structure. However, note that reducing the amount of debt from the forecast level of 83 percent by substituting equity will reduce Hydro's revenue requirement, and therefore, the tolls for ratepayers, if the reduction in financial risk is properly reflected in the return on equity. The ATWACC for investor owned utilities is constant over a range with substantially more equity than Hydro's forecast level of equity.

Re: p. 6, lines 5-7

Dr. Vilbert states, “Even though Hydro pays no corporate income taxes, the benchmark sample companies used by cost of capital witnesses do; therefore, an appropriate opportunity cost of capital for evaluation is the ATWACC.”

- (a) Please explain in further detail why the ATWACC of utilities who are taxable is the appropriate cost of capital for Hydro, which is not taxable.

Response:

The ATWACC approach has nothing to do with the selection of a sample of companies to benchmark the cost of capital for Hydro. It is a method to estimate the cost of capital once appropriate samples have been selected.

Please refer to Section II.B., “Absence of Pure Plays” of Dr. Vilbert’s written evidence and page B-16, lines 10-18. As noted in that section, the difficulty facing a cost of capital witnesses for a Crown Corporation is selecting benchmark samples of comparable risk. Under the rate of return on rate base methodology, Dr. Vilbert believes that the equity invested in Hydro should expect to earn a return equal to the expected return on equity invested in comparable risk companies. Therefore, samples of investor owned regulated utility companies in Canada and the U.S. are reasonable starting points to estimate the overall cost of capital for Hydro. This is also the approach used by Ms. McShane, although she does not use the ATWACC method to estimate the cost of capital. Even though Ms. McShane does not explicitly consider the capital structure and tax rate of the companies in her samples, her sample companies are taxable corporations with market value capital structures that vary from each other. The returns on equity estimated by Ms. McShane (or any other cost of capital witness using market data) are a function of both the business risk and the financial risk of the companies. The ATWACC approach is simply a method to insure the consistency of the estimated return on equity and the financial risk (capital structure) of the sample companies. As noted in Dr. Vilbert’s evidence on page 6, line 20 through page 7, line 19, the ATWACC and the standard approach will give the same answer if the standard approach is properly implemented.

Re: p. 6, lines 5-7

- (b) Dr. Vilbert's qualifications in Appendix A indicate that he has given expert evidence on cost of capital in both Canada and the U.S. Would Dr. Vilbert use different tax rates for Canadian companies than for U.S. companies to estimate their ATWACCs?

Response:

Yes, if the marginal corporate income tax rates differ. The appropriate tax rate to use to estimate the cost of capital for investor owned utilities is the marginal corporate tax rate of the company whose cost of capital is being determined ("the target company"). When Dr. Vilbert estimates the ATWACC for a Canadian company, he relies on the target company's marginal Canadian corporate tax rate for all companies included in his sample(s) whether the sample companies are Canadian or U.S. companies. When Dr. Vilbert estimates the ATWACC for a U.S. company, he relies on the target company's U.S. marginal corporate tax rate for all companies included in his sample(s).

The target company's tax rate is the appropriate rate because the sample is providing evidence regarding the ATWACC for the target company as if it had the sample company's capital structure, bond rating and estimated cost of equity. In other words, the estimation procedure is estimating the cost of capital for the target company, not the sample companies.

Re: p. 21, lines 3-5

Please provide a copy of the article cited at this reference.

Response:

A copy of Eugene F. Fama and Kenneth R. French, "Taxes, Financing Decisions and Firm Value," *The Journal of Finance*, 53, No. 3 (June 1998), 819-843, is attached.

Re: p. 21, lines 7-8, and p. 21, lines 8-9

Please provide a copy of the articles cited at this reference.

Response:

The following articles are attached: Stewart C. Myers, "The Capital Structure Puzzle," *The Journal of Finance*, 39: 575-592 (1984) and Stewart C. Myers, "Still Searching for Optimal Capital Structure," *Are the Distinctions Between Debt and Equity Disappearing?*, R.W. Kopke, and E. S. Rosengren, eds., Federal Reserve Bank of Boston. (1989).

Re: p. 28, lines 6-8

Dr. Vilbert states, “The debt guarantee provided by the Province has no effect on the ATWACC for Hydro because Hydro is paying a debt guarantee premium that compensates the Government for the credit risk to taxpayers of providing the guarantee.”

As an independent expert on cost of capital, does Dr. Vilbert believe the guarantee is a component of the return on equity? Please explain the answer.

Response:

The debt guarantee allows Hydro to issue debt at a lower cost (yield) at higher levels of debt than it could without the debt guarantee. Without the debt guarantee, Hydro’s interest cost would be higher. If the sum of the debt guarantee fee and the interest cost equals the cost of debt without the guarantee, the guarantee fee would be fair compensation for the risk of default. In this sense, the debt guarantee is a cost of debt.

In Hydro’s case, the debt guarantee fee is paid to the equity holder, who is the party providing the guarantee. In this sense, it is compensation to the equity holder. Nonetheless, since the compensation would go to a third party (e.g., the Federal government) if it provided the guarantee, Dr. Vilbert believes it is economically more appropriate to view the guarantee as a cost of debt.

Re: p. 31, lines 7-8

Dr. Vilbert states, “No, but if it is shown that ratepayers have provided the equity, that equity would be equivalent to the ‘no cost’ capital.”

- (a) Please explain in detail what criteria Dr. Vilbert would use to evaluate whether ratepayers have provided the equity.

Response:

Dr. Vilbert has not studied the source of equity financing for either Crown Corporations in general or for Hydro in particular. For publicly traded companies, determining the equity holders is simple; equity holders are the investors who own the outstanding shares of common equity of the firm.

However, in principle, the issue for a Crown Corporation is the source of financing to purchase the assets used in the firm’s operations. Some assets are financed by debt, but the claim of the debt holders is limited to the promised interest and return of the principal. For Hydro, the source of the assets not financed by debt would have to be evaluated to determine whether they were provided by the Crown or by the rate payers in the form of retained earnings or a combination of both.

For a Crown corporation as for an investor-owned utility, retained earnings would ordinarily be part of the Crown’s assets, not the ratepayers’. Retained earnings are reinvested capital from equity holders. However, suppose a Crown corporation had raised capital for its operations not by contribution of tax monies or by retention of part of the return at or below the cost of capital, but by revenues from rates that provided an expected rate of return above the cost of capital. The money that the excess in the rate of return supplied would be ratepayers’ capital, not the Crown’s. An example for an investor owned utility in the U.S. is Accumulated Deferred Income Taxes (“ADIT”). Deferred Income Taxes are the difference in the taxes paid to the Government and the taxes upon which the revenue requirement is based. The excess of book income taxes over actual income taxes, if included in the revenue requirement (i.e., if not “flowed through” to customers directly), is often considered to be ratepayer provided funds. In this case, ADIT is subtracted from the rate base in setting rates, in accord with the view that ratepayers have provided these funds.

The analysis required to make an actual determination of the extent of ratepayer-supplied funds for Hydro would be quite involved and would require estimating the required return on Hydro’s equity over the life of the corporation and determining whether rates were set in excess of this cost. Dr. Vilbert understands that previously there was no required return on equity. Instead the cost of service was set with reference

to a margin over debt costs that accrued to equity as opposed to determining the opportunity cost of capital. The margin allowed over debt would have to be compared to an estimate of the required return on equity. The effect, if any, of the previous regulatory regime on the required return on equity would also have to be evaluated as part of this calculation.

Re: p. 31, lines 7-8

- (b) In Dr. Vilbert's opinion, do retained earnings constitute ratepayer-supported equity?

Response:

Please see the response to NLH-26 (a) above.

Re: p. 34, lines 4-5, and p. 35, line 1

Dr. Vilbert states, "It may seem counter intuitive to believe that the revenue requirement increases by replacing 'expensive' equity with 'cheap' debt, but debt has no tax advantage for Hydro, whereas equity does."

Could Dr. Vilbert please clarify what he means by the tax advantage for Hydro from equity?

Response:

The tax advantage is in relation to Investor Owned Utilities ("IOU's"). IOUs pay interest on debt before paying corporate income taxes but the return on equity comes from after-corporate-income-tax earnings. Thus, IOU's must generate income before tax of $\$X/(1-\text{tax rate})$ to pay their shareholders $\$X$ on equity. Hydro does not pay income taxes so Hydro needs an income before taxes of only $\$X$ to pay $\$X$ to shareholders. For an equal amount of equity in its capital structure, Hydro's revenue requirements are less than an IOU's by the amount of income taxes. On the other hand, Hydro's after-tax cost of debt is higher than an IOU's because the IOU can deduct its interest payments from its taxable income.

Over the broad middle range of capital structures, substituting debt for equity by an IOU does not affect the IOU's revenue requirement because the tax savings on debt are offset by the increased return on equity resulting from the increase in financial risk. For Hydro, the revenue requirement is not constant because there are no tax savings from substituting debt for equity to offset the increased return on equity due to financial leverage. Recall that for an IOU, the cost of equity goes up enough to offset the tax savings from debt. Because there are no tax savings from debt for a Crown Corporation, the revenue requirement increases.

Re: p. 34, diagram

Dr. Vilbert shows that the ATWACC of IOUs rises more rapidly than Hydro's at higher levels of debt.

- (a) Could Dr. Vilbert please explain why this is the case?

Response:

The reason that the ATWACC increases at high levels of debt is because of the increasing costs of financial distress. See page 29, line 12 through page 30, line 1 and page B-17, line 9 through page B-18, line 10 of Dr. Vilbert's written evidence for a discussion of the costs of financial distress. The graph on page 34 of Dr. Vilbert's written evidence illustrates the effect of the increasing costs of financial distress by showing that the ATWACC increases as the amount of debt in the capital structure exceeds the broad middle range of capital structures. Because of the debt guarantee by the Province, Hydro can use more debt in its capital structure than other companies before the effects of financial distress would begin to be felt and the ATWACC would begin to increase.

Re: p. 34, diagram

- (b) Could Dr. Vilbert please indicate at approximately what levels of debt the deviation between the IOUs' and Hydro's ATWACC would occur?

Response:

Dr. Vilbert can not specify the precise percent of debt in the capital structure that would lead to an increase in the ATWACC for either Hydro or the IOUs. See the response to NLH-19 (b) for discussion of estimating the broad middle range of capital structures for which the ATWACC is constant. See the response to NLH-28, (a) for the reason that the ATWACC of Hydro does not begin to increase until a higher level of debt than for an IOU.

Re: B-32, lines 16-18

Dr. Vilbert states, “Specifically, the price of the stock that underlies the DCF method will equal $PV(\text{Dividends}) + PV(\text{Option to Default})$, where PV is the present value of the quantity in parentheses.”

- (a) Please explain what is meant by the “option to default.”

Response:

Dr. Vilbert’s Appendix B page B-31 line 23 through page B-32 line 5 discusses the option to default. Technically, the “option to default” is the shareholders’ right to default on debt instead of using personal assets to pay the bondholders. The option to default is valuable because the value of the firm’s assets may be less than the value of the debt at the time it is necessary to pay bondholders, yet equity holders do not have to dip into their personal assets to pay off bondholders. Equity is worth the greater of (1) the market value of the assets minus the face value of the outstanding debt, and (2) zero. Debt is worth the lesser of (1) its face value, and (2) the market value of assets (the effects of intermediate interest rate fluctuations aside).

Re: B-32, lines 16-18

- (b) Please provide documented support for this definition of the price of a stock.

Response:

See, for example, Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, 6th Ed., New York: Irwin McGraw-Hill (2000) at Section 20.2.

Re: p. B-37, lines 13-17

Dr. Vilbert states, “This in turn will result in a negative correlation between measured ATWACC and the debt ratio, not because more debt lowers the ATWACC, but because a lower ATWACC tends to lead to more use of debt. That is, the negative correlation may be real, but the causality the exact opposite of that hypothesized in the AEUB’s decision.” Please provide the section of the AEUB decision to which Dr. Vilbert is referring.

Response:

AEUB U99099 is available from the AEUB’s web page (www.eub.gov.ab.ca). The Board’s findings related to the above issue are on pages 299-309 (in Part 1).