**National Energy Board** 

Hearing Order RH-1-2010

Enbridge Pipelines Inc.

Line 9 Application – Tolls and Tariff

Responses of Enbridge to Information Request No. 2 of the National Energy Board

July 8, 2010

# Depreciation

- 2.1 Depreciation
  - **References:** (i) Enbridge Pipelines Inc. (Enbridge) Response to National Energy Board (NEB) Information Request 1.6(a); Regulatory Document A1S8X9, adobe page 11
    - (ii) Enbridge Response to Imperial Oil Limited (IOL) Information Request 177(b); Regulatory Document A1S9C3, adobe page 252
  - **Preamble:** In reference i), Enbridge states that in light of the findings of the Muse Report, depreciating Original Reversal Costs over a period ending December 31, 2017 is conservative in the sense that it lessens depreciation-related toll impacts.

In reference ii), Enbridge states that the proposed depreciation rates represent Enbridge's best estimate of the remaining depreciable life of Line 9.

**Requests:** Please explain which is more important, in Enbridge's view, to determining depreciation for toll-making purposes: depreciated-related toll impact or providing the best estimate of the remaining depreciable life of Line 9 (both the Original Reversal Costs and the Bi-Directional Costs).

What other factors were considered in estimating the remaining depreciable life of Line 9 (both the Original Reversal Costs and the Bi-Directional Costs)?

**Responses:** Providing the best estimate of the remaining depreciable life of specific Line 9 capital costs is the more important of these two considerations in determining depreciation for purposes of Line 9 tolls.

The other factors are set out in Appendix A-4 and responses to related information requests.

# **Exemptions**

- 2.2 Exemptions
  - **Reference:** Enbridge Response to IOL Information Request 20(e) Regulatory Document A1S9C3, adobe page 31
  - **Preamble:** Enbridge does not confirm that the application seeks a cost-of-service toll for Line 9, stating that the proposed tolls for 2008, 2009 and 2010 are intended to afford Enbridge with a reasonable opportunity to recover its revenue requirement.
  - **Request:** Please provide Enbridge's definition of a cost-of-service toll and explain how the tolls in this application are not based on cost-of-service.
  - **Response:** For the purposes of its Application, Enbridge calculated its cost of service without the return on rate base; see Statement C-1.1. Enbridge calculated its return on rate base separately; see Statement B-1.1. Enbridge's revenue requirement is the sum of its cost of service and its return on rate base; see Statement E-3.

The foregoing explains Enbridge's response to IOL-Enbridge 20(e). Enbridge recognizes, however, that the Board treats "cost of service" and "revenue requirement" as synonyms. Enbridge accordingly confirms that Enbridge is seeking cost-of-service tolls in its Application.

# **Business Risk**

## 2.3 Market and Competitive Risk

- **References:** (i) Enbridge Response to IOL Information Request 66(g), Attachment 1; Regulatory Document A25291 (A1T1D3), adobe page 9
  - (ii) Application Appendix A-3, pages 6 to 9, paragraphs 17 to 18; Regulatory document A1R0V1 - Appendix A-3 - Business Risk (Fair Return Standard), paragraphs 17 to 18
- **Preamble:** Reference i) contains a graphical forecast of WCSB dispositions to various markets including "Eastern Canada" and "Other Markets".

Reference ii) discusses the future operations of Line 9 in its current configuration and concludes that "...the probability that Line 9 will be in westbound service is very low. It is possible, moreover, that westbound service could cease earlier."

- **Requests:** (a) Please define "Eastern Canada" and "Other Markets".
  - (b) Does the forecast assume an eastbound flow (re-reversal) of Line 9?
  - (c) Does the forecast consider Ontario refiner requirements should Line 9 cease westbound deliveries, as the Muse Report and Enbridge suggest may happen in reference ii)?
  - (d) What accounts for the apparent increase in disposition to "Eastern Canada" in 2013/2014?
  - (e) Has Enbridge included in its forecast any expected increases in western deliveries to "Eastern Canada" as a result of the IOL Kearl Oil Sands project? If not, why not and how would that alter the disposition picture?
  - (f) Has Enbridge included in its forecast any expected increases in other volumes of western Canadian crude oil penetrating the Ontario market? If not, why not and how would that alter the disposition picture?
- **Responses:** (a) Eastern Canada is defined as Ontario and Quebec. Other markets are defined as potential markets for western Canadian crude such as the continental U.S., Asia and other waterborne destinations.
  - (b) The forecast did not assume eastbound service on Line 9 to Montreal. The forecast did assume that there were no pipeline capacity constraints between Sarnia and the Imperial Nanticoke and United Warren

refineries.

- (c) Yes.
- (d) The forecast assumed that westbound service on Line 9 would cease as of January 1, 2014, resulting in an increase in disposition of western Canadian crude to Eastern Canada.
- (e) No. The forecast assumes that no modifications have taken place to Ontario refineries that would enable them to process an increased amount of heavy crude oil, including Kearl DilBit, delivered from western Canada. If such modifications were to occur, however, then there would be an increase in demand for those crudes in Eastern Canada.
- (f) Yes.

# 2.4 Market and Competitive Risk

- **Reference:** Enbridge Response to IOL Information Request 87(c); Regulatory Document A25291 (A1S9C3), adobe page 142
- **Preamble:** In the above reference, Enbridge presents a quote from a news release regarding the modifications of the Capline and Chicap pipelines that could carry light crude oil from the Gulf Coast to Ontario.
- **Requests:** (a) Please provide the news release referenced in Enbridge Response to IOL Information Request 87(c).
  - (b) What is the status of the referenced modifications to the Capline and the Chicap pipelines?
- **Responses:** (a) Please see Attachment 1 to NEB 2.4(a).
  - (b) Enbridge understands that Capline and Chicap have completed their modifications.

# 2.5 Credit Risk

- **References:** (i) Enbridge Response to NEB Information Request 1.8; Regulatory Document A1S8X9, adobe page 14
  - (ii) Application, Appendix A-7.2, page 16; Regulatory Document A1R0V6, adobe page 19
  - (iii) Enbridge Response to NOVA Chemicals (Canada) Limited (NOVA Chemicals) Information Request 1.12(d); Regulatory Document A1S8Z4, adobe page 28
- **Preamble:** In reference (i), Enbridge proposes that once final tolls are approved by the Board, it would invoice Line 9 shippers for the variance between the toll revenue generated by the applicable interim tolls and the toll revenue generated by the applicable final tolls. Enbridge also states that if final tolls were to be higher than interim tolls, Enbridge would bear the risk during the period after the provision of financial assurances and before the establishment of final tolls.

In reference (ii), Ms. McShane states that Enbridge faces higher credit risk than at the time of the pipeline reversal.

Reference (iii) discusses how Ms. McShane, in her assessment of the business risk of Enbridge, considered the ability to require financial assurances as listed in the tariff as mitigating credit risk.

- **Requests:** (a) Please explain what Enbridge meant by the use of the phrase "during the period after the provisions of financial assurances and before the establishment of final tolls" when it stated that it would bear the risk if final tolls were to be higher than interim tolls.
  - (b) Please explain why Enbridge would bear the risk during this period if a counterparty was not able to pay its invoices.
  - (c) Does Enbridge bear any risk after the final tolls are established? Please explain.
  - (d) How did Ms. McShane's consideration of the ability to require financial assurances as mitigating credit risk impact her overall assessment of business risk?
- **Responses:** (a) Enbridge establishes the level of financial assurances that may be required based on approved (interim) tolls, and not applied-for tolls (final). There is a risk that, during the period between its provision of financial assurances and the establishment of final tolls, a shipper could

become financially unable to pay its tolls. If such a circumstance was to occur and the final tolls were higher than interim tolls, the financial assurances provided would not be sufficient and Enbridge could be unable to recover the difference between the two tolls.

- (b) Please see response to NEB 2.5(a).
- (c) After final tolls are established, Enbridge bears the risk that a current shipper may not be able to pay the difference between the interim and final tolls.
- (d) The issue of credit risk was, in the first instance, a relatively minor consideration in the overall assessment of Enbridge's risk profile, and since the ability of Enbridge to require financial assurances mitigates that risk, credit risk, while noted in the testimony, was not a significant factor in the overall assessment of business risk.

### 2.6 Regulatory Risk

- **References:** (i) Enbridge Response to NOVA Chemicals Information Request 1.3b(i); Regulatory Document A1S8Z4, adobe pages 9 to 10
  - (ii) Enbridge Response to NOVA Chemicals Information Request 1.4(a);Regulatory Document A1S8Z4, adobe page 11
- **Preamble:** In reference (i), Enbridge indicates that its request for a throughput deferral account and a toll adjustment mechanism would reduce short-term risk relative to late 2006 and early 2007.

Reference (ii) states that the degree of short-term business risk mitigation under the FSA in 2007 compared to 2008 and 2009 is the same.

- **Requests:** (a) Please describe the short-term risks faced by Line 9 in late 2006 and early 2007 referred to in (i).
  - (b) Please reconcile the assertions of reference (i) and reference (ii) and clarify whether short term risk would increase, decrease or remain constant, as compared to 2007, if the applied-for deferral accounts and toll adjustment mechanism were to be approved.
- **Responses:** (a) When the business risk analysis was prepared in late 2006 and early 2007, for the purpose of a tolls application to set final tolls for the periods commencing April 1, 2006 and January 1, 2007, Enbridge had not proposed a throughput deferral account or two toll adjustment mechanisms, and would also have been at risk for deviations between forecast and actual operating and maintenance and capital costs other than regulatory costs and oil gains and losses. Under the FSA, as indicated in response to NOVA Chemicals 1.4(a), Enbridge operated under a full cost of service model that trued up all deviations between forecast and actual costs and throughput.
  - (b) As stated in response to NEB 2.6(a), under the FSA, Enbridge operated under a full cost of service model. As of late 2006 and early 2007, pursuant to its tolls application for final tolls commencing April 1, 2006 and January 1, 2007, Enbridge would have been at risk for deviations between actual and forecast costs other than oil losses and regulatory costs and for deviations between actual and forecast throughput. In this application for final tolls for 2008, 2009 and 2010, Enbridge has applied for a throughput deferral account and two toll adjustment mechanisms. The short-term risks were higher when the business risk analysis was prepared in late 2006 and early 2007 for Enbridge's application for final tolls commencing April 1, 2006 and January 1, 2007 than they were

under the FSA. The short-term risks are lower in this application for final tolls for 2008, 2009 and 2010 than they were in late 2006 and early 2007.

## 2.7 Comparison of U.S. Utilities and MLP Samples

- **Reference:** Enbridge Response to NEB Information Request 1.10; Regulatory Document A1S8X9, adobe pages 17 to 19
- **Preamble:** In its response to NEB IR 1.10, Enbridge provides a detailed comparison of the regulatory regime and the business environments for U.S. utilities and NEB-regulated pipelines.
- **Request:** (a) As requested in NEB IR 1.10, please provide a comparison of the U.S. utilities and NEB-regulated pipelines in regards to the handling of throughput (volume) risk.
  - (b) Based on Enbridge's response to NEB IR 1.10 and (a) above, please discuss the extent to which the business risk of "NEB-regulated pipelines" can be considered to be relatively similar to the business risk of a "benchmark Canadian pipeline".
  - Please provide a detailed comparison of the regulatory regime and business environments, similar to the one provided in response to NEB IR 1.10 and (a) above, of the MLP sample and NEB-regulated pipelines.
  - (d) Using the results from the comparison in (c), please compare the MLP sample with Line 9, where the comparisons differ.
- **Responses:** With respect to the benchmark sample, the treatment of volume risk (a) depends on the utility. Some of them have decoupling, which delinks revenues from volumes, so that allowed and actual revenues are tracked, for example, on an average use per customer basis, and differences between allowed and actual revenue are recovered from or returned to customers. Some of them (gas distributors) have weather normalization clauses, which adjust or true up revenues for differences between normal and actual weather. Some have straight-fixed variable rates which include all fixed costs in a fixed or customer charge, which mitigates revenue volatility due to volume variability. The response to NEB 1.11 lists the different mechanisms for each utility that address volume variability. If no mechanism is listed, the utility is at risk for differences between actual volumes and the billing determinants used to set rates. (There are similar differences among electric and gas utilities in Canada; some Canadian gas and electric utilities have no mechanisms that adjust for annual differences between volumes used for rate setting purposes and actual volumes while others have mechanisms that either adjust for differences due to weather, variances in customer usage or use a rate design which recovers a large percentage of fixed costs through a

fixed charge or customer charge.)

With respect to volume risk for NEB-regulated pipelines, the treatment differs by pipeline. However, generally, the pipelines have significant or full protection from volume risk as a result of 1) a toll design which recovers the fixed costs of the pipeline at the forecast throughput through fixed charges and/or 2) a deferral account or true up mechanism which adjusts between toll years for differences between throughput reflected in tolls and actual throughput. The latter may be the result of negotiated settlements with shippers, contractual arrangements, or a decision by the Board as a result of a proposal by the pipeline.

In the aggregate, the NEB-regulated pipelines, as a result of regulatory mechanisms, have better year-to-year volume protection than the typical electric or gas utility in the benchmark sample. On the other hand, the typical electric or gas utility serves a franchise area in which the utility is the sole provider of wires or pipes services and faces lower competitive and market risks.

- (b) The conclusion that the sample of U.S. benchmark utilities is reasonably comparable to a benchmark Canadian pipeline was not intended to mean that each of the specific risks faced by Canadian pipelines and the U.S. utilities are equivalent, but rather that, when both the short-term and long-term risks are considered in the composite, the level of business risk faced is reasonably similar. An investor in a regulated firm, whose assets are long-lived, is concerned with the ability of the firm to recover the capital invested and a compensatory return on the capital over the life of the assets. The companies that form the benchmark sample of U.S. utilities are gas and electric utilities, whose principal business is to deliver largely monopoly services (i.e., there are no other providers of "pipes" or "wires" services) within franchised service areas that are typically characterized by a customer base that is dominated by residential and commercial customers. While short-term risk arising from volume variability faced by the sample of electric and gas utilities is higher than that faced by NEB-regulated pipelines, Canadian pipelines face higher long-term capital recovery risks due to higher market and competitive risk.
- (c) The selected MLPs own both gas and liquids pipelines both of which operate in integrated North American markets characterized by a high degree of interconnection. Over half and two-thirds of natural gas and oil, respectively, produced in Canada is exported to the U.S.

With respect to the regulatory models, for U.S. gas pipelines which, as in Canada, are contract carriers, the basic regulatory model is an original cost rate base/rate of return methodology, governed by similar principles as for Canadian pipelines: the opportunity to recover prudently incurred costs and to earn a fair return on investment, where fair return comprises the three requirements of capital attraction, financial integrity and comparable investment. Unless precluded by the terms of a settlement, pipelines can file for a change in tolls under Section 4 of the Natural Gas Act, under which the pipeline bears the burden of proof that the proposed rates are just and reasonable. Under Section 5 of the Natural Gas Act, the FERC itself and customers can challenge existing rates, in which case the burden of proof lies with the FERC or customers to demonstrate that the rates in question are not just and reasonable. There is no requirement to make periodic rate filings, unless specified as part of a settlement with shippers. Settlements are widely used.

The revenue requirement includes test year operating and maintenance costs, depreciation and amortization, and a return on rate base. Rate base is the depreciated original cost of plant in service plus an allowance for working capital and the return is determined by establishing a capital structure. The capital structure is based on the pipeline's own capital structure when the pipeline has its own debt rating or the parent's if it does not, unless either is determined to be excessive based on the capital structures that the FERC has approved in other cases or based on the capital structures maintained by the proxy companies used to determine the cost of equity, in which case the FERC may adopt a hypothetical capital structure. The rate of return is based on an embedded cost of debt, a return on equity developed using a sample of proxy companies, to which a standardized discounted cash flow model is applied. The pipeline-specific ROEs are selected from the range of ROEs estimated for the individual proxy companies, reflecting the pipeline's risk relative to that of the proxy sample. The revenue requirement also includes an allowance for income taxes, based on the normalized approach to determining income taxes.

Rates are based on a straight fixed variable rate design, where for firm service, fixed costs are recovered in a reservation or demand charge and variable costs are recovered in a variable rate based on throughput. There are no deferral accounts; pipelines are at risk for revenue and cost variances between rate filings. Pipelines can discount both firm and interruptible rates below the posted maximum rate as long as the resulting rates are not unduly discriminatory.

Oil pipelines subject to FERC regulation must file their tariffs and can make changes in tolls after 30 days notice. FERC can suspend the filings for up to seven months and investigate the tolls either on its own motion or in response to a protest. After seven months, the tolls go into effect subject to refund. Oil pipelines have four different rate options, depending on their circumstances. Until 1992, oil pipeline tolls were either cost based or market based. The Energy Policy Act of 1992 directed the FERC to adopt a simplified and generally applicable methodology for oil pipeline rate setting. The FERC adopted a rate indexing methodology, under which ceiling levels for pipeline rates are adjusted annually in accordance with a formula. Rates that were in effect, and not subject to investigation or litigation at the time of the legislation, were deemed to be just and reasonable. The FERC reviews the index adopted every five years. The index in place currently is equal The FERC is currently to the producer price index plus 1.3%. reviewing the prevailing index methodology to establish the new index formula for the period 2011 to 2016. Indexed rates can be challenged on the basis that the resulting rates produce revenues substantially in excess of the pipeline's costs. Pipelines can file a cost of service application in order to establish rates higher than would have otherwise been allowed by applying the index if they can demonstrate that their cost of service substantially deviates from the revenues that will result from the application of the indexing methodology.

The "154-B" cost of service methodology utilized by FERC employs a trended original cost rate base, rather than an original cost rate base. The trended original cost rate base combines elements of original and reproduction cost. A trended original cost rate base adjusts the equity financed portion of rate base for experienced inflation; the debt financed portion is equal to the original cost. The ROE is determined in the same manner as for gas pipelines, i.e., it is based on the application of a standardized discounted cash flow approach to a sample of proxy companies. The resulting nominal ROE is translated into a real cost of equity by adjusting for inflation. The real cost of equity is applied to the equity portion of rate base as adjusted.

Oil pipelines are also allowed to charge market-based rates in cases where they have established that they lack market power in the relevant markets. The determination that a pipeline lacks market power in relevant markets is made on a case-by-case basis.

Oil pipelines may also file to charge settlement rates if all shippers agree to such rates.

NEB oil and gas pipeline toll regulation has been grounded in a cost of service approach, based on original cost and the opportunity to recover the invested capital and a return on that capital which meets the same requirements of the fair return standard delineated above. The cost of service approach to tolls entails determination of test year costs, including rate base and a fair return thereon, and tolls designed to provide an opportunity to recover the allowed return. For gas pipelines, tolls have typically been set using straight fixed variable rates designed to recover 100% of the pipeline's fixed costs. For oil pipelines, which are common carriers, tolls have also been designed to recover the full costs of the pipeline but on a per barrel of throughput basis, differentiated among the different products delivered.

Prior to 1995, tolls for gas pipelines were typically established as the result of an annual tolls proceeding which entailed a detailed review of the pipeline's costs. For oil pipelines there were three classes of toll filings, ranging from a filing for toll adjustments to reflect significant changes in throughput to a toll filing to change the cost of capital or major aspects of the toll setting methodology (e.g., income tax methodology). Since 1995, there has been a shift from annual toll setting proceedings before the Board to settlements, including multiyear negotiated settlements, frequently incorporating incentive mechanisms which provide both the pipelines and shippers opportunities to benefit from improved pipeline performance, and which entail the pipeline assuming higher risks than under traditional cost of service regulation (e.g., through the imposition of potential penalties). The negotiated settlements have generally incorporated protection through deferral account mechanisms for recovery of costs beyond the control of management and have also incorporated mechanisms for variances between actual and forecast throughput. New tolls are filed each year based on the specific terms of the agreements. NEB-regulated Group 1 pipelines do not have the authority to discount tolls to meet competition.

(d) For purposes of 2008-2010, Enbridge has applied for tolls based on a cost of service methodology, with a deferral account and toll adjustment mechanism for throughput variances. The proposed toll setting methodology mitigates the short-term risks (as reflected in year to year earnings variability) to a greater extent than the toll setting methodologies which have been adopted for either the interstate U.S. gas and oil pipelines, i.e., the short-term risks faced by the pipelines which comprise each of the MLPs are higher than Enbridge's.

In contrast to the MLPs, however, Enbridge represents a single purpose asset, i.e., a single pipeline serving one competitive market with only two shippers. Each MLP is compromised of a portfolio of pipeline assets, which diversifies the long-term competitive and market risks. Further, the MLP structure itself, due to the tax benefits, results in a lower cost of capital than would be the case if the operations were organized as a conventional corporation. While the company-specific risks of Enbridge and the MLPs are not identical, the relative risk measurements associated with the MLP sample compared to the benchmark utility sample are representative of the likely differences

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between Enbridge (i.e., stand-alone) and a benchmark Canadian pipeline (Satisfactory versus Excellent business risk profile, mid-BBB/Baa versus A/A3 debt ratings and Value Line Safety rank of 2 versus 1 on a scale of 1 to 5, as set out in Schedule 4, page 1 of Appendix A-7.2). Accordingly, the MLP and benchmark utility samples represent reasonable proxies for Enbridge and a benchmark Canadian pipeline, respectively, for the purpose of estimating the incremental risk premium for the former.

# 2.8 Comparison of U.S. Utility and MLP Samples

- **Reference:** Enbridge Response to NEB Information Request 1.11; Regulatory Document A1S8X9, adobe page 20
- **Preamble:** In its response, Enbridge provides detailed information for the U.S. utilities and MLP samples in a format similar to that provided for the Canadian pipeline sample. The percentage of regulated assets and the method of regulation (including the toll methodology) for each company is part of the information provided.
- **Request:** (a) Please describe the nature of the unregulated activities/assets for those companies in the samples with less than 80 per cent regulated assets and discuss the risk associated with each of the activities/assets.
  - (b) Please provide further details regarding the following methods of regulation and/or toll methodologies which were referred to in the various tables:
    - b.1. Straight fixed variable rates
    - b.2. Market-based rates
    - b.3. Generic FERC index methodology
  - (c) In addition, please discuss the regulatory risk associated with each of these methods as compared to the level of regulatory risk of the Canadian benchmark pipeline and Line 9.
- **Responses:** (a) The information requested for companies with less than 80 percent regulated assets is provided in Attachment 1 to NEB 2.8(a). There are no MLPs with less than 80 percent regulated assets.

## (b) b.1 **Straight Fixed Variable (SFV)**

The term "straight fixed variable rate design" refers to a method of determining demand and commodity rates whereby all costs classified as fixed are assigned to the demand component. As a result there is less income fluctuation due to, for example, weather.

## b.2 Market-Based Rates

Market-based rates are permitted by the FERC only in markets where a pipeline is found to lack market power. As such, to utilize market-based rates a pipeline must demonstrate that there is adequate competition (i.e., the carrier lacks market power), in both the originating and destination markets. Filing requirements require a lengthy application. However, if the application is approved, the carrier may set rates at whatever level the market will bear.

# b.3 Generic FERC Index Methodology

Under indexed rates, a rate may be changed, at any time, to a level not to exceed the ceiling level. The current ceiling level equals the product of the previous year's ceiling level and the new published index level. The index level is published prior to June 1 of each year. The index adjustment is reviewed every five years and is now based on the Producer Price Index for Finished Goods (PPI) plus 1.3%. The current five-year period expires in 2011 and the FERC has recently (June 15, 2010) invited comments on its review.

(c) Ms. McShane interprets the term "regulatory risk" as utilized in the request to relate specifically to the method of regulation as it impacts short-term risks; that is, year-to-year variability in earnings.

With respect to straight-fixed variable rates, since virtually all of a utility's costs are fixed, the methodology mitigates the risk that costs will not be recovered due to lower throughput. In principle, the risk associated with this methodology is comparable to the risk inherent in the toll design methodologies that have been utilized by NEB-regulated pipelines. The principal difference would arise if the straight-fixed variable rates were not applied to the entire capacity of the utility.

With respect to market-based rates, which apply largely to oil pipelines (as contrasted with gas pipelines) and which are based on what the market will bear, the risk is higher than for NEB-regulated pipelines, including Enbridge, whose tolls are designed to recover their own forecast costs.

The generic indexing methodology was adopted in order to streamline pipeline regulation. Reliance on an indexing approach carries more short-term risk than the applicable rate design methodology. However, the reliance on indexing as the "default" mechanism does not preclude a pipeline from applying for cost-based rates if the indexing methodology would preclude the pipeline from charging just and reasonable rates. In addition, U.S. oil pipelines can, without regard to the ceiling set by the indexing methodology, charge negotiated rates, if such rates have been agreed to by all the shippers.

## 2.9 Canadian Oil Pipeline Sample

- **Reference:** Enbridge Response to NEB Information Request 1.12; Regulatory Document A1S8X9, adobe pages 21 to 22
- **Preamble:** In its response, Enbridge states that Ms. McShane recognizes that settlements reflect a "give and take" process. Ms. McShane goes on to say that nevertheless, the end results, particularly when a number of settlements are considered as a group, are an indicator of comparable returns available on investments of similar, though not identical, risks. Ms. McShane also states that the results of negotiated settlements are not intended to, nor should they, on a stand-alone basis, be determinative of returns that meet the Fair Return Standard.
- **Requests:** (a) Please explain how considering a number of settlements as a group, rather than individually, would make them an indicator of comparable returns available and whether they could thus be used as an indicator for the Fair Return Standard.
  - (b) Please discuss the extent to which the referenced 'give and take' process can impact the agreed upon ROE and common equity ratio in a negotiated settlement.
- **Responses:** Settlements are the outcome of a collaborative process, subject to Board (a) approval, between pipelines and shippers. During settlement negotiations, a pipeline may offer concessions on an issue (or issues), e.g. a reduction in operating costs, in exchange for a concession from shippers on, for example, return on equity. This "give and take" process results in individual settlements being reflective of both general industry conditions and the unique circumstances of the participants taking part in the negotiations. As such, when considered as a group, tempering the impact of the unique circumstances of any particular settlement, the results of negotiated settlements provide an indicator of comparable returns (in terms of both capital structure and rate of return on equity) available to investments of similar, but not identical, risks. The fair return standard entails providing the opportunity to earn a rate of return on equity ("ROE") which meets the comparable investment, financial integrity and capital attraction requirements. With the caveat that individual settlements reflect the concessions made by all parties, the results of negotiated settlements, when viewed as a group, provide one perspective on ROEs that meet or are at least compatible with the requirements of the fair return standard.
  - (b) Unless one is party to the negotiations, it is not possible to know what

the "gives" and "takes" are. For this reason, the outcomes of settlements should only be considered in the aggregate. On an *a priori* basis, given that both shippers and pipelines are knowledgeable negotiators, there is no reason to presume that the outcomes of settlements in the aggregate as regards cost of capital would not be representative of the outcomes of fully litigated proceedings.

### 2.10 Debt Rating Methodology

<b>References:</b>	(i)	Enbridge Response to NEB Information Request 1.14; Regulatory
		Document A1S8X9, adobe page 24 to 25

- (ii) Enbridge Response to IOL Information Request 115; Regulatory Document A1S9C3, adobe page 183 to 184
- (iii) Application, Appendix A-7.2, Appendix B, Regulatory Document A1R0V6, adobe pages B-1 to B-5
- **Preamble:** In reference (i), Enbridge provides the financial and business risk combined matrix and assigns a business risk category of "Satisfactory" to demonstrate where Line 9 fits in the matrix. Enbridge then categorizes the financial risk for Line 9 as no better than "Significant" when at a 50 per cent equity ratio, assuming a strict application of the Debt/Capital criteria.

In reference (ii), Enbridge states that Ms. McShane's conclusion that Enbridge would be assigned a business risk of no higher than "Satisfactory" was based on her assessment of where Enbridge fits relative to the Canadian regulated companies that S&P ranks.

In reference (iv) Ms. McShane provides, in table format, an overview of the Canadian Liquid Pipelines.

- **Requests:** (a) Please provide detailed information on the six companies referred to in reference (ii). This information should include a table overview for each of the companies, such as provided for the Canadian Liquid Pipelines in reference (iv).
  - (b) Please explain why the six companies in reference (ii) were not included in the comparables provided by Ms. McShane in assessing the reasonableness of Enbridge's applied-for capital structure.
- **Responses:** (a) The requested information is provided in Attachment 1 to NEB 2.10(a).
  - (b) For the express purpose of assessing the reasonableness of Enbridge's proposed capital structure, the companies reviewed in Table 2 and Appendix B were limited to other liquids pipelines and to pipelines that were largely a single line or single system, which Inter Pipeline Fund and Pembina Pipeline Corporation did not appear to be. The inclusion of these pipeline companies in the analysis would not have changed Ms. McShane's conclusions.

# **Cost of Capital**

## 2.11 ROE Revised Formula

- **Reference:** Enbridge Response to NEB Information Request 1.20 (b); Regulatory Document A1S8X9, adobe pages 33 to 34
- **Preamble:** The above reference states that Ms. McShane has compared the results of the revised formula with "ROEs that she has estimated from first principles on an ongoing basis since 1995", and that the revised formula results "compare favourably".
- **Request:** Please provide a table showing Ms. McShane's past ROE estimates from "first principles", going back to 1995. In the table, please show the following information related to each past estimate: the applicable toll year; the capital structure associated with Ms. McShane's ROE recommendation; the name of the utility and regulator in question; and the ROE and deemed capital structure ultimately allowed by the regulator. Please also identify any case where the regulator's decision was an approval of a ROE and deemed capital structure established in a negotiated settlement.
- **Response:** The requested information is provided in Attachment 1 to NEB 2.11.

### 2.12 ROE Revised Formula

- **References:** (i) Enbridge Response to NEB Information Request 1.21 (b); Regulatory Document A1S8X9, adobe page 36
  - (ii) Enbridge Response to IOL Information Request 201 (a); Regulatory Document A1S9C3, adobe page 302
  - (iii) Enbridge Response to NEB Information Request 1.28 (b); Regulatory Document A1S8X9, adobe page 54
- **Preamble:** References (i) and (ii) assert that in RH-4-2001, the determination "that the results of the RH-2-94 formula continued to be reasonable was largely based on the application of the Capital Asset Pricing Model, a test which does not easily lend itself to estimating the relationship between interest rates and the cost of equity over time." In reference (i), this was in the context of discussing the merit of using the 2002 RH-2-94 Formula ROE as the starting point in a revised formula.

Reference (iii) describes the use of different time frames to test the sensitivity of the regressions results. In the case of the time frame from 2002 to 2009 Q3, the reference states that it "was intended to coincide with time frame of the RH-2-2004 proceeding."

- **Requests:** (a) Please explain on what basis Ms. McShane judges that the CAPM "does not easily lend itself to estimating the relationship between interest rates and the cost of equity over time".
  - (b) Please indicate whether, and on what basis, Ms. McShane considers the DCF model to be better equipped for "estimating the relationship between interest rates and the cost of equity over time".
  - (c) Please explain why the CAPM model's ability to estimate "the relationship between interest rates and the cost of equity over time" is important to the validity of the conclusion reached in RH-4-2001 that the RH-2-94 Formula ROEs continued to result in appropriate returns for the Mainline for 2001 and 2002.
  - (d) Please confirm whether the 2002 to 2009 Q3 period in reference (iii) was intended to coincide with the time frame of the RH-2-2004 proceeding or the RH-4-2001 proceeding. If it was the RH-2-2004 proceeding, please explain.
- **Responses:** (a) Since the CAPM calculation itself includes the interest rate, the use of CAPM to test the relationship between the cost of equity and interest rates is effectively testing one variable against itself. With respect to the

other two variables which make up the CAPM, the beta is a historical calculation, typically measured over a five-year period, that is an indicator of what happened to stock prices (relative to the market) over that period, but is not a measurement which can be matched against a concurrent interest rate. With respect to the market risk premium, while it is widely recognized that it changes with changing economic and capital market conditions, those changes cannot be measured with sufficient accuracy to allow testing of the relationship between interest rates and the risk premium. The DCF model, in contrast, relies on prices of stocks that are concurrent with interest rates, in conjunction with forecasts of growth that are regularly updated.

- (b) Please see response to NEB 2.12(a).
- (c) Had the members of the Board's hearing panel been able to estimate the relationship between interest rates and the cost of equity, which could have provided some additional insight into the trends in the cost of equity over time, it is possible that they might have reached a different conclusion.
- (d) The reference was meant to be to the RH-4-2001 Reasons for Decision.

### 2.13 ROE Methodology

- **References:** (i) Document A1S8X9, adobe page 33
  - (ii) Enbridge Response to NEB Information Request 1.22 (c); Regulatory Document A1S8X9, adobe page 38
  - (iii) Enbridge Response to NEB Information Request 1.32 (a); Regulatory Document A1S8X9, adobe page 63
  - (iv) Enbridge Response to IOL Information Request 203 (b); Regulatory Document A1S9C3, adobe page 306
- **Preamble:** Reference (i) sates that "If done from first principles, the fair return would be estimated by applying various models, to whose results informed judgment would then be applied."

Reference (ii) states that "Other [non-CAPM] risk premium methodologies and the DCF test ... will not necessarily produce results that are internally consistent with the CAPM."

Reference (iii) states that "In undertaking the analysis of a firm's cost of equity from "first principles," it would be reasonable to conduct a DCF test using multiple versions of the model (e.g., a multi-stage model)."

Reference (iv), in discussing the two regressions used in developing the revised ROE formula, states that: "The analysis based on allowed returns is based on regulators' assessments of the various cost of equity test results presented by both applicants and intervenors. The DCF-based risk premium test results reflect the relationship between the cost of equity measured using a dividend yield (which reflects the market's valuation of the security through the price) and a forecast of growth."

- **Requests:** (a) Please explain what models Ms. McShane would use if she was estimating Line 9's ROEs from "first principles".
  - (b) Please explain why a first principles analysis would make use of "various models".
  - (c) In light of the statements in references (i) through (iii), please discuss why it is appropriate to rely on the results of a single DCF-based regression absent other regressions based on various cost of equity models.
  - (d) Given that allowed returns represent "regulators' assessments of the various cost of equity test results presented" and in light of the

considerations mentioned in references (i) through (iii), please discuss why it is appropriate to put weight on the results of the DCF-based regression rather than relying exclusively on the results of the allowedreturns regression.

- **Responses:** (a) As noted in footnote 28, page 27 of Appendix A-7.2, Regulatory Document AIR0V6, "From 'first principles' entails selection of proxy companies, application of the various cost of equity tests (e.g., risk premium, Capital Asset Pricing Model, discounted cash flow)". Specifically, if Ms. McShane were applying a "from first principles" approach to develop an ROE for a benchmark utility, she would use several different risk premium methods, multiple DCF models and the comparable earnings test, in addition to other benchmarks that may provide a perspective on a fair return.
  - (b) Each of the tests mentioned in response to NEB 2.13(a) is based on different premises and brings a different perspective to determining the fair ROE. None of the individual tests is, on its own, a sufficient means of ensuring that all three requirements of the fair return standard are met; each of the tests has its own strengths and weaknesses. Individually, each of the tests can be characterized as a relatively inexact instrument; no single test can pinpoint the fair ROE. For example, Bonbright states, "No single or group test or technique is conclusive. Therefore, it is generally accepted that commissions may apply their own judgment in arriving at their decisions." (James C. Bonbright, Albert L. Danielsen, David R. Kamerschen, Principles of Public Utility Rates, 2<sup>nd</sup> Ed., page 317, Arlington, VA.: Public Utility Reports, Inc., March 1988). Moreover, different tests may be more or less reliable depending on prevailing economic and capital market conditions. For example, the Federal Communications Commission stated in Report and Order 42-43, CC Docket No. 92-133 (1995).

"Equity prices are established in highly volatile and uncertain capital markets... Different forecasting methodologies compete with each other for eminence, only to be superseded by other methodologies as conditions change... In these circumstances, we should not restrict ourselves to one methodology, or even a series of methodologies, that would be applied mechanically. Instead, we conclude that we should adopt a more accommodating and flexible position."

These considerations not only emphasize the importance of reliance on multiple tests, but also of benchmarking, or testing the reasonableness of the test results themselves against other relevant information. (c) Of the approaches listed in response to NEB 2.13(a), only the DCF model uses a variable (dividend yields) that is explicitly related to the equity markets and whose values can be simultaneously matched against current interest rate values.

Ms. McShane did not rely on the results "of a single DCF-based regression". As stated at page 37 of Appendix A-7.2, Regulatory Document AIR0V6, "the relationship between the equity risk premium, long-term government bond yields and corporate bond yield spreads for regulated companies was tested two ways. First, the allowed ROEs adopted for U.S. utilities were used to test the sensitivity of the utility cost of equity to changes both in long-term government bond yields and utility bond yield spreads. In addition, the relationship between interest rates and the cost of equity was tested using DCF costs of equity for a benchmark sample of U.S. gas and electric utilities and both interest rates and corporate bond yield spreads." In both cases, regression analyses were undertaken.

(d) The allowed ROEs do represent regulators' assessments of the various cost of equity tests set before them. However, as stated in footnote 34, page 36 of Appendix A-7.2 regulators' decisions lag the period covered by the market data on which the various cost of equity tests were performed and the ROE decisions based. To take account of this factor in the analysis of the allowed returns data, the government bond yield and spread variables were lagged six months. In contrast, the DCF-based regressions are based on concurrent data, i.e., the monthly estimates of the cost of equity were regressed against the corresponding month's government bond yield and spreads. The use of two separate approaches allows the robustness of the individual test results to be assessed.

### 2.14 ROE Methodology

- **References:** (i) Enbridge Response to NEB Information Request 1.19; Regulatory Document A1S8X9, adobe page 32
  - (ii) Enbridge Response to NEB Information Request 1.22 (b) and (c); Regulatory Document A1S8X9, adobe page 38
  - (iii) Enbridge Response to NEB Information Request 1.23; Regulatory Document A1S8X9, adobe page 40
- **Preamble:** Reference (i) states that "If Ms. McShane were estimating the ROE for Enbridge from "first principles," by using various cost of equity tests to estimate the fair return on equity, the MLP sample could have been used to apply the Capital Asset Pricing Model."

Reference (ii) indicates that Line 9's risk-related ROE premium over the revised formula ROE was derived by assuming, among other things, that the 2008-2010 average risk free rate was 4.4%. Reference (ii) also indicates that the implicit market risk premium (MRP) resulting from this derivation is 9.45%.

Reference (iii) states that "In a pure CAPM context, Ms. McShane would estimate the market risk premium at approximately 6.75%."

- **Requests:** (a) Please provide the basis for Ms. McShane's current MRP estimate of 6.75%.
  - (b) Please discuss the relative merits of estimating Line 9's risk-related ROE premium using a current MRP estimate (e.g. 6.75%) versus using the approach which is associated with an implicit MRP of 9.45%.
  - (c) Please show what Line 9's risk-related ROE premium would be if estimated using Ms. McShane's current MRP estimate of 6.75% rather than starting from the 10.4% benchmark cost of equity (and hence using the implicit 9.45% MRP).
  - (d) For comparison purposes, please provide the cost of equity that Ms. McShane would estimate for Line 9 if she were to use CAPM directly as alluded to in reference (i). For this request, a single cost of equity estimate will suffice rather than one for each of 2008, 2009, and 2010.
  - (e) For comparison purposes, please provide the cost of equity that Ms. McShane would estimate for a benchmark Canadian pipeline if she were using CAPM in a first principles analysis. For this request, a single cost of equity estimate will suffice rather than one for each of 2008, 2009, and 2010.

- **Responses:** (a) The following represents a summary of the analysis that Ms. McShane has undertaken in this regard:
  - i) Using both Canadian and U.S. historical returns and risk premiums during the post-World War II period as the point of departure, the analysis indicated that the average Canadian equity market returns (arithmetic) were approximately 12.0% and the average income and total returns on long-term government bonds were approximately 7.0%. The latter are well in excess of the long-term Canada bond yields which are forecast to prevail going forward (in the range of approximately 4.75% in the near term to 5.25% over the longer term). A comparison of the longer-term equity market returns in Canada and the U.S. to the post-World War II returns demonstrates that the average nominal rates of return for the equity markets have not changed materially. Over the longer term (i.e., since the mid-1920s), the equity market returns in both countries (arithmetic) have been in the approximate range of 11.5%-12.5%.
  - ii) An analysis of the trends in P/E ratios, equity market returns, and bond returns demonstrates:
    - (1) The increase in price/earnings ratios experienced during the market bubble of the 1990s has not resulted in a higher and unsustainable level of equity market returns. The arithmetic average equity returns in both Canada and the U.S. from 1947-1988 (prior to the increase in P/E ratios commencing in 1989) are actually higher than the average returns for the full 1947-2009 period.
    - (2) An analysis of rolling 10-year average equity returns reveals no material upward or downward trend in equity market returns in Canada or the U.S. over the post World War II period.
    - (3) The observed decline in the experienced risk premium over the 1947-2009 period, particularly in Canada, is due largely to an increase in bond returns, not a decline in equity returns. As noted above, the historical bond returns in Canada (both total and income returns) were significantly higher (at approximately 7.0%) than the forecast yields on long-term Canada bonds in both the near term and over the longer-term.

The P/E ratio analysis suggests that historical equity

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market returns in both Canada and the U.S. are reasonable estimates of the forward looking equity market return. In contrast, the Canadian historical bond total and income returns are both materially higher than estimates of expected bond returns, which strongly suggest that the historical achieved equity market risk premium in Canada over the period 1947-2009 understates a reasonable estimate of the forward-looking equity market risk premium.

iii) An analysis of nominal equity returns, rates of inflation and real returns on equity in both the U.S. and Canada shows that real equity returns have generally been higher when inflation was lower. The negative relationship between the achieved real equity returns and inflation does not suggest that the expected nominal equity rates of return should be lower than the historical nominal returns as a result of lower expected inflation.

In summary, given the longer-term equity market returns, the absence of any material upward or downward trend in the nominal historical equity market returns during the post World War II period, the higher historical bond returns compared to forecasts, the P/E ratio analysis, and the observed negative relationship between real returns and inflation, a reasonable expected value of the future equity market return is a range of 11.5%-12.0%, based on Canadian equity market returns and supported by U.S. equity market returns. The expected return on longterm Canada bonds, based on both near term and longer-term forecasts of the 30-year Canada bond yield, is in the range of approximately 4.75% to 5.25% respectively. The resulting expected equity market risk premium is approximately 6.75%.

(b) In Ms. McShane's judgment, the appropriate point of departure for estimating the equity risk premium for Enbridge is the estimated benchmark return and the associated benchmark risk premium.

Estimating the incremental equity risk premium for Enbridge in relation to a market risk premium of 6.75% in conjunction with the relevant betas for each of the two samples (benchmark utility and MLP) effectively presumes that the CAPM alone is a sufficient means of estimating a fair return on equity. The direct application of the CAPM is only one test that would be used within the context of a "from first principles" assessment of the fair return for a benchmark pipeline, to which a premium for Enbridge's higher risk would be applied. As stated in response to NEB 1.22, the implicit market risk premium of 9.45% reflects factors which are not solely the result of the direct application of the CAPM model, including an allowance for financing

# flexibility.

Further, as indicated in response to NEB 1.22, the CAPM is a sparse model that relies on a single variable, beta, to estimate the equity risk premium. The calculation of an implied market risk premium of 9.45% from the estimated benchmark return assumes that the required return on equity is not only linearly related to the beta, but the rate of return on equity applicable to a zero beta stock or portfolio of stocks is equal to the risk-free rate. The study by Eugene Fama and Kenneth French, "The Capital Asset Pricing Model: Theory and Evidence", Journal of Economic Perspectives, Vol. 18, No. 3, Summer 2004, concluded that the empirical relationship between beta and average rate of return has been much flatter than the CAPM would predict. Specifically, based on analysis covering 1928 to 2003, they showed that the CAPM predicted return on the lowest beta stock portfolio was 2.8 percentage points lower than the actual return. The flatter than observed relationship between beta and return is only partially accounted for in the calculation of the implicit market risk premium requested in NEB (The use of a long-term government bond yield in the 1.22(c). application of the CAPM, rather than the short-term rate that is typically used to test the model, partially compensates for the model's observed tendency to understate returns for relatively low beta stocks). Backing out the market risk premium in the manner requested in NEB 1.22(c) will overstate the "true" market risk premium. Similarly, the application of the CAPM "from first principles" without fully accounting for the flatter than observed relationship between beta and return will understate the return requirement for low beta stocks.

- (c) Using only the CAPM as the means of estimating the incremental risk premium, and the same betas used in the initial analysis (average of the raw and the adjusted betas), the risk premium would be approximately 1.2% (equal to the beta of MLP sample of 0.80 minus beta of benchmark sample of 0.635 X Market Risk Premium of 6.75%) before the 25 basis point addition for the consideration of the impact of the assigning Enbridge Pipelines' lower cost of debt to Enbridge. However, please see response to NEB 2.14(b).
- (d) If the CAPM were applied directly to Enbridge, within the context of a "from first principles" approach to the estimation of the fair return, the estimated "bare-bones" CAPM cost of equity is approximately 10.25% for 2008-2010 based on the average forecast long-term Canada bond yield for those three years of approximately 4.50% and a beta of approximately 0.80 to 0.85 based on the betas for the MLP sample as a proxy for Enbridge, for a bare bones cost of equity of approximately 10.0%.

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The addition of a minimum adjustment for financing flexibility of 0.50% would increase this estimate to approximately 10.25%. The estimated CAPM cost of equity represents the results of only one test that would be applied within the context of a "from first principles" assessment of Enbridge's cost of equity. Other risk premium methodologies and the DCF test, supplemented by a comparable earnings test, would all be applied in determining the cost of equity "from first principles."

(e) The CAPM result that would apply to a benchmark pipeline (i.e., a pipeline with a capital structure that would equate its total risk of the proxy benchmark utility sample) would be approximately 9.6%, based on a beta of approximately 0.65 to 0.70, a market risk premium of 6.75%, a long-term Canada of 4.5% and a minimum financing flexibility adjustment of 0.50%. However, as indicated in response to NEB 2.14(d), the estimated CAPM cost of equity represents the results of only one test that would be applied within the context of a "from first principles" assessment of the cost of equity.

## 2.15 ROE Methodology

- **References:** (i) Enbridge Response to NEB Information Request 1.23; Regulatory Document A1S8X9, adobe pages 39 to 40
  - (ii) Enbridge Response to IOL Information Request 184 (a); Regulatory Document A1S9C3, adobe pages 260 to 261
  - (iii) Enbridge Response to IOL Information Request 200 (b); Regulatory Document A1S9C3, adobe page 299
- **Preamble:** The above references refer to conclusions reached in three articles/studies that are not on the record.
- **Request:** Please provide copies of the above referenced articles/studies.

#### **Response:** The requested articles/studies are attached as:

- Attachment 1 to NEB 2.15
- Attachment 2 to NEB 2.15
- Attachment 3 to NEB 2.15
- Attachment 4 to NEB 2.15

## 2.16 ROE Methodology

- **Reference:** (i) Enbridge Response to IOL Information Request 98 (a); Regulatory Document A1S9C3, adobe page 160
  - (ii) Enbridge Response to IOL Information Request 100 (b); Regulatory Document A1S9C3, adobe page 162
  - (iii) Enbridge Response to IOL Information Request 187 (e); Regulatory Document A1S9C3, adobe page 266
  - (iv) Enbridge Response to NEB Information Request 1.26 (a); Regulatory Document A1S8X9, adobe pages 46 to 49
  - (v) Attachment 1 to Enbridge Response to NEB Information Request 1.26(a); Regulatory Document A1S8Y8
- **Preamble:** Reference (i) reiterates Ms. McShane's view that "capital structure, within a reasonable range, is appropriately a decision for management, because management is in the best position to assess its business risks, financing requirements and access to debt and equity capital." It confirms that the principal reason that Ms. McShane relied on her chosen approach for estimating a fair return is that it is "compatible with the [above] philosophy".

Reference (ii) states that a reasonable range for capital structure is one which, among other things, "is consistent with the goal of minimizing the cost of capital".

Reference (iii) states that Ms. McShane would view a range of equity ratios from 45 to 60% as reasonable for Line 9.

References (iv) and (v) present two alternative approaches for quantifying how Line 9's cost of equity would change as a result of capital structure changes. Approach 1 holds the cost of capital fixed as capital structure changes, and Approach 2 is based on cost of capital declining as the debt ratio increases. Reference (iv) and (v) specifically considered an adjustment from a 50% equity thickness to a 45% equity thickness. Reference (iv) concludes that "Since both approaches have merit, it is reasonable to give weight to both."

- **Requests:** Note, for the purposes of this information request, please ignore the effect that a varying capital structure could have on Line 9's embedded 2008 and 2009 debt rates (as discussed in NEB request 2.22 (d) below).
  - (a) In light of reference (i) to (iii), please explain why Ms. McShane concludes that there is merit in Approach 2 which presumes that the cost

of capital declines as the debt ratio increases from 50% to 55%.

- (b) Please explain why the calculations done in reference (iv) and (v) use a market cost rate for debt.
- (c) Please confirm that if Line 9's equity thickness were deemed at 45% and the ROE were adjusted using Approach 1, then the total return that Line 9 would receive would be higher than in the base-case that uses a 50% equity thickness due to the adjustment's use of a market cost rate of debt, which is below Line 9's embedded cost of debt.
- (d) Please confirm that if adjustments to cost of equity are made according to Approach 2, the Board's choice of deemed equity thickness (even within a "reasonable range") will have an impact on the total return.
- (e) If either (c) or (d) is confirmed, please discuss what this implies for the philosophy of the regulator leaving the capital structure as a management decision so long as it falls within a reasonable range.
- (f) If (c) is confirmed, please consider a scenario where Approach 1 was relied upon with no weight put on Approach 2, and 45% equity thickness was the capital structure that the Board deemed most appropriate. Also consider that the Board subscribed to the philosophy that the deemed capital structure should be set at the level requested by management and viewed 50% as being within the reasonable range. Under this scenario, please discuss the appropriateness of an approach where the requested ROE is first adjusted as in Approach 1 (using the market cost rate for debt), and is then *re-adjusted* back to the management-requested capital structure using a method identical to Approach 1 except using Line 9's embedded debt rate.
- **Responses:** (a) The conclusion that there is some merit to the approach that presumes the cost of capital declines as debt as added to the capital structure over a range of capital structures recognizes that there is market value to the income tax shield that is afforded by the use of debt. The flip side of maximizing firm value by taking advantage of the deductibility of interest expense for corporate income tax purposes is the impact on the cost of capital. If the value of the firm rises as debt is added to the capital structure due to the value of the income tax shield, the converse is a reduction in the cost of capital. The development of the income trust sector in Canada, which benefited from the deductibility of interest expense for corporate income tax purposes, suggests that the use of debt can lower the cost of capital.

Please note, however, that reference (iv) indicates that it is impossible to state with precision whether, within a reasonable range of capital structures, raising the debt ratio decreases the overall cost of capital or leaves it unchanged. The latter conclusion, that is, a flat cost of capital over a range of capital structures, is consistent with the observation that individual firms within the same industry maintain a range of capital structures. It is perhaps obvious that, if there were a single identifiable capital structure which minimized the cost of capital, all firms with similar levels of business risk would maintain the same capital structure. The observation that the actual capital structures maintained by firms with relatively similar business risks exhibit a relatively wide range supports the conclusion that the cost of capital does not change materially as capital structures change within a reasonable range.

- (b) The calculations utilize the market cost rate for debt as it represents the marginal cost, consistent with the measurement of the cost of equity, which is also a marginal cost. The estimation of the impact on the cost of capital of moving from one capital structure to another is not a function of the embedded (historical average) cost of debt, but the marginal cost.
- (c) Approaches 1 and 2 were applied to estimate how the market cost of equity changes as the capital structure changes. The appropriate cost of debt for the purpose of estimating that impact is the marginal (market) cost of debt, as indicated in response to NEB 2.16(a). While the marginal cost of debt is the appropriate measure for estimating the equivalent equity ratio/ROE combinations, for toll setting purposes, the pipeline should be entitled to recover its embedded cost of debt. Under Approach 1, because the embedded cost is higher than the marginal cost of debt used to estimate the impact of changing the capital structure on the cost of equity, the revenue requirement cost of capital is slightly higher at 45% equity than it is at 50% equity.
- (d) Confirmed.
- (e) The conclusion that both Approach 1 and Approach 2 have merit recognizes that the choice of capital structure entails a degree of judgment, as there is no single formula that can pinpoint the optimal capital structure, underscoring the role of management in determining an appropriate capital structure.
- (f) If the ROE at 45% equity that results from the initial application of Approach 1 (moving from 50% equity to 45% using the marginal cost of debt) is used as the point of departure to readjust back to 50% equity, using the embedded, rather than the marginal cost of debt, the resulting ROE is marginally higher at 50% equity than it was initially. This is due to the higher cost of capital that results from using the embedded cost of debt, rather than the marginal cost, when readjusting back to the 50% equity ratio. While, theoretically, this methodology produces

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inconsistent results, in practice, the difference in the readjusted ROE at 50% that results from using this methodology is minimal due to the relatively small difference between Enbridge's average embedded cost of debt (approximately 6.5%) for the three test years and the 6% marginal debt cost used to estimate the capital structure/ROE combinations.

# 2.17 ROE Methodology

- **References:** (i) Enbridge Response to NEB Information Request 1.24; Regulatory Document A1S8X9, adobe pages 41 to 42
  - (ii) Enbridge Response to NEB Information Request 1.27; Regulatory Document A1S8X9, adobe pages 50 to 52
  - (iii) Enbridge Response to NEB Information Request 1.26; Regulatory Document A1S8X9, adobe pages 46 to 49
  - (iv) Attachment 1 to Enbridge Response to NEB Information Request 1.26(a); Regulatory Document A1S8Y8
- **Preamble:** The responses in references (i) and (ii) rely on the Hamada equation to estimate the impact that capital structure has on the appropriate ROE premium for Line 9 (i.e. the premium over the revised formula ROE).

References (iii) and (iv) present two approaches for quantifying how Line 9's cost of equity would change as a result of capital structure changes.

- **Requests:** (a) Please indicate what assumptions underpin the Hamada equation, and discuss their reasonableness and potential impact on the conclusions reached in references (i) and (ii). In doing so, please indicate whether the Hamada equation assumes that corporate debt costs are equal to the risk free rate (and hence that the debt beta is zero).
  - (b) Please discuss the extent to which the Hamada equation is consistent with the two approaches presented in references (iii) and (iv), and what this implies about the reliability of the conclusions reached in references (i) and (ii).
  - (c) Please indicate whether instead of using the Hamada equation to undertake the analyses in references (i) and (ii), it is possible to use the two approaches in references (iii) and (iv). If it is not possible, please explain why.
  - (d) If the analysis described in (c) is possible, please undertake the analysis that was done in references (i) and (ii) using the two approaches used in references (iii) and (iv), and comment on the results. In presenting this analysis, please explain how the debt cost rate was chosen for each of the samples (MLP and Benchmark Utility).
  - (e) If the analysis described in (c) is possible, please discuss the relative merits of the results in (d) as compared to those in references (i) and (ii).

In doing so, please make reference to the assumptions described in (a).

- (f) If the analysis described in (c) is *not* possible, please indicate whether any other approaches could be used to undertake the analysis in references (i) and (ii), which would rely on less restrictive assumptions than presented in (a). If so, please provide this analysis and discuss the results.
- **Responses:** (a) The Hamada equation is based on the following assumptions:
  - i. the dollar amount of debt is constant over time,
  - ii. debt capital is assumed to have negligible risk that interest and principal payments will not be made when owed, i.e., the debt beta is zero, and
  - iii. The discount rate used to calculate the tax savings from the income tax shield on interest is assumed to be equal to the cost of debt capital (thus, the tax shield has the same risk as debt).

All three assumptions represent simplifications of reality. In practice, debt issued by a corporation is risky; the tax shields are similarly not tax-free; and the assumption that debt is constant may not hold in practice. Consequently, the application of the equation used in response to NEB 1.24 represents an approximation of the relationship between the betas for the two samples as unlevered (from their market value capital structures) and relevered (at their book value capital structures).

The Hamada equation can be restated to allow for risky debt as follows:

$$\begin{split} \mathbf{B_L} &= \mathbf{B_u} + (\mathbf{B_u} \cdot \mathbf{B_d})^* (\mathbf{1} \cdot \mathbf{t})^* (\mathbf{D} / \mathbf{E}) \\ & \text{Where:} \\ & B_L = \text{Levered equity beta} \\ & B_u = \text{Unlevered equity beta} \\ & B_d = \text{Debt Beta} \\ & t = \text{Corporate tax rate} \\ & D / \mathbf{E} = \text{Debt} / \text{Equity} \end{split}$$

For the purpose of this question, Ms. McShane estimated debt betas over the same seven year period as used for the equity betas for the two samples, using Moody's A and BBB rated long-term bond indices as proxies for the cost of debt for the benchmark utility and MLP samples respectively. Over the period July 2002-June 2009, the debt betas (estimated by regressing monthly bond returns against monthly S&P 500 returns) were estimated at 0.04 and 0.10 for the benchmark and

MLP samples, respectively.

The table below shows the relative betas of the two samples as initially presented in response to NEB 1.24 (assuming debt beta equal to zero) and as applied using the formula above as adapted for a non-zero debt beta. The analysis assumes a 30% tax rate. The results using the adapted formula are very similar to the initial results.

Case 1: Debt Beta = 0						
	<u>Beta</u> Levered	<u>Debt</u> <u>Beta</u>	<u>Initial</u> Equity <u>Ratio</u>	<u>Initial</u> Debt/Equity	Beta Unlevered	
Benchmark	0.635	0.0	58.5%	0.7094	0.42	
MLP	0.810	0.0	65.0%	0.5385	0.59	
				<u>New</u> Debt/Equity		
			<u>New</u> Equity Ratio		<u>Relevered Debt</u> <u>Beta = 0</u>	
Benchmark			44%	1.273	0.802	
MLP			49%	1.041	1.017	
				Ratio	1.267	
Case 2: Debt	Beta non-					
2010			Initial			
	<u>Beta</u> Levered	<u>Debt</u> <u>Beta</u>	<u>Equity</u> <u>Ratio</u>	<u>Initial</u> Debt/Equity	<u>Beta Unlevered</u>	
Benchmark	0.635	0.04	58.5%	0.7094	0.44	
MLP	0.810	0.10	65.0%	0.5385	0.62	
			New			
			<u>Equity</u> <u>Ratio</u>	<u>New</u> Debt/Equity	<u>Relevered Debt</u> <u>Beta non-zero</u>	
			44%	1.273	0.792	
			49%	1.041	0.991	
				Ratio	1.252	

(b) The Hamada equation integrates Approach 2 and the Capital Asset Pricing Model as follows:

Approach 2 holds:

(1) WACC<sub>AT</sub> of a Levered Firm = WACC<sub>UL</sub> of the Unlevered Firm  $x (1-tD_{levered firm})$ 

The WACC<sub>AT</sub> of the levered firm under Approach 2 is equal to:

(2) Cost of Debt X Debt Ratio X (1-t) + Cost of Equity X Equity Ratio

and

(3) Cost of Equity = WACC<sub>UL</sub> + (Debt Ratio/Equity Ratio) X (1-t) X (WACC<sub>UL</sub>-Cost of Debt)

Under the CAPM, the costs of equity for the unlevered and levered firms are, respectively:

- (4)  $R_f + B_U X MRP$  and
- (5)  $R_f + B_L X MRP$ , where

 $B_U$  = Beta of the unlevered firm  $B_L$  = Beta of the levered firm  $R_f$  = Risk-free rate MRP = Market Risk Premium

The cost of debt to the levered firm is equal to:

(6)  $R_f + B_D X MRP$ , where  $B_D$  is the beta (systematic risk component) of the levered firm's debt

Substituting (4), (5) and (6) into (3):

(7)  $R_{f} + B_{L} X MRP =$   $R_{f} + B_{U} X MRP + (R_{f} + B_{U} X MRP - R_{f} - B_{D} X MRP) X$ Debt/Equity Ratio X (1-t)

This reduces to a levered beta of:

(8)  $B_L = B_U + (B_U - B_D) X \text{ Debt/Equity Ratio } X (1-t)$ 

The Hamada equation, however, assumes that corporate debt is riskless  $(B_D = 0)$ , so the Hamada equation is:

(9)  $B_L = B_U X (1 + \text{Debt Ratio/Equity Ratio } X (1-t))$ 

However, the application of Approach 2 for the purposes of the response to NEB 1.26(a) when performed in conjunction with the

CAPM is consistent with the assumption that the spread between the company's cost of debt and the risk-free rate divided by the market risk premium is equal to the debt beta.

This can be demonstrated as follows:

# **Assumptions:**

Risk-free Rate (R <sub>f</sub> )	= 4.5%
Levered Equity Beta (B <sub>L</sub> )	= 0.70
Market Risk Premium (MRP)	= 6.75%
Cost of Corporate Debt (COD)	= 6.0%
Tax Rate	= 30%
Debt Beta = $B_D = (COD - R_f) / MRP$	= 0.222
Market Value Equity Ratio	= 60%
Market Value Debt Ratio	= 40%

## Therefore,

Levered Cost of Equity	$= R_{f} + B_{L} X MRP = 9.225\%$
Levered Beta (B <sub>L</sub> )	$= 0.70 = B_{U} + (B_{U} - B_{D}) X (1-t)X(D/E)$
	$= B_{\rm U} + (B_{\rm U}222) X (1 - 0.30) X (.40/.60)$

## Solving for $B_{\rm U}$

Beta of the Unlevered Firm,  $B_U = 0.55$ 

#### Therefore

Cost of Equity for Unlevered Firm	$= R_{f} + B_{U} X MRP$
	= 4.5% + 0.55  X  6.75% = 8.2%

### **Relevering at a 45% equity ratio:**

Levered Beta (B <sub>L</sub> )	$= B_{U} + (B_{U} - B_{D})X(1 - t)X(D/E)$
	= 0.55 + (0.55 - 0.22) X (1 - 0.30) X (.55/.45)
	= 0.83
New CAPM Cost of Equity	$= R_{f} + B_{L} X MRP$
	= 4.5% + 0.87  X  6.75%
	= 10.1%

The application of Approach 1 also presumes that the debt beta = spread/market risk premium.

- (c) Yes, one can use Approaches 1 and 2 in conjunction with the CAPM. Please see response to NEB 2.17(d).
- (d) The results of the analysis are presented below.

#### **Assumptions:**

Risk Free Rate = 4.5%Cost of Debt for Benchmark Sample = 6.0%, equal to estimated

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market cost for A rated utility, based on forecast longterm government bond yield of 4.5% plus 1.5% spread

- Cost of Debt for MLP Sample = 6.35% (equal to cost for A rated sample plus 0.35% equal to average historical spread between A and BBB rated long-term debt)
- Market Risk Premium = 6.75%

Levered Betas = 0.635 for benchmark sample and 0.81 for MLP sample

Tax Rate = 30%

Market Value Capital Structures (based on medians): 41.5%/58.5% Debt/Equity for Benchmark Sample 35.0%/65.0% Debt/Equity for MLP sample

Book Value Capital Structures (based on medians): 57.0%/43.0% Debt/Equity for Benchmark Sample 53.0%/47.0% Debt/Equity for MLP Sample

### **CAPM Costs of Equity:**

Benchmark Sample = 4.5% + 0.635 \* 6.75% = 8.79% MLP Sample = 4.5% + 0.81\* 6.75% = 9.97%

### **Cost of Equity at Book Value Capital Structures:**

Approach 1:Benchmark Sample (43% Equity): 10.44%MLP Sample (47% Equity): 12.08%Approach 2:Benchmark Sample (43% Equity): 9.59%MLP Sample (47% Equity): 11.05%

#### **Implied Betas at Book Value Capital Structures:**

(Cost of Equity – Risk-Free Rate)/Market Risk Premium *Approach 1:* Benchmark Sample = 0.88 MLP Sample = 1.12 Ratio of MLP to Benchmark Sample Betas = 1.28

Approach 2:Benchmark Sample = 0.75MLP Sample = 0.97Ratio of MLP to Benchmark Sample Betas = 1.29

The results are not materially different from those initially presented in response to NEB 1.24.

(e) The approach undertaken in response to NEB 2.17(d) above, which explicitly takes account of the risk borne by the debt holders, is in principle superior, although there is little difference in the outcome.

Please note that the analysis presented in response to NEB 1.24 was simply intended to address the question of whether using market value capital structures rather than book value capital structures materially changed the conclusions regarding the relative risk of the two samples.

(f) Not applicable.

## 2.18 ROE Methodology

- **References:** (i) National Energy Board, RH-2-94 Reasons for Decision, Multi-Pipeline Cost of Capital, March 1995, page 3; Regulatory Document 93409
  - (ii) Application, Appendix A-7.2, page 34; Regulatory Document A1R0V6, adobe pages 37
  - (iii) Application, Appendix A-7.2, page 40; Regulatory Document A1R0V6, adobe pages 44
  - (iv) Enbridge Response to NEB Information Request 1.26 (c) and (d); Regulatory Document A1S8X9, adobe page 49
- **Preamble:** Reference (i) states that "In the context of [the RH-2-94] proceeding, a benchmark pipeline refers to a hypothetical utility whose overall investment risks are characteristic of a low-risk, high-grade regulated pipeline." The benchmark pipeline ROE was applied to six pipelines (five gas and one oil) that were subject to the RH-2-94 Decision.

In reference (ii), Ms. McShane states that she "evaluated the potential for preserving the initial RH-2-94 benchmark pipeline ROE of 12.25% established in RH-2-94 as a point of departure for establishing the 2008, 2009, and 2010 ROEs for Enbridge, but by revising or adjusting the original formula to produce ROEs that more closely approximated the cost of equity for a benchmark pipeline over time."

Reference (iii) states that the Benchmark Utility Sample "is reasonably comparable to a benchmark NEB-regulated pipeline", and goes on to describe similarities between Enbridge Pipelines, NOVA Gas Transmission, and TransCanada Pipelines and the companies contained in the Benchmark Utility Sample.

The responses in reference (iv) are based on the premise that for the purposes of considering whether adjustments are required to account for leverage, the appropriate comparator to the Benchmark Utility Sample's capital structure is that of a "benchmark oil pipeline", as represented by the Enbridge System and Trans Mountain.

**Requests:** (a) Please explain why, in light of references (i) through (iii), the responses in reference (iv) only compare the capital structure of the Benchmark Utility Sample with the capital structures of two oil pipelines. Among other things, please explain why the comparison was not to all the pipelines that were subject to the RH-2-94 Decision and why the comparison included the Enbridge System which was not subject to the

RH-2-94 Decision.

- (b) For each of the six pipelines that were subject to the RH-2-94 Decision, please provide the most recent (and last, in the case of pipelines which have subsequently been taken over/amalgamated) capital structure that was set by the Board in a fully litigated case (i.e. that did not result from a settlement), and please provide the average of these six equity thicknesses.
- (c) Using the Hamada equation, please show how Line 9's ROE recommendation would change if the average equity thickness provided in (b) were used as the relevant "benchmark Canadian pipeline" capital structure, instead of the 45% ("benchmark oil pipeline" equity thickness) used in the response to (c) in reference (iv).
- (d) If the analysis described in information request 2.17 (c) is possible, please also provide the information requested in part (c) of this request (i.e. 2.18), using the two approaches referred to in 2.17 (c).
- **Responses:** (a) The remaining pipelines are gas transmission pipelines, each of which would have a different business risk profile than an oil pipeline. While Enbridge Pipelines (then IPL) was not subject to Order TG/TO-1-95 (RH-2-94), its allowed common equity ratio had been previously established at 45% as noted in response to IOL-Enbridge 55(e).
  - (b) Of the six pipelines that were subject to Order TG/TO-1-95 (RH-2-94), only TransCanada's common equity ratio has explicitly been set by the Board as a result of a fully litigated proceeding, at 36% in the RH-2-2004 proceeding. The RH-1-2008 decision for TQM did not establish a capital structure. Based on the capital structures for the five pipelines (including TQM) as established in the RH-2-94 proceeding and TransCanada's equity ratio of 36% established as in the RH-2-2004 proceeding, the average equity ratio is 34.3%.

	Equity Ratio
TransCanada	36.0%
Foothills	30.0%
Alberta Natural Gas	30.0%
TQM	30.0%
Westcoast	35.0%
Trans Mountain	45.0%
Average	34.3%

(c) Ms. McShane understands that she is to assume that the relevant benchmark pipeline equity ratio is to be equal to the average presented in the table provided in response to NEB 2.18(b), and then to assume that (1) the beta for the benchmark utility sample of 0.635 is applicable to a benchmark Canadian pipeline at a book value common equity ratio of approximately 34.0%; (2) that the market value capital structures of the benchmark utility sample should be used to unlever the sample betas and (3) the resulting asset betas should be relevered at the book value common equity ratio of 34%. The resulting relevered betas at 34% equity would then be compared to the similarly unlevered and relevered MLP betas to reestimate the indicated risk premium for Enbridge.

Germale	Investment	Market Value Equity	Tax	Asset	Book Value Equity	Relevered
Sample	Beta	Katio	Kate	Beta	Katio	Beta
Benchmark	0.635	58.5%	30%	0.42	34.0%	1.00
MLP	0.81	65.0%	30%	0.59	47.0%	1.05
Ratios of Betas						
(MLP/	1.275					1.05
Benchmark)						

The arithmetic using the Hamada equation is provided below.

The arithmetic result is that the indicated premium for Enbridge measured by the ratio of the relevered betas is minimal.

However, the analysis is premised on several assumptions that Ms. McShane considers to be flawed. First, the assumption that the relevant common equity ratio for any individual pipeline would be equal to the most recently litigated common equity ratio is inconsistent with the capital structures which have actually been adopted, albeit by way of negotiated settlement. Of the pipelines listed in the table in response to NEB 2.18(b), three have negotiated higher common equity ratios than are provided in the table (Westcoast, Foothills and TransCanada), one has been integrated into another pipeline (Alberta Natural Gas has been integrated with Foothills), and one (TQM) has no specified allowed equity ratio. Second, the premise of the request appears to be that, for all intents and purposes, the relevant pipeline capital structure that would equate the total risk (as measured by beta) of the benchmark utility sample to a benchmark pipeline is the simple average of the most recent litigated capital structures of all the pipelines that were governed by Order TG/TO-1-95 (RH-2-94), with no distinction between oil and gas pipelines. While Ms. McShane concluded that the risk of the benchmark utility sample was reasonably comparable to a benchmark

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pipeline, the analysis and conclusions were tied specifically to oil pipelines, and a baseline common equity ratio for a benchmark oil pipeline of 45%. Consequently, she believes the calculations provided above are fundamentally flawed and cannot be used to draw any meaningful conclusions regarding the appropriate risk premium for Enbridge.

(d) The calculations are provided below (consistent with Ms. McShane's understanding of what was being requested, but as they are essentially based on the same assumptions as in response to NEB 2.18(c) (and produce similar relationships between the betas), she believes that they are based on a flawed point of departure and cannot be used to draw any meaningful conclusions regarding the appropriate risk premium for Enbridge.

#### **Assumptions:**

Risk Free Rate = 4.5%

- Cost of Debt for Benchmark Sample = 6.0%, equal to estimated market cost for A rated utility, based on forecast longterm government bond yield of 4.5% plus 1.5% spread
- Cost of Debt for MLP Sample = 6.35% (equal to cost for A rated sample plus 0.35% equal to average historical spread between A and BBB rated long-term debt)

Market Risk Premium = 6.75%

Levered Betas = 0.635 for benchmark sample and 0.81 for MLP sample

Tax Rate = 30%

Market Value Capital Structures (based on medians):

41.5%/58.5% Debt/Equity for Benchmark Sample 35.0%/65.0% Debt/Equity for MLP sample

Book Value Capital Structures (Benchmark assumed at 34% equity; MLPs based on medians):

66.0%/34.0% Debt/Equity for Benchmark Pipeline 53.0%/47.0% Debt/Equity for MLP Sample

## **CAPM Costs of Equity:**

Benchmark Sample = 4.5% + 0.635 \* 6.75% = 8.79% MLP Sample = 4.5% + 0.81\* 6.75% = 9.97%

## **Cost of Equity at Book Value Capital Structures:**

Approach 1:Benchmark Pipeline (34% Equity): 12.09%MLP Sample (47% Equity): 12.08%Approach 2:Benchmark Pipeline (34% Equity): 10.39%MLP Sample (47% Equity): 11.05%

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# **Implied Betas at Book Value Capital Structures:**

(Cost of Equity – Risk-Free Rate)/Market Risk Premium *Approach 1:* Benchmark Pipeline = 1.12 MLP Sample = 1.12 Ratio of MLP to Implied Benchmark Pipeline Betas = 1.00

Approach 2:Benchmark Sample = 0.87MLP Sample = 0.97Ratio of MLP to Benchmark Sample Betas = 1.12

Average ratio of MLP to Benchmark Sample Betas = 1.05

#### 2.19 ROE Methodology

- **References:** (i) Enbridge Response to NEB Information Request 1.24; Regulatory Document A1S8X9, adobe pages 41 to 42
  - (ii) Enbridge Response to NEB Information Request 1.27; Regulatory Document A1S8X9, adobe page 51
- **Preamble:** Reference (i) provides the reasons why Ms. McShane relied on book value capital structure, and provides some reasons which support the use of market value capital structure.

Reference (ii) lists the book-value equity ratios for the MLP Sample and Benchmark Utility Sample, measured in two alternative ways.

- **Requests:** (a) In light of the competing reasons supporting the use of market and book value capital structures, please elaborate as to why Ms. McShane relied on book value weights.
  - (b) Please provide the market-value equity ratios for the companies in the Benchmark Utility Sample and the MLP Sample, by adding two columns to the table shown in reference (ii).
  - (c) If the analysis described in information request 2.17 (c) is possible, please provide an analysis like the one provided in reference (i) (of how the results would differ if using market value capital structures) but using the two approaches referred to in 2.17 (c).
- **Responses:** (a) In addition to the reasons provided in response to NEB 1.24, book value capital structures are typically what firms have reference to in the establishment of their target financial structures, and are the ratios, which, as used for regulatory purposes, are compatible with recovery of the embedded cost of debt, rather than the market cost of debt.
  - (b) Following is the table from the response to NEB 1.27 with the additional columns requested.

	Book Commo Ratio 20	Value n Equity 02-2008	Market Value Common Equity Ratio 2002-2008		
	As	Weighted	As	Weighted	
	reported	average	reported	average	
MLP Sample					
BUCKEYE PARTNERS LP	46.5%	46.6%	67.0%	65.8%	
ENBRIDGE ENERGY PRTNRS LP	45.2%	46.1%	61.1%	60.9%	
ENERGY TRANSFER PARTNERS					
LP	38.5%	41.2%	60.5%	58.2%	
ENTERPRISE PRODS PRTNER LP	47.3%	48.4%	65.0%	64.0%	
KINDER MORGAN ENERGY LP	42.4%	42.0%	64.1%	63.9%	
MAGELLAN MIDSTREAM					
PRTNRS LP	48.1%	48.4%	70.3%	71.2%	
ONEOK PARTNERS LP	41.7%	43.5%	60.9%	61.0%	
SUNOCO LOGISTICS PRTNRS LP	55.0%	54.2%	70.1%	70.2%	
TC PIPELINES LP	77.3%	66.2%	83.3%	75.8%	
Average	49.1%	48.5%	66.9%	65.7%	
Median	46.5%	46.6%	65.0%	64.0%	
Benchmark Utility Sample					
AGL RESOURCES INC	40.3%	40.7%	54.2%	54.3%	
CONSOLIDATED EDISON INC	47.4%	47.5%	56.1%	56.0%	
DOMINION RESOURCES INC	37.1%	37.2%	55.7%	56.1%	
FPL GROUP INC	43.1%	43.0%	58.5%	59.1%	
NEW JERSEY RESOURCES CORP	47.8%	48.2%	67.3%	67.3%	
NORTHWEST NATURAL GAS CO	47.1%	47.1%	59.7%	60.1%	
NSTAR	35.3%	35.3%	50.9%	51.2%	
PIEDMONT NATURAL GAS CO	47.1%	46.7%	64.5%	64.3%	
SOUTHERN CO	40.6%	40.7%	60.4%	60.4%	
VECTREN CORP	41.5%	41.5%	55.1%	55.1%	
WGL HOLDINGS INC	51.9%	51.9%	63.4%	63.5%	
Average	43.6%	43.6%	58.7%	58.9%	
Median	43.1%	43.0%	58.5%	59.1%	

(c) The results of the analysis are presented below.

# **Assumptions:**

Risk Free Rate = 4.5%

- Cost of Debt for Benchmark Sample = 6.0%, equal to estimated market cost for A rated utility, based on forecast longterm government bond yield of 4.5% plus 1.5% spread
- Cost of Debt for MLP Sample = 6.35% (equal to cost for A rated sample plus 0.35% equal to average historical spread between A and BBB rated long-term debt)

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Market Risk Premium = 6.75% Levered Betas = 0.635 for benchmark sample and 0.81 for MLP sample Tax Rate = 30% Market Value Capital Structures (based on medians): 40.9%/59.1% Debt/Equity for Benchmark Sample 36.0%/64.0% Debt/Equity for MLP sample Book Value Capital Structures (based on medians): 57.0%/43.0% Debt/Equity for Benchmark Sample 53.0%/47.0% Debt/Equity for MLP Sample

#### **CAPM Costs of Equity:**

Benchmark Sample = 4.5% + 0.635 \* 6.75% = 8.79%MLP Sample = 4.5% + 0.81\* 6.75% = 9.97%

### **Cost of Equity at Book Value Capital Structures:**

Approach 1:Benchmark Sample (43% Equity): 10.51%MLP Sample (47% Equity): 11.97%Approach 2:Benchmark Sample (43% Equity): 9.62%MLP Sample (47% Equity): 11.00%

## **Implied Betas at Book Value Capital Structures:**

(Cost of Equity – Risk-Free Rate)/Market Risk Premium *Approach 1:* Benchmark Sample = 0.89 MLP Sample = 1.11 Ratio of MLP to Benchmark Sample Betas = 1.24

Approach 2:Benchmark Sample = 0.76Sample = 0.96Ratio of MLP to Benchmark Sample Betas = 1.26

The results are not materially different from those initially presented in response to NEB 1.24 as well as those presented in response to NEB 2.17(d).

- 2.20 ROE Methodology
  - **Reference:** Enbridge Response to NEB Information Request 1.33; Regulatory Document A1S8X9, adobe page 67
  - **Preamble:** Part (i) of the above reference explains that master limited partnerships (MLPs) do not pay corporate income taxes, but that the partners pay their share of the MLP's income taxes as well as receive their share of the MLP's income tax credits.

In part (iii) of the above reference, four principal reasons are listed for why Moody's has a specific rating methodology for MLPs:

(1) because partnerships pay out a high proportion of their cash flows in distributions, they have less ability than conventional corporations to build up a credit cushion; (2) because they pay out a high proportion of earnings, they need to access the capital markets when they make acquisitions; (3) refinancing risk, again associated with the high payouts; and (4) governance risk related to the possibility of the general partner extracting value from the MLP to the detriment of the bondholders and unit holders.

Part (iv) of the above reference refers to "cash costs of the MLPs' equity", and mentions that only investment grade MLPs were included in the MLP Sample.

The Board requires additional information on how MLPs' capital structures might be influenced by these factors.

- **Requests:** (a) Please discuss the extent to which MLP tax rules influence the incentive to carry debt as compared to a conventional corporation. In doing so, please specifically explain how debt interest payments are treated for tax purposes in the case of both MLPs and their partners.
  - (b) Please discuss the extent to which each of the four reasons listed in part (iii) of the above reference might influence the amount of debt that an investment-grade MLP can carry in its capital structure as compared to an investment-grade conventional corporation.
  - (c) Please explain what is meant by "cash costs of the MLPs' equity".
- **Responses:** (a) An MLP is not taxed; the partners are taxed based on their portion of the income of the MLP, including the gains/losses and deductions. The fact that MLPs are not taxed, but rather the partners, means that double-taxation is avoided. The tax benefits available to MLPs mean that more of their earnings are available to be distributed to unitholders than are available for a corporation to distribute to shareholders. In isolation, the

beneficial tax treatment could incent MLPs, all other things equal, to incur higher leverage than a conventional corporation since the income is only taxed once. However, MLPs depend on the ability to access the capital markets to grow, since they distribute a high proportion of their income. The need to have continual access to the capital markets, in conjunction with debt covenants that are imposed on the debt that they issue, will constrain the amount of leverage that they maintain.

- (b) The three issues that are associated with high payouts (the lesser credit cushion, need to access capital markets and refinancing risk) would suggest less leverage than a conventional corporation operating in the same line of business. The governance issue referenced points to lower debt ratios, all other things equal, as an offset to the risk to bondholders in order to maintain investment grade credit ratings.
- (c) The cash costs of equity are the associated distributions per unit.

### 2.21 ROE Data/Samples

- **Reference:** Enbridge Response to NEB Information Request 1.27; Regulatory Document A1S8X9, adobe pages 50 to 52
- **Preamble:** The above reference explains that the TC PipeLines LP common equity ratio "reflects a period of growth during which TC Pipelines has acquired or increased its interests in several pipelines; the capital structure over the period has evolved with the financing of those investments."

It also explains that "TC Pipelines is comprised largely of investments in pipelines in which it does not hold a controlling interest and for which it uses the equity method of accounting rather than consolidation. As with other companies which account for non-controlling interests on an equity accounting basis, TC Pipelines' capital structure does not include the debt of those pipeline investments."

The reference also provides an alternative way of calculating the equity ratios. As a result of the alternative calculation technique, two tables are provided. The first table reports the original and alternative equity ratios for each member of the MLP and Benchmark Utility Sample (and the sample averages). The second table shows how the alternative equity ratios impact the recommended Line 9 ROE (based on the Hamada equation).

- **Requests:** (a) Please discuss the extent to which it is appropriate to include companies that are undergoing growth through acquisitions and purchases of interests in a sample meant to be comparable to Line 9. In doing so, please discuss how this growth might impact the capital structure and cost of capital observed.
  - (b) Please discuss the extent to which in a sample meant to be comparable to Line 9, it is appropriate to include companies "comprised largely of investments in pipelines in which [they do] not hold a controlling interest and for which [they use] the equity method of accounting". In doing so, please discuss how this growth might impact the capital structure and cost of capital observed.
  - (c) Please explain why the alternative method of calculating the capital structure, provided in the above reference, is a preferred approach conceptually. Please describe in what way the approach serves to reduce the extent to which TC PipeLines LP's capital structure is impacted by either of the characteristics noted in the preamble.
  - (d) Please discuss the extent to which any of the other members of the MLP Sample exhibit either of TC PipeLines LP's characteristics noted in the

preamble.

- (e) Please provide a version of the first table from the above reference, which excludes TC PipeLines LP from the MLP Sample.
- (f) If the response to (d) identifies any other members of the MLP Sample that exhibit the characteristics noted in the preamble, please provide a version of the first table from the above reference, which excludes those members from the MLP Sample.
- (g) Please reproduce the second table in the above reference showing the impact of using each of the averages provided in (e) and (f).
- (h) If the analysis described in information request 2.17 (c) is possible, please use the two approaches referred to in that request to show the impact of using the alternative equity ratios shown in the above reference (using the full MLP sample). Please also use these two approaches to show the impact of using each of the average equity ratios provided in (e) and (f) of this IR (i.e. 2.21) (based on both the original technique for calculating equity ratios and the alternative approach shown in the above reference).
- **Responses:** (a) The suitability of TC PipeLines for a sample of proxy companies reflects the underlying pure play pipeline operations. While it has grown in size, its growth has been primarily attributable to acquired interests in mature pipelines. In the first proceeding at FERC following their policy decision to allow MLPs in proxy samples for purposes of determining the cost of equity, the inclusion of TC PipeLines in the proxy sample was broadly supported by parties to the proceeding (*Kern River Gas Transmission Co.*, Docket No. RP04-274, (Opinion No. 486-B) 126 FERC ¶61,034 (2009)). All other things equal, as compared to Enbridge, the diversification of TC PipeLines' interests among pipelines would tend to lower its risks and thus its cost of capital relative to that faced by Enbridge, which is a single asset pipeline.
  - (b) The fact that TC PipeLines has investment interests in pipelines may result in a less leveraged capital structure than those of MLPs which own pipelines directly. Since the debt of the pipelines themselves is not imputed to TC PipeLines in analysts' assessments (i.e., the leverage of the MLP in analysts' reports is as reported on the financial statements of TC PipeLines), the stronger capital structure of TC PipeLines relative to its peers would, *a priori*, be expected to translate into a lower beta (and lower cost of equity capital) than its more highly leveraged peers.
  - (c) The expectation is that the capital structure would trend toward a higher proportion of debt as the company grows. By using a weighted average of the annual capital structures, more weight is given to the more recent

years when the MLP has more capital in total and a higher proportion of debt in its capital structure.

(d) No other member of the MLP sample exhibits the same characteristics as TC PipeLines. The only other member of the sample with significant equity investments (approximately 10% of total assets) is ONEOK Partners. Although the percentage is relatively low and S&P does not impute any of the debt of the companies to ONEOK Partners in which it has an equity interest, Ms. McShane did test the sensitivity of the relative betas of the two samples to the inclusion of ONEOK Partners in responses to NEB 2.21(f) and NEB 2.21(g).

	Common Equity Ratio Average 2002-2008		
		Weighted	
	As reported	average	
MLP Sample			
BUCKEYE PARTNERS LP	46.5%	46.6%	
ENBRIDGE ENERGY PRTNRS LP	45.2%	46.1%	
ENERGY TRANSFER PARTNERS LP	38.5%	41.2%	
ENTERPRISE PRODS PRTNER LP	47.3%	48.4%	
KINDER MORGAN ENERGY LP	42.4%	42.0%	
MAGELLAN MIDSTREAM PRTNRS LP	48.1%	48.4%	
ONEOK PARTNERS LP	41.7%	43.5%	
SUNOCO LOGISTICS PRTNRS LP	55.0%	54.2%	
Average	45.6%	46.3%	
Median	45.9%	46.4%	
Benchmark Utility Sample			
AGL RESOURCES INC	40.3%	40.7%	
CONSOLIDATED EDISON INC	47.4%	47.5%	
DOMINION RESOURCES INC	37.1%	37.2%	
FPL GROUP INC	43.1%	43.0%	
NEW JERSEY RESOURCES CORP	47.8%	48.2%	
NORTHWEST NATURAL GAS CO	47.1%	47.1%	
NSTAR	35.3%	35.3%	
PIEDMONT NATURAL GAS CO	47.1%	46.7%	
SOUTHERN CO	40.6%	40.7%	
VECTREN CORP	41.5%	41.5%	
WGL HOLDINGS INC	51.9%	51.9%	
Average	43.6%	43.6%	
Median	43.1%	43.0%	

(e) Please see table below.

	Common Equity Ratio Average 2002-2008		
		Weighted	
	As reported	average	
MLP Sample			
BUCKEYE PARTNERS LP	46.5%	46.6%	
ENBRIDGE ENERGY PRTNRS LP	45.2%	46.1%	
ENERGY TRANSFER PARTNERS LP	38.5%	41.2%	
ENTERPRISE PRODS PRTNER LP	47.3%	48.4%	
KINDER MORGAN ENERGY LP	42.4%	42.0%	
MAGELLAN MIDSTREAM PRTNRS LP	48.1%	48.4%	
SUNOCO LOGISTICS PRTNRS LP	55.0%	54.2%	
Average	46.1%	46.7%	
Median	46.5%	46.6%	
Benchmark Utility Sample			
AGL RESOURCES INC	40.3%	40.7%	
CONSOLIDATED EDISON INC	47.4%	47.5%	
DOMINION RESOURCES INC	37.1%	37.2%	
FPL GROUP INC	43.1%	43.0%	
NEW JERSEY RESOURCES CORP	47.8%	48.2%	
NORTHWEST NATURAL GAS CO	47.1%	47.1%	
NSTAR	35.3%	35.3%	
PIEDMONT NATURAL GAS CO	47.1%	46.7%	
SOUTHERN CO	40.6%	40.7%	
VECTREN CORP	41.5%	41.5%	
WGL HOLDINGS INC	51.9%	51.9%	
Average	43.6%	43.6%	
Median	43.1%	43.0%	

(f) Please see the table below with both TC PipeLines and ONEOK Partners removed.

- (g) The requested tables are presented below.
  - i) Removal of TC PipeLines only:

The MLP beta was revised to 0.82 from 0.81 to reflect the removal of TC PipeLines from the sample for purposes of this calculation.

Sample	Investment Beta	Sample Common Equity Ratio	Tax Rate	Unlevered Beta	Enbridge Equity Ratio	Relevered Beta
Benchmark	0.635					
MLP - revised Capital structure	0.82	46.4%	30%	0.45	50%	0.77
	Ratios of Betas	Initial Premium	Enbridge Premium			
As Filed	1.275	6.0%	7.65%			
Revised Capital Structures	1.214	6.0%	7.28%			
Difference			-0.37%			

 Removal of TC PipeLines and ONEOK Partners: The MLP beta was revised to 0.84 from 0.81 to reflect the removal of TC PipeLines and ONEOK Partners from the sample for purposes of this calculation.

Sample	Investment Beta	Sample Common Equity Ratio	Tax Rate	Unlevered Beta	Enbridge Equity Ratio	Relevered Beta
Benchmark	0.635					
MLP - revised Capital structure	0.84 Ratios of Betas	46.6% Initial Premium	30% Enbridge Premium	0.47	50%	0.79
As Filed	1.275	6.0%	7.65%			
Revised Capital Structures	1.248	6.0%	7.49%			
Difference			-0.17%			

- (h) The analysis using the full sample and the weighted average capital structures was provided in response to NEB 2.19(c). The analyses removing TC PipeLines only and both TC PipeLines and ONEOK Partners are provided below.
  - i) Removal of TC PipeLines only.

Inferring a beta for the MLP sample assuming the equity ratio rises from the median book value ratio of 46.4% to the 50% as requested by Enbridge.

### **Assumptions:**

Risk Free Rate = 4.5%

- Cost of Debt for Benchmark Sample = 6.0%, equal to estimated market cost for A rated utility, based on forecast longterm government bond yield of 4.5% plus 1.5% spread
- Cost of Debt for MLP Sample = 6.35% (equal to cost for A rated sample plus 0.35% equal to average historical spread between A and BBB rated long-term debt)

Market Risk Premium = 6.75%

Levered Betas = 0.635 for benchmark sample and 0.82 for MLP sample

Tax Rate = 30%

Book Value Capital Structures (based on medians):

```
53.6%/46.4% Debt/Equity for MLP Sample
```

## **CAPM Costs of Equity:**

MLP Sample = 4.5% + 0.82\* 6.75% = 10.04%

## **Cost of Equity at Book Value Capital Structures:**

Approach 1:MLP Sample (50% Equity):9.63%Approach 2:9.81%

## **Implied Betas at Book Value Capital Structures:**

(Cost of Equity – Risk-Free Rate)/Market Risk PremiumApproach 1:MLP Sample= 0.76Approach 2:MLP Sample= 0.79

At a mid-point of 0.77, the ratio of the inferred MLP beta at a 50% equity ratio to the Benchmark Sample Beta of 0.635 = 1.22

ii) Removal of TC PipeLines and ONEOK Partners.

Inferring a beta for the MLP sample assuming the equity ratio rises from the median book value ratio of 46.6% to the 50% as requested by Enbridge.

## Assumptions:

Risk Free Rate = 4.5%

- Cost of Debt for Benchmark Sample = 6.0%, equal to estimated market cost for A rated utility, based on forecast longterm government bond yield of 4.5% plus 1.5% spread
- Cost of Debt for MLP Sample = 6.35% (equal to cost for A rated sample plus 0.35% equal to average historical spread between A and BBB rated long-term debt)

Market Risk Premium = 6.75%

Levered Betas = 0.635 for benchmark sample and 0.84 for MLP sample

Tax Rate = 30%

Book Value Capital Structures (based on medians):

53.4%/46.6% Debt/Equity for MLP Sample

## **CAPM Costs of Equity:**

MLP Sample = 4.5% + 0.84\* 6.75% = 10.17%

## **Cost of Equity at Book Value Capital Structures:**

Approach 1:MLP Sample (50% Equity):9.78%Approach 2:9.95%

#### **Implied Betas at Book Value Capital Structures:**

(Cost of Equity – Risk-Free Rate)/Market Risk Premium *Approach 1:* MLP Sample = 0.78 *Approach 2:* MLP Sample = 0.81

At a mid-point of 0.79, the ratio of the inferred MLP beta at a 50% equity ratio to the Benchmark Sample Beta of 0.635 = 1.25

### 2.22 Cost of Debt

- **Reference:** Enbridge Response to NEB Information Request 1.38; Regulatory Document A1S8X9, adobe pages 73 to 74
- **Preamble:** The above reference states that the proposed method for calculating Line 9's debt costs is a "common method". It explains that \$45 million of a specific 1999 \$100 million debt issue was assigned by Enbridge Pipelines Inc. to Line 9 "as financing for the Line 9 Reversal Project", and that until its maturation on 31 October 2009, the \$45 million will count in its entirety in the calculation of Line 9's debt costs. The remaining Line 9 debt is considered to have a cost equal to the Enbridge Pipelines Weighted Average Cost of Debt.
- **Requests:** (a) Please describe what the meaning is, in a practical and formal sense, of Enbridge Pipelines Inc. assigning a specific portion of the 1999 \$100 million debt issuance to Line 9 for the Line 9 Reversal Project.
  - (b) Please discuss the rationale behind the use of the \$45 million in calculating Line 9's debt costs, rather than using the Enbridge Pipelines weighted average cost of debt for all of Line 9's debt.
  - (c) Please provide evidence to support the assertion that the method for calculating Line 9's debt costs, in particular putting substantial weight on the debt that was assigned to Line 9, is a "common method".
  - (d) Please clarify whether the proposed method for calculating Line 9's debt costs implies that the 2008 and 2009 debt rates are contingent on the deemed capital structure.
- **Responses:** (a) Enbridge's capital structure included the assigned \$45 million as debt. Enbridge's cost of that debt was equal to the interest rate of the \$100 million debt issue. As a result, the interest rate on the \$45 million allocation of the \$100 million debt issuance was used in the calculation of the cost of debt for Enbridge. Consequently, the assigned \$45 million was excluded from the calculation of Enbridge Pipelines Weighted Average Cost of Debt.
  - (b) Please see the response to NEB 2.22(a). The \$45 million allocation of the \$100 million debt issuance to Enbridge provided a fixed rate cost of debt.
  - (c) The term "common method" was meant to indicate that a consistent approach was used to calculate the cost of debt for each of 2008, 2009 and 2010.

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(d) Enbridge's cost of debt in 2008 and 2009 was determined independently from its deemed capital structure.

## 2.23 Cost of Debt

**References:** Enbridge Response to IOL Information Request 11 (b); Regulatory Document A1S9C3, adobe page 16

ii) Enbridge Response to IOL Information Request 45 (a); Regulatory Document A1S9C3, adobe page 70

**Preamble:** Reference (i) lists for year-end 2008 and 2009 the specific debt issues used to determine the Enbridge Pipelines Inc. weighted average cost of debt.

Reference (ii) provides the total long term debt of Enbridge Pipelines Inc. (excluding debt for Southern Lights) outstanding for year-end 2008 and 2009, and for the quarter ended 31 March 2010.

The sum of the 2008 and 2009 issues in reference (i) appears to be significantly different from the totals provided in reference (ii) for year-end 2008 and 2009.

- **Requests:** (a) Please explain the reason for the difference in the summation of the issues listed in reference (i) and the total amounts provided in reference (ii).
  - (b) Please provide a list similar to the one in reference (i), which also includes the issues that are included in the totals provided in reference (ii).
  - (c) Please submit the weighted average cost of debt for Enbridge Pipelines Inc. that would result from including all the issues included in the totals provided in reference (ii).
- **Responses:** (a) The summation in reference (i) includes the specific term debt issued by Enbridge Pipelines. The total amounts in reference (ii) include the term debt issued by Enbridge Pipelines, as well as the outstanding balances under Enbridge Pipelines' committed bank credit facilities. The committed bank credit facilities are classified as long term debt under GAAP as the maturity dates on these facilities extend beyond a 365-day period.
  - (b) Please see response to NEB 2.23(a). Reference (i) includes all term debt issue by Enbridge Pipelines.
  - (c) Please see response to NEB 2.23(a). Reference (ii) includes all term debt issue by Enbridge Pipelines.