

**Enbridge Pipelines Inc. ("Enbridge")
Line 9B Reversal and Line 9 Capacity Expansion Project ("Project")**

**Application under section 58 and Part IV ("Application") of the National Energy Board Act
OH-002-2013
File OF-Fac-Oil-E101-2012-10 02**

Enbridge Response to National Energy Board ("NEB" or "Board") Information Request No. 3

Consultation Matters

3.1 Consultation with Stakeholders Regarding Changes to Project

Reference: i) Filing A3H3T6 B12-6 – Attachment 5 – ESEIA Addendum (Adobe page 3 of 24).

ii) National Energy Board Filing Manual, [Chapter 3.3 Consultation](#).

Preamble: Reference i) states that additional lands, not originally incorporated in the Project scope, will be required at the North Westover Station, Hilton Station, Cardinal Station and at the Montréal Terminal. The additional lands required at the Montréal Terminal will be outside the current Enbridge property boundaries and will require landowner authorization.

Reference i) further states that a new densitometer will be installed at KP 2989.30. The Board also notes that reference i) does not confirm that consultation with all potentially affected landowners occurred and that appropriate land rights were obtained.

Reference ii) requires companies to describe the design and implementation of their consultation program regarding the potential broad impacts of the project that may extend beyond the project boundaries (e.g., noise and air emissions).

Request: Please provide an updated and itemized table of the consultation activities that have taken place with all potentially affected stakeholders relating to the proposed changes to the construction activities and land requirements associated with the Project. This table should clearly indicate:

- a) the stakeholder/landowner consulted, date for each contact and method of contact (for example telephone, personal meeting, email, letter mail);
- b) a description of the consultation undertaken to explain the proposed changes

to construction activities and land requirements;

- c) confirmation that all appropriate land authorizations at the Montréal Terminal have been or will be acquired; and,
- d) a summary of any issues and concerns that have been raised relating to the proposed changes to the construction activities and land requirements, the steps Enbridge has taken or will take to address these issue and concerns, or an explanation of why steps will not be taken to address any particular concerns.

Response: a) The noted consultation activities have yet to be undertaken and therefore a table of consultation activities is not provided. Enbridge will notify all stakeholders and Aboriginal communities engaged to date on the Project regarding the changes to construction activities and land requirements through an update letter that will be mailed by the end of July, 2013. The Project web site will also be updated as appropriate; the timing for the update will be aligned with the timing of the update letter.

Enbridge believes that consultation is ongoing through the life of the Project and that the timing for the update letter is appropriate given the nature of the changes in construction activities. Furthermore, the changes to construction activities and land requirements will not impact the fact that, for the great majority of stakeholders: the Project will have no noticeable impact since it involves reversing the flow and increasing capacity, with no change to maximum operating pressure, of an existing pipeline; and any impacts arising from construction (noise, dust, traffic, and disruptions due to equipment movement) are expected to be temporary and minor in nature. The new land requirements are for temporary work space in an industrial area or on Enbridge station property.

Finally, the landowner on whose property Enbridge plans to construct the densitometer, located at KP 2989.30, has no concerns regarding the Project and signed an agreement with Enbridge granting all required rights to construct, operate and maintain the densitometer in November, 2012. An Enbridge representative also hand delivered notification letters to the four adjacent landowners, who are located within 150 m of the densitometer site, on June 21, 2013. Enbridge will endeavour to accommodate any concerns raised by these landowners and, where practical, incorporate them into its construction planning.

Enbridge will work with stakeholders and Aboriginal communities to address any concerns that may be raised.

- b) Please refer to response to NEB IR 3.1.a.
- c) Enbridge confirms that preliminary discussions with the industrial landowner have occurred and that all appropriate land authorizations at the Montreal Terminal will be acquired prior to Project construction.
- d) Please refer to response to NEB IR 3.1.a.

Economic and Financial Matters

3.2 *Uncommitted toll charges*

- Reference:**
- i) Filing A3G4R9 B8-3 – Attachment 1 to NEB IR 1.1 – Pro Forma TSA, Schedule B (Adobe page 34 of 52).
 - ii) Filing A3G4R9 B8-3 – Attachment 1 to NEB IR 1.1 – Pro Forma TSA, Articles 6.03 (Adobe page 13 of 52).
 - iii) Filing A1Y9R7 Enbridge Competitive Toll Settlement, Part VIII, Line 9 Matters, (Adobe page 40 of 122).
 - iv) Filing A3G4R8 Enbridge response to NEB IR No. 1.2 (Adobe pages 2-3 of 46).

Preamble: In reference i), Enbridge explains "Actual Committed Tolls will be adjusted accordingly to equal the International Joint Toll pursuant to the 2011 Competitive Tolling Settlement, on a distance-adjusted basis, from the respective Canadian Origination Point to Sarnia. In addition, a distance and commodity adjusted charge of \$0.21 to Montréal is reflected in the table above."

In reference ii), in Article 6.03, Enbridge explains that the Uncommitted Tolls will be calculated to provide a premium such that the total Uncommitted Toll from any Canadian Origination Point to Montréal is no more than 22% over the estimated Line 9 International Joint Tariff to Montréal as set forth in Schedule B. Furthermore, the reference states that the "Shipper acknowledges that the differential between the Uncommitted Toll and the Committed Toll may change during the Term."

Reference iii) states, at Article 31.2, that "Line 9 tolls are currently set on a standalone basis and will continue to be set on a standalone basis under the CTS regardless of whether Line 9 is used for East to West or West to East service or is used for partial East to West and partial West to East service."

Reference iii) at Article 31.3 states that in the event that Enbridge applies to reverse service on Line 9 and such reversal is approved by the NEB, such that Line 9 or a portion of Line 9 is operated in a fashion that allows volumes to flow from the Canadian Mainline into Line 9 and supports flow of hydrocarbons from West to East in Line 9, Enbridge may file, at its discretion, a negotiated International Joint Tariff for delivery on Line 9 at that time.

In reference iv), Enbridge states that the proposed Project's toll making

methodology is well aligned with the principles and methodology underlying the Competitive Toll Settlement (CTS) applicable on Enbridge's mainline system. The reference also states that uncommitted tolls are set so that the toll from any Canadian receipt point is no more than 22% higher than the International Joint Tariff toll to Montréal.

- Request:**
- a) Please explain how the proposed tolling methodology for Line 9 is aligned with the principles and the toll making methodology underlying the CTS.
 - b) Please clarify the definition of the "negotiated" International Joint Tariff stated at Article 31.3 in reference iii) and its connection to the Line 9 International Joint Tariff referred to in Article 6.03 in reference ii).
 - c) Please explain whether the premium for uncommitted volumes on Line 9 will apply to the volume shipped from any Canadian Origination Point to Sarnia, and if so, please discuss how this premium is calculated and if this premium is consistent with the principle of Line 9 tolls being set on a standalone basis, as described in Article 6.03 in reference ii).
 - d) Please discuss over what time period the uncommitted toll will be maintained at no more than 22% over the estimated Line 9 International Joint Tariff to Montréal and discuss what measures, if any, Enbridge will take to maintain the 22% premium limit over this time period.
 - e) Please explain if the distance and commodity charge of \$0.21 to Montréal, stated in reference i), will apply to uncommitted tolls. If so, please also provide the methodology underlying this charge.

- Response:**
- a) The proposed tolling methodology for Line 9 is aligned with the principles and the toll making methodology underlying the CTS by:
 - (1) ensuring that CTS International Joint Rate Tariff ("CTS IJT") tolls applicable to delivery points on the Enbridge Mainline will be the same, irrespective of the specific facilities or path, as per CTS Section 14.2. Committed and uncommitted tolls to Nanticoke and West Seneca will be the same on Line 9 as those published under the CTS IJT NEB No. 326 Tariff;
 - (2) ensuring that any toll to a Non-Enbridge Mainline receipt or delivery point will be greater than the toll to the nearest upstream Enbridge Mainline receipt and delivery point and offered equally to all similarly situated shippers, consistent with Section 14.5 of the CTS. Tolls to Montreal are higher than tolls to the nearest upstream Enbridge Mainline Delivery Point under the CTS IJT and have been offered

equally to all similarly situated shippers;

- (3) providing toll certainty for shippers by adjusting initial tolls annually on July 1st at a rate of 75% of the GDPP Index, consistent with the parameters outlined in Section 31.4 of the CTS; and
 - (4) allowing Enbridge to offer incentives to attract incremental volumes onto Line 9, provided such toll incentives are offered equally to all Line 9 shippers, as per Sections 14.1 and 31.7 of the CTS.
- b) Article 31.3 of the CTS indicates “Enbridge may file, at its discretion, a negotiated International Joint Tariff for delivery on Line 9” at the time the line is operated in West to East service. Article 6.03 shows the results of Enbridge’s negotiations with shippers to develop the Line 9 IJT toll for this service. For details on Enbridge’s “Notification of Commercial Third Parties”, please refer to the Application at Adobe page 37 of 54. Enbridge consulted with prospective shippers to develop the Line 9 International Joint Tariff (“Line 9 IJT”) toll methodology and the terms and conditions of the TSA.
- c) Consistent with Section 14.2 of the CTS, there is no premium applied to uncommitted volumes for deliveries to Sarnia from western Canadian receipt points. The premium for uncommitted volumes would only apply for transportation from Sarnia to Montreal.
- d) The Initial Term of the Transportation Service Agreement (“TSA”) is 10 years. Pursuant to Section 5.03 of the TSA, the Shipper may extend the TSA for an additional five years. The 22% maximum premium over committed tolls will apply for the duration of the TSA.

The overall premium for service from western Canada to Montreal paid by uncommitted volume shippers may increase or decrease over this time period but will never exceed a 22% premium to the committed tolls. If a permitted adjustment to committed tolls would result in uncommitted tolls exceeding the 22% premium, then Enbridge would file with the NEB adjusted Line 9 uncommitted tolls (applicable to service from Sarnia to Montreal) such that the total uncommitted toll from any Canadian Origination Point to Montreal is no more than 22% over the committed toll from any Canadian Origination Point to Montreal.

- e) Yes, the \$0.21 charge will apply to the uncommitted toll. The uncommitted toll would be calculated by applying a premium (not to exceed 22%) to the committed toll. The committed toll includes the \$0.21 charge.

Negotiations with prospective shippers resulted in an agreement regarding the Line 9 IJT toll from Sarnia to Montreal. That negotiated toll was then added to the CTS IJT toll to Sarnia to derive the Line 9 IJT toll. Compared to a distance adjusted toll using the CTS IJT unit transmission rate, the resulting Line 9 IJT toll was \$0.21 cents higher.

3.3 *Changes to uncommitted tolls*

- Reference:** i) Filing A3G4R9 B8-3 – Attachment 1 to NEB IR 1.1 – Pro Forma TSA, Article 6 (Adobe page 13-14 of 52).
- ii) Filing A3G4R8 Enbridge response to NEB IR No. 1.2 (Adobe pages 2-3 of 46).

Preamble: In reference i), Article 6.03 explains that the uncommitted toll shall only be adjusted annually by 75% of the GDPP (Canada Gross Domestic Product at Market Prices) Index multiplied by the uncommitted tolls in effect, and that the LMCI process will also adjust the incremental committed and uncommitted tolls, as explained in section 6.04.

Furthermore, in reference i) at Article 6.08, Enbridge explains that, under certain conditions, Enbridge shall not offer transportation service on Line 9 on either a committed or uncommitted basis for an aggregate toll from an Origination Point to the Delivery Point that is less than the then applicable Committed Toll on Line 9. Alternatively, the Carrier may do so but only if the applicable Committed Toll is reduced commensurately. In reference ii), Enbridge states the toll making methodology principle that uncommitted tolls are set so that the toll from any Canadian receipt point is no more than 22% higher than the International Joint Tariff toll to Montréal.

- Request:**
- a) Please explain whether uncommitted tolls will be adjusted for any reason other than the annual change in the GDPP Index or the LMCI process, and if so, when and how will uncommitted shippers be notified of this change.
 - b) Please describe the scenarios that could increase and decrease the uncommitted toll premium stated in reference ii).
 - c) Please provide a numerical example of an aggregate toll from an Origination Point to a Delivery Point that would require Enbridge to reduce the committed toll on Line 9, as described in the reference at article 6.08 of reference i). In the example, please explain the process that Enbridge would undertake to reduce the committed toll if required, and discuss whether the uncommitted toll would also be reduced if, prior to reducing the committed toll, the uncommitted toll premium was 22%.

- Response**
- a) The uncommitted tolls could be adjusted for reasons other than the annual GDPP Index adjustment or any incremental tolls resulting from an NEB order in relation to LMCI. For example, adjustments to the CTS IJT or an expansion subject to Section 31.13 of the CTS could result in adjustments to the uncommitted tolls. In such a case, Enbridge would consult with shippers

before making a filing with the NEB.

- b) A decrease in the uncommitted toll premium could occur, for example, if the committed toll and uncommitted toll both increased by the same dollar amount. An LMCI surcharge would be an example of this.
- c) Section 6.08 of the TSA was included to provide assurance for Committed Shippers that a future expansion could not be offered with tolls lower than the then-applicable committed toll. If, for example, capacity could be added with very little capital cost, Enbridge could not offer this transportation with a toll lower than the committed toll for the Project. If the committed toll were to be reduced in such a situation, the uncommitted toll would also be reduced, if necessary, to ensure that the premium is no more than 22%. In such a situation, agreement of the current committed shippers, and approval of, or filing with, the NEB would be required.

3.4 *Uncommitted capacity*

Reference: i) Filing A3G4R8 Enbridge response to NEB IR No. 1.4 (Adobe page 6 of 46).

ii) Filing A3D7I1 Application, (Adobe page 51 of 54).

Preamble: In reference i), Enbridge discusses why 25,000 bpd of pipeline capacity may not be available for uncommitted shippers in all circumstances.

In reference ii), Enbridge submits that 25,000 bpd of spot capacity on Line 9 is sufficient for Enbridge to meet its common carrier requirements under the NEB Act.

Request: a) Please discuss if pipeline capacity will be allocated to uncommitted shippers in a scenario where, due to a reduction in operating pressure, the pipeline was operating at an annual average capacity below the aggregate committed volume (for example, the pipeline was operating an annual average committed capacity of 250,000 bpd and the aggregate committed volumes were 275,000 bpd).

b) In the scenario described in part a), if uncommitted capacity will be made available, please describe how much (i.e., percentage) and how it will be allocated among uncommitted shippers. If no uncommitted capacity will be made available, please discuss how Enbridge will meet its common carrier requirements.

Response: a) In a situation where there was a reduction in operating pressure for a period of time and the pipeline was operating at an annual average capacity below the aggregate committed volumes, the amount of space allocated to uncommitted shippers would be zero (assuming that committed shippers used all the pipeline space that was available to them).

b) As explained in the Application, 25,000 bpd represents slightly less than 10% of the capacity of Line 9 – which would have an annual capacity of 300,000 bpd.

As noted in the preamble and references, the circumstances of the open season, the capacity commitments that resulted from it, and the reasons why Enbridge decided to maintain 25,000 bpd of uncommitted capacity are discussed in the Application (Adobe page 51 of 54).

Enbridge considers that the proposed 25,000 bpd uncommitted capacity volume, as well as the priorities afforded to uncommitted volumes under the Rules Tariff (as summarized in response to NEB IR 1.4), would enable Enbridge to meet its obligations under subsection 71(1) of the *National*

Energy Board Act in a similar fashion, and to the same extent, as has been regularly approved by the NEB; including recently for Trans Mountain Pipeline ULC ("Trans Mountain") in the RH-001-2012 Reasons for Decision (May 2013 – at pages 33 – 34) ("Trans Mountain Decision").

As described in the Trans Mountain Decision, Chevron Canada Limited and Chevron Canada Resources (collectively, "Chevron") asked the Board to decide that no less than 20% of *actual capacity*, rather than *nominal capacity*, on the Trans Mountain system should be available for uncommitted volumes. Chevron argued that, if there were to be "an issue" with the Trans Mountain system (which presumably could include a reduction in operating pressure), firm and uncommitted shippers should bear that burden equally. The Board denied the request, deciding that the percentage of uncommitted capacity based on the nominal capacity of the Trans Mountain system was appropriate. As Enbridge understands the relevant provisions of the Trans Mountain Rules and Regulations, they would – in all material respects – have the same effect as would their counterparts in the Enbridge Rules Tariff vis-à-vis the availability of uncommitted capacity in the event of a reduction in operating pressure (for example).

For convenience, the following provisions are excerpted from the Trans Mountain Rules and Regulations that were included in the Trans Mountain application:

14.2 Determination of Available Capacity.

- (a) As soon as practical following the Monthly Nomination Date for receipt of Nominations, the Carrier will determine the hydraulic capacity of the Mainline System available for transportation of Petroleum in the following Month (the "Available Capacity"). The determination of Available Capacity will take into account:
 - i) the characteristics of the Petroleum Nominated for the Month;
 - ii) planned maintenance; and
 - iii) (iii) carry-over volumes initially scheduled for Delivery or injection in the prior Month.

- (b) In the case of an event of Force Majeure affecting the Carrier's pipeline system, any resulting reduction in Mainline System capacity will be allocated pro rata to each of the designated capacity categories defined in Rule 14.3.

14.3 Allocation of Available Capacity.

The Carrier will allocate Available Capacity in accordance with the following procedures:

- (a) Firstly, among all Firm Service Shippers Nominating quantities of Designated Petroleum Type for transportation to the Designated Delivery Point, up to a maximum of each such Firm Service Shippers' Monthly Volume;
- (b) Second, subject to Rule 6.8, among Firm Service Shippers Nominating (i) a Petroleum type other than the Designated Petroleum Type, or (ii) to a Delivery Point other than their Designated Delivery Point, up to a maximum of each such Firm Service Shippers' Monthly Volume;
- (c) Third, among Uncommitted Shipper Nominations to Priority Destinations, as approved by Order of the National Energy Board;
- (d) Fourth, among (i) Uncommitted Shippers with Nominations to the Westridge Marine Terminal, subject to Rule 14.4, (ii) Uncommitted Shippers with Nominations to Land Destinations, subject to Rule 14.5.

3.5 *Treatment of capital costs*

- Reference:** i) Filing A3G4R8 Enbridge response to NEB IR No. 1.3 (Adobe page 4 of 46).
- ii) Filing A3G4R9 B8-3 – Attachment 1 to NEB IR 1.1 – Pro Forma TSA, Schedule B (Adobe page 34 of 52).
- iii) Filing A1Y9R7 Enbridge Competitive Toll Settlement, Part VIII, Line 9 Matters, (Adobe page 42 of 122).

Preamble: In reference i), Enbridge explains that planned engineering activities for Line 9B, including \$9.6 million in integrity activities already conducted, are included in the aggregate capital costs used to develop initial tolls and, as such, will be recovered through firm service (committed) tolls and uncommitted tolls.

Reference ii) Schedule B, shows the initial committed tolls as of January 1st, 2013 pursuant to Line 9 International Joint Tariff.

Article 31.11 of reference iii) defines Line 9 Capital Expenditures and explains that such expenditures would include expansion of Line 9 such as expanded pipeline capacity, increased storage capacity, or the creation or expansion of new Line 9 receipt and delivery points. Article 31.12 of the reference also states that Enbridge is responsible for all Line 9 Capital Expenditures on Line 9 during the Term of the CTS.

- Request:** a) Please explain if the initial committed tolls listed in reference ii) include all of the capital expenditures outlined in reference i).
- b) Please discuss if any of the capital expenditures listed in reference i) are considered to be a capital expenditure for which Enbridge is responsible, as defined in reference iii).
- c) Please explain how a deviation from the forecasted amount of capital expenditures listed in reference i) will be recovered through the firm service (committed) tolls and uncommitted tolls.

- Response** a) Yes, the capital costs listed in reference i) are included in the aggregate capital costs used to establish the initial committed tolls listed in reference ii).
- b) Yes, under Section 31.12 of the CTS, Enbridge is responsible for all Line 9 Capital Expenditures during the CTS Term. Sections 31.13 and 31.14 of the CTS provide for Enbridge to negotiate with shippers for projects with expected capital expenditures greater than \$25 million and for standalone

projects which require capital expenditures but are not supported by Enbridge because the associated incremental revenues would not cover the incremental costs. Any deviation from the forecasted amount of capital expenditures listed in reference (i) will be to Enbridge's account.

- c) Please refer to response to NEB IR 3.5b.

3.6 *Economic feasibility and justification*

- Reference:** i) Filing A3H3A8 Enbridge response to NEB IR No.2.1 (Adobe page 1-3 of 14).
- ii) Filing A3H3A8 Enbridge response to NEB IR No.2.3 (Adobe page 8 of 14).
- iii) Filing A3H3A8 Enbridge response to NEB IR No.2.5 (Adobe page 11 of 14). iv) Filing A3D7I1 Application, (Adobe page 51 of 54).
- iv) Filing A3D7I1 Application, (Adobe page 51 of 54).

Preamble: In reference i) Enbridge states that the economic effects of the Project are measured relative to a reference case without the Project (but including the Line 9 Phase I Reversal Project). Enbridge submitted that there would be incremental pipeline transportation revenue of approximately \$50 million annually over 30 years. Enbridge also states that the estimated savings in input costs to Québec refineries from access to lower-priced domestic crude oil as a result of the Project are approximately \$780 million annually over 30 years, based on forecast oil price differentials, throughput of 250,000 barrels per day, and deliveries divided equally between Montréal and Québec City.

Also in reference i), Enbridge explains that using the Statistics Canada Interprovincial Input-Output Model, the direct and indirect labour income increase is nearly \$350 million and the direct and indirect employment increase is approximately 5,500 person-years. Enbridge also provides a breakdown by province of these benefits.

In reference ii), Enbridge describes the feasibility of other transportation methods for delivering Western Canadian and/or U.S. produced crude oil to Québec area refineries. For example, Enbridge states that it may be feasible for other existing pipelines to perform this task, but not before the estimated Project in-service date of 2014.

In reference iii), Enbridge states that if the Project were approved, Western Canadian and Bakken oil producers would have access to a larger market to sell their respective production, which in turn would potentially have a positive impact on their crude netback.

In reference iv), Enbridge explains that a formal binding open season was held allowing shippers to subscribe for capacity on a 10-year term with one five-year renewal option and that upon the close of the open season, Enbridge had received executed Transportation Service Agreements (TSAs) from three counterparties with refining interests in Eastern Canada. The TSA provides

shippers with priority access to capacity in exchange for their significant ship-or-pay commitment to the Project

- Request:**
- a) Please provide the reference case transportation revenues and the assumptions made to calculate the incremental transportation revenue of \$50 million annually over 30 years associated with the Project
 - b) Please provide the input cost saving to Québec refineries specifically for the 10-year term for which Enbridge has ship-or-pay commitments.
 - c) Please discuss the assumptions used to derive the 10-year (from request b) above) and 30-year input cost savings, including: whether the cost savings in both the 10-year and 30-year intervals have been averaged and if so, how Enbridge expects the savings to be distributed over the time periods; and, the level of confidence that the input cost saving provided for the 10-year and 30-year period will be realized, taking into account the possible realization of any of the alternatives described in reference ii).
 - d) Please isolate the direct labour income and employment increase from the figures provided in reference i), including the provincial breakdown, and explain how direct and indirect impacts are defined in the model.
 - e) Please provide an estimate of the potential positive impact on the crude netback discussed in reference iii) and discuss relevant assumptions and factors that influence the estimate.

- Response**
- a) In the reference case (without the Project) Line 9B ceases to operate, no western Canadian and Bakken crude oil is shipped to Montreal, and the associated Line 9 consolidated pipeline revenue requirement equals zero. The Line 9 consolidated pipeline revenue requirement associated with transporting 250,000 bpd of firm volumes in an eastward direction to Montreal was then estimated. The revenue requirement reflects a Transportation Services Agreement for Line 9 between Enbridge and shippers and projected cost of service beyond 2024. The pipeline revenue projection was based on the following assumptions:

In-service date: mid-2014
Project life: 30 years
Capital expenditures: \$121.8 million (2012\$)
Inflation rate: 2%/annum
Spend profile: 2012 (7%), 2013 (51%), 2014 (42%)
Asset category: Station (85%), Tank (2%), G&A (13%)

The Line 9 consolidated pipeline revenue requirement (consisting of operating costs, power, property taxes, depreciation, corporate income taxes

and earned return) was projected to rise from \$42.1 million in year 1 to \$101.6 million in year 30. The total cumulative revenue requirement is \$2,084 million (or \$69.5 million average annual over 30 years). The foregoing are nominal dollars.

In constant 2012 dollars (excluding inflation) the revenue requirements are \$40.5 million in year 1 rising to \$55.0 million in year 30. The total cumulative revenue requirement is \$1,478 million (or \$49.3 million average annual over 30 years).

- b) The input cost saving to Quebec refineries for a ten year term is estimated to equal \$5,539 million 2012 dollars (or average annual amount of \$553.9 million). By comparison, the cost saving over a 30 year term is estimated to equal \$23,512 million 2012 dollars (or average annual amount of \$783.7 million).
- c) See Attachment 1 to NEB IR 3.6.c for the details respecting the calculation of the estimated refiner input cost savings attributable to the Project. The assumptions regarding throughput, the division of deliveries between Montreal and Quebec City, the make-up of the domestic oil deliveries (MSW, Sweet Synthetic and Bakken), and the imported crudes being replaced are shown in the control panel at the top of the table. The projected crude oil prices delivered to the refinery-gate underlying the calculations are shown in the first five columns (2012 Canadian dollars per barrel). The annual savings in refiner feedstock costs are shown separately for Montreal and Quebec City, and the cumulative savings are shown for terms of five, 10 and 30 years.

The savings were measured over varying terms of five, 10 and 30 years to assist in judging the effect of one of the main uncertainties. Even if shorter terms are considered, the economic effects of the Project are shown to be substantially positive.

Reference ii) identified several alternative transportation methods for delivering Western Canadian and/or U.S. produced crude oil to Quebec area refineries including rail, barge marine tanker, other existing pipelines, trucks or a combination thereof. In response to NEB IR 2.3, Enbridge concluded that these options may be potentially feasible but are impractical in terms of economics and efficiency. In the case of other existing pipelines, Enbridge concluded that it was “infeasible for other pipelines to perform this task before the estimated Project in-service date of 2014”. Thus, the other alternatives are not likely to erode the identified input cost savings, particularly in the near to medium term. There is a higher level of confidence that the five year and 10 year savings will be realized than the 30

year savings. The higher level of confidence in the shorter terms is also evidenced by firm shippers' willingness to enter into 10 year ship-or-pay agreements.

- d) Attachment 1 to NEB IR 3.6.d provides the requested breakdown of the employment and labour income effects.

Direct effects include jobs (and associated labour income) created by Enbridge itself and estimated employment (and labour income) in industries from which the Project purchases its inputs (e.g., valves during construction and electric power during operations). Indirect effects are the employment (and labour income) effects on industries that supply inputs to the directly affected industries, and the effects of supplying these industries for all subsequent rounds of spending in the economy.

- e) An analysis of the period 2015 to 2017 indicates that the reversal of Line 9B would increase the average netback price for western Canadian light sweet conventional and light sweet synthetic crude oil by \$0.83 and 1.24/bbl, respectively. The estimated increase for western Canadian heavy crude oil is approximately \$0.36/bbl. The corresponding price increase for Bakken crude oil at Beaver Lodge, North Dakota, is estimated to be US\$0.27/bbl. This estimate of the price effects attributable to the reversal of Line 9B is influenced by: the western Canadian and U.S. crude oil supply forecast; assumptions concerning the availability of other pipelines, such as Keystone XL; refinery capacities and refiner valuations for light crude oils; and pipeline tolls and rates.

The pipeline availability assumptions and the light crude oil supply forecast are likely the most influential of the variables that affect the analysis results. This specific analysis assumes that the Keystone XL pipeline will be commissioned in 2015. Should the Keystone XL project not proceed, the light crude oil price uplift attributable to the reversal of Line 9B would likely increase. With regard to the light crude oil supply forecast, the desirability of accessing the eastern Canada market is influenced by the degree of competitive pressure from other sources of light crude oil supply that western Canadian and Bakken crude oil producers face in alternative North American markets. The attached graph, based upon data from the U.S. Energy Information Administration, illustrates both the rate of change in and the absolute volume of select competing sources of North American light crude oil supply (see Attachment 1 to NEB IR 3.6.e.). Light crude oil supply in Texas and Oklahoma is expected to continue to expand, and further limit the ability of western Canadian and Bakken crude oil producers to market their output in the large Gulf Coast market.

Note that this analysis assumes that the Imperial Dartmouth, Nova Scotia, refinery has been closed, and is no longer a potential market for Line 9B shippers. No attempt has been made to estimate the degree to which the remaining Quebec and Atlantic Canada refineries might act to increase their crude oil runs in response to the closure of a local competitor, and thus increase demand for Line 9B shipments.

3.7 *Emergency Response Financing*

- Reference:** i) Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.12 (Adobe page 22 of 46).
- ii) Filing A3D7J6 Pipeline Compliance and Risk Management – Pipeline Risk Assessment – Line 9B Reversal and Line 9 Capacity Expansion Project (Adobe pages 7-8 of 18).

Preamble: In reference i) Enbridge defined a worst-case spill scenario to be a pipeline rupture.

In reference ii), Enbridge defines the Project to include the reversal of Line 9B to flow from North Westover to Montréal and flow rate increase on Line 9 of up to 47,696 m³/day.

Reference ii) states that a pipeline rupture occurring with the proposed additional capacity of the Project would increase the amount of product released before the pipeline is isolated by approximately 47 m³.

Reference ii) also states that the increase in capacity to Line 9 as a whole yields a minor increase in risk for 0.9% of the pipeline and that, overall, the changes in risk as a result of the Project are minimal, and the risk control and mitigation strategies currently being executed by Enbridge manage these risks.

- Request:** a) Please describe how Enbridge Pipelines Inc. will ensure that it can financially sustain management of all potential risks and liabilities through its financial resources and third party liability insurance, including the additional increase in risk stated in reference ii), that may arise from, among other things, potential accidents, malfunctions, failures during the construction and the operation of the Project. Please include all assumptions made with respect to the total initial volume out (including the incremental volume out of 47 m³) and marginal changes in risk resulting from the Project, as appropriate.
- b) With respect to the third party liability insurance coverage discussed in part a), please provide a summary of the key features of the insurance policy. This summary should include, but not be limited to: limits on insurance coverage, deductible amounts, the risks and perils and properties covered by the insurance policy and the exclusions from coverage. In the response, please give consideration to whether the coverage is for the Project alone or for Enbridge Pipelines Inc. umbrella coverage. Should the coverage be for the latter, please explain how coverage is allocated among other pipelines covered by this insurance policy.

- c) Please describe the Project's access to dedicated and unfettered financial resources from Enbridge Pipelines Inc. should a worst-case spill scenario, or other high impact emergency, occur with respect to the Project.

Response: a) Enbridge is a well-capitalized corporation with a 60 year plus history of mitigating risk exposures related to the reliable operation of its crude oil pipelines. If a release from Line 9 were to occur, Enbridge would be able to satisfy its obligations by drawing upon its substantial financial resources – those at the ready or those available to it after a brief mobilization period. At the ready resources include operating cash flows, draws on Enbridge's \$300 million committed bank credit facility, and insurance policies as described in response to NEB IR 3.7.b.

Additional resources that could be mobilized include further committed bank credit facilities and access to private or public debt markets (especially given Enbridge's A-mid investment grade credit rating).

For the purpose of this response Enbridge has relied on the Revised Pipeline Risk Assessment for assumptions regarding volume out and change in risk from the Project.

- b) Enbridge is covered under a consolidated (umbrella) insurance program maintained by Enbridge Inc. on its various operations and assets that renews annually (on May 1st). The current year's limit of coverage is US\$685 million. Coverage under the program includes sudden and accidental pollution liability events – subject to a US\$10 million deductible/retention - and standard coverage exclusions found in most insurance policies.

Enbridge Inc. reviews its operational exposures and coverage limits at least annually to confirm the adequacy and appropriateness of coverage and limits. Enbridge Inc. has an established allocation methodology (which is based on insurance-based risk and exposure criteria as well as each operation's proportional share amongst the consolidated group), which determines cost and coverage allocation.

- c) The substantial resources of Enbridge and those upon which it could draw (all as described in the responses to NEB IRs 3.7.a and 3.7.b) would be accessible to satisfy obligations and liabilities that may arise in the unlikely event of a worst-case spill scenario or other high impact emergency.

Engineering Matters

3.8 *Internal Corrosion Susceptibility*

- Reference:**
- i) Filing A3D7J4 Line 9B Reversal and Line 9 Capacity Expansion Project - Pipeline Integrity Engineering Assessment (Adobe page 12 of 96).
 - ii) Filing A3D7J4 Line 9B Reversal and Line 9 Capacity Expansion Project - Pipeline Integrity Engineering Assessment (Adobe page 41 of 96).
 - iii) Filing A3D7J7 Line 9B Reversal and Line 9 Capacity Expansion Project – Facilities Integrity Engineering Assessment (Adobe page 14 of 23).
 - iv) Filing A2C0V6 Engineering Assessment for Line 9 Reversal Phase I (Adobe page 22 of 56).

Preamble: In reference i), Enbridge states that a review of the Line 9 Reversal Phase I Engineering Assessment (EA), in consideration of the increased annual capacity and transportation of heavy crude on Line 9A as a result of the Line 9B Reversal and Line 9 Capacity Expansion Project (the Project), confirms the conclusions reached in that EA under the operating parameters proposed for the Project. Enbridge further states that the EA prepared for the Line 9 Reversal Phase I Project and related Information Request responses are therefore applicable to the Project.

Table 4-6 at reference ii) and Table 3-8 at reference iii) present typical properties of crude types proposed to be shipped on a reversed Line 9, from both the pipeline-based EA and the facility-based EA. The Board notes that the properties of the product being shipped will change between light crude and heavy crude.

In reference iv), while discussing its Internal Pipe Corrosion (IPC) susceptibility analyses, Enbridge states that lighter commodities such as light sour blend are typically cleaner (lower sediment and water content than heavier commodities), and that the reduced concentration of corrosive contaminants contained in lighter products decrease the overall corrosion threat under all flow conditions.

Given the differences in crude properties shown in references ii) and iii) and the statements made by Enbridge regarding the comparative corrosivity threat of light versus heavy crudes in reference iv), further information is required regarding anticipated changes to Enbridge's IPC susceptibility analyses for a reversed Line 9 carrying heavy crudes.

Request: Provide a discussion on the anticipated changes to the IPC susceptibility

analyses for Line 9 (Line 9A and 9B) as a result of adding heavy crude to the types of products shipped. The discussion should include, but not be limited to, the following characteristics of heavy crude:

- a) sediment and water content;
- b) temperature;
- c) total sulphur;
- d) organic chlorides.

Response: a - d) The IPC susceptibility analysis uses an empirical modeling of heavy crude transport by volume to assess the requirement for additional internal corrosion mitigation activities. Increasing volumes of heavy crude transportation increases the activities to monitor and mitigate potential internal corrosion, all other factors remaining equal. Potential accumulation of water or sediment will be managed by maintenance (cleaning) pigging planned for Line 9.

While sediment and water ("S&W") content of heavy crude is expected to be marginally higher than the historical average values for light or medium crudes there is no factor in the IPC susceptibility analysis for S&W.

The temperature of heavy crude batches is not expected to deviate beyond Enbridge normal operating experience and will not affect the incidence of internal corrosion.

Total sulfur content of heavy crude batches is not expected to deviate beyond Enbridge normal operating experience. In any event, elevated sulfur levels do not directly contribute to pipeline corrosion and would not affect the incidence of internal corrosion.

Organic chlorides do not affect corrosion at pipeline operating temperatures and will not affect the incidence of internal corrosion. Total acid number of heavy crudes overlaps that of medium and light crudes. Naphthenic acid is not corrosive at pipeline operating temperatures. Total acid and naphthenic acid will not affect the incidence of internal corrosion.

Chloride salt levels of heavy crudes overlap those of medium and light crudes and are not expected to deviate beyond Enbridge normal operating experience. Chloride salt levels will not affect the incidence

of internal corrosion. Reid vapor pressure does not affect the incidence of internal corrosion. Similarly, pour point does not affect the incidence of internal corrosion. Microbes are assumed to be present in all crude streams and do not affect the incidence of internal corrosion. Dissolved gases, including CO₂ and H₂S, are assumed to be present in all streams and do not affect the incidence of internal corrosion.

3.9 Pressure Surge Analysis

- Reference:**
- i) Filing A2R2H5 Line 9 Reversal Phase 1 Project – Mainline Transient Analysis Summary Report.
 - ii) Filing A3D7I1 Line 9B Reversal and Line 9 Capacity Expansion Project – Application (Adobe page 18 of 54).
 - iii) Filing A3D7J4 Line 9B Reversal and Line 9 Capacity Expansion Project - Pipeline Integrity Engineering Assessment.

Preamble: Reference i) was prepared by Enbridge in support of its response to NEB IR 3.8 for the Line 9 Phase I Project. That document concluded that for a flow rate of 140,000 barrels per day (bpd) on Line 9, from Sarnia Terminal to Westover Terminal, the infrastructure in Line 9 mainline will be capable of handling transient events. In addition, Enbridge submitted that a simulated transient event did not cause overpressures exceeding 110% of the maximum approved operating pressure (MOP).

In reference ii) Enbridge has proposed to increase the capacity of the entire Line 9 to 300,000 bpd through the addition of pumps and skids that will inject a Drag Reducing Agent (DRA).

Reference iii) does not include pressure surge analysis for Line 9B, nor does it re-evaluate the pressure surge analysis completed in reference i) with the proposed increase in flow rate to 300,000 bpd.

Request: In a similar format to that of reference i), please provide a Mainline Transient Analysis Summary Report for all of Line 9 which takes into account the proposed increase in capacity to 300,000 bpd. As in reference i), the report should identify worst-case pressure transient scenarios as they relate to the proposed MOP of a reversed Line 9, and discuss mitigation measures if required.

Response: Please see Attachment 1 to NEB IR 3.9.

3.10 *Leak Detection*

- Reference:**
- i) Filing A3D7I1 Line 9B Reversal and Line 9 Capacity Expansion Project – Application (Adobe pages 46-47 of 54).
 - ii) Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.25 (Adobe pages 42-43 of 46).
 - iii) CSA Z662-11 – Oil and Gas Pipeline Systems.

Preamble: Enbridge states in reference i) that it will design its leak detection system in accordance with CSA Z662-11 Annex E. Also in reference i) Enbridge stated that Leak detection thresholds are line specific to reflect the pipeline’s unique design, fluids shipped, and operation.

In reference ii) Enbridge states that the objective of designating the class location is to identify the safety factor needed when determining the pressure design for steel pipe. Enbridge further states that for the Project, there are no additional protective measures required due to class location pursuant to CSA Z662-11.

Table E.1 in reference iii) provides leak detection system parameters based, in part, on class location of the facilities. In addition, Clause 10.3.3.2 in reference iii) states that operating companies shall periodically review their leak detection programs to confirm their adequacy and effectiveness.

Request: Please provide the following:

- a) A discussion of how Enbridge has considered class location in the design of its leak detection system for Line 9.
- b) Using Table E.1 in reference iii) as a guide, describe how the leak detection system proposed for Line 9 will meet or exceed the practices recommended in Annex E of reference iii).
- c) The estimated maximum volume of product that can be released before a leak is detected with the proposed leak detection system for Line 9.
- d) A discussion of how the volume estimated in c) will be used by Enbridge in its periodic reviews of its leak detection programs to confirm adequacy and effectiveness as per Clause 10.3.3.2 of reference iii).
- e) A discussion of how changing the types of products shipped and the injection of DRA in Line 9 affect both the leak detection system

effectiveness and the volume estimated above in c).

- Response:**
- a) Enbridge is committed to employing industry leading leak detection methodologies. This is achieved by meeting or exceeding all applicable engineering standards and regulatory requirements, and by employing the most suitable technologies. Enbridge exceeds the expectations for class locations set out in CSA Z662-11 Annex E table E.1, intervals for data retrieval, maximum calculation intervals, and recommended calculation windows, by applying 5 minute, 20 minute and 2 hour alarm windows, as well as line balance calculations on a 2 and 24 hour period.
 - b) The Enbridge leak detection system exceeds “Annex E” recommendations by using shorter imbalance calculation windows than those indicated in Table E.1. This enhances leak detection by enabling alarm annunciation to occur much sooner than the longer 1 hour and daily windows noted in Table E.1. Each imbalance calculation represents the rolling accumulation of the diagnostic flows within the specified imbalance segment over the designated imbalance window. The accumulation period varies according to the imbalance window as described in response to NEB IR 3.10.a. Imbalance alarms are issued whenever the imbalance calculation value exceeds the designated imbalance window threshold. A 5-minute Material Balance System ("MBS") volume imbalance is a 5-minute rolling accumulation. A 20-minute MBS volume imbalance is a 20-minute rolling accumulation. A 2-hour MBS volume imbalance is a 2-hour rolling accumulation. Imbalance calculations are performed at every time step as data is received and processed.
 - c) Enbridge has conducted analysis of estimated leak sensitivity (and therefore the estimated maximum volume of product that can be released before a leak is detected) for the Project using the API 1149 industry accepted methodology. Attachment 1 to NEB IR 3.10.c summarizes the results of that analysis and indicates the maximum volume that can be released before detection by the Computational Pipeline Monitoring ("CPM") system. Releases below the sensitivity of the CPM would be detected by one or all of the other four overlapping leak detection methods described in further detail below.

The estimated leak sensitivity for the alarm windows, as outlined in Attachment 1 to NEB IR 3.10.c, was generated by using the standard API 1149 methodology, and is an estimate of expected future performance. The detailed engineering has not been completed and therefore baseline assumptions to complete the calculation were made. These assumptions could affect future leak sensitivity results. Assumptions and notations include the following:

- The alarm windows outline ranges of leak sensitivity between flow meter to flow meter sections. The ranges are a percentage of nominal flow;
- Instrument uncertainty values were assumed for flow meters, pressure transmitters and temperature transmitters. The instrument uncertainty values will be finalized during detailed engineering;
- Leak sensitivity is affected by pipeline flow rate.

The sensitivity of the CPM system is estimated to be 2% of nominal flow over a 2 hour alarm window. This would equate to approximately 70.5 m³ (443 bbl) over a 2 hour period, with a flow rate of 47,696 m³ (300,000 bbl) per day. As an example, a 2% discrepancy between an injection and delivery flow rate over a 2 hour time period would result in an imbalance alarm. Leaks below the minimum detectable threshold for the CPM are detected through the other leak detection methods, described below, such as line balance calculations, controller monitoring, third party report, visual surveillance or inline inspection. Alarm thresholds are specific to each pipeline system and the final values for the Line 9 system will be established during the tuning period of system development.

Enbridge is committed to leak detection and applying industry best practices. This commitment will be realized through employing industry-leading technologies, developed processes, and skilled personnel. Enbridge is also committed to continuous improvement of its leak detection strategy which is a comprehensive, multi-layered approach for its pipeline network. The strategy encompasses five primary detection methods, each with a different focus and featuring differing technology, resources and timing. Used together, these methods provide an overlapping and comprehensive leak detection capability.

- Controller monitoring - Controllers monitor pipeline conditions through the Supervisory Control And Data Acquisition ("SCADA") system, which is designed to identify unexpected operational changes, such as pressure drops, that may indicate a leak. The SCADA system also monitors concentrations of explosive vapor, pump seal failures, equipment vibration levels and sump levels.
- CPM - Computation Pipeline Monitoring systems utilize measurements and pipeline data to detect anomalies that could indicate possible leaks. The pipeline monitoring system that Enbridge uses provides a sophisticated computer model of its pipelines and continuously monitors

changes in their calculated volume of liquids.

- Scheduled line balance calculations - These calculations are sometimes referred to as “over/short reports” in the industry and are calculations of oil inventory that are performed at fixed intervals, typically every two and 24 hours. The purpose of these calculations is to identify unexpected losses of pipeline inventory that may indicate a possible leak.
 - Visual surveillance and reports – Enbridge conducts aerial and ground line patrols of its pipelines. In addition, it manages third-party reports of oil or oil odours through its emergency telephone line, and communicates with affected publics and local emergency officials through its public awareness program.
 - Acoustic In-line Inspection – In addition to a comprehensive Integrity Management plan, the regular use of acoustic-based in-line tool technology will detect anomalous acoustic activity associated with leaks or pockets of trapped gas in pressurized pipes. In essence, smart pigs are tuned to 'listen' for leaks. This non-continuous method relies on technology that is designed to detect very small leaks during regular in-line inspection tool runs.
- d) Enbridge would not use the volume estimated in response to NEB IR 3.10.c for periodic reviews. Enbridge uses several more operative techniques to determine the effectiveness of an existing CPM system. Enbridge performs ongoing testing on all CPM systems to understand performance and opportunities for improvement. These methods include:
- Parameter Manipulation test: Enbridge performs annual leak testing of all of the CPM systems using an API 1130 recognized “flow meter parameter manipulation technique”.
 - Simulated leak tests: Simulated leak test data sets are generated and entered into the CPM system to measure performance.
 - Fluid withdrawal tests: Performed annually on selected lines to evaluate CPM performance and to test response procedures. The volume withdrawn required to generate an alarm and the elapsed time to detect are used to determine the effectiveness of the CPM system.

The results feed into a continuous leak detection performance improvement program.

- e) Enbridge's leak detection system is configured to accommodate various

operating factors, including different product types, and DRA. The Enbridge system properly models the impact of DRA. Therefore the effectiveness of the system, and the volume estimated in response to NEB IR 3.10.c, are not negatively impacted by the use of DRA.

3.11 *Emergency Response*

- Reference:**
- i) Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.12 (Adobe page 22 of 46).
 - ii) Filing A3D7J6 Pipeline Compliance and Risk Management – Pipeline Risk Assessment – Line 9B Reversal and Line 9 Capacity Expansion Project (Adobe page 7 of 18).
 - iii) Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.25 (Adobe page 43 of 46).

Preamble: In reference i) Enbridge defines a worst-case spill scenario to be a pipeline rupture. In reference ii) Enbridge states that a pipeline rupture occurring with the proposed additional capacity of the Project would increase the amount of product released before the pipeline is isolated by approximately 47 m³. Enbridge also states that this additional initial volume out has minimal impact on modeled transport impacts to high consequence areas.

In Reference iii) Enbridge states that it maintains comprehensive emergency response plans, developed in consultation with regulatory agencies and applicable stakeholders, that address regional priorities and high risk locations such as key water crossings and residential communities.

Request: Please provide the following:

- a) A demonstration of how the increase in initial volume out value of 47 m³ was calculated in reference ii).
- b) A discussion of the assumptions used in calculating initial volume out including, but not limited to, control centre response time, and valve closure time.
- c) A discussion of whether Enbridge has recent corporate experience with pipeline failures where the assumptions discussed in b) have proven to be non-conservative? Provide examples.
- d) description of how the assumptions discussed in b) and any examples provided in c) have been taken into account for the current Line 9 comprehensive emergency response plans.
- e) What changes, if any, are being made to the Line 9 comprehensive emergency response plans cited in reference iii) as a result of the Project?

- Response:** a) The Revised Pipeline Risk Assessment identifies 95.2 m^3 as the increase in initial flow rate realized by the Project.

The initial volume out is calculated by multiplying the design flow rate by the time that it takes to recognize an incident and close the remote controlled sectionalizing valves. Enbridge uses 10 minutes for the time to recognize the incident and three minutes as the time to close remote controlled valves for modeling purposes.

The design flow rate for the pipeline in its current state is $42,444 \text{ m}^3$ or 29.5 m^3 per minute. Using 13 minutes, the initial volume out is 383.2 m^3 .

The design flow rate for the pipeline after the capacity expansion is $52,944 \text{ m}^3$. Using 13 minutes the initial volume out is 478.4 m^3 .

The difference in volume out is $478.4 - 383.2 = 95.2 \text{ m}^3$.

- b) Initial volume out is the design flow rate x (time to recognize release + valve closure time). For volume released modeling purposes Enbridge uses 10 minutes as the time required to evaluate and respond to a release alarm and three minutes as the time required to close remote controlled sectionalizing valves (three minutes is an Enbridge standard for remote controlled valve closure time).
- c) Enbridge has not had recent corporate experience with pipeline failures that indicate that the assumptions used to calculate the initial volume out are not conservative.
- d) The Emergency Response Plan does not need to be modified in order to accommodate the assumptions discussed.
- e) Changes to the emergency response plans are not necessary.

3.12 *Investigative Excavations*

Reference: Filling A3D7J4 Attachment 7 – Line 9B Reversal and Line 9 Capacity Expansion Project - Pipeline Integrity Engineering Assessment (Adobe page 94 of 96).

Preamble: In the above reference, Enbridge states that prior to the flow reversal and capacity expansion it will execute required excavations and rehabilitate the pipeline to maintain pipeline integrity and meet the required operating parameters as per the Enbridge Integrity Management Plan.

Request: Please provide the following information with supporting detail relative to Line 9 from Sarnia to Montréal:

- a) Is Enbridge presently doing any digs (excavations)?
- b) How many digs are planned over the next 6 month period?
- c) Are there any digs being completed due to integrity requirements specific to the Line 9B project?
- d) What digs, if any, are being completed as part of routine maintenance work (e.g. not as a result of requirements specific to the Line 9 Phase I project or the Line 9B Flow Reversal and Capacity Expansion)?

Response:

- a) At present, Enbridge is not conducting any digs on Line 9A. On Line 9B, Enbridge is conducting one dig and preparing to backfill one dig.
- b) In late 2012 and early 2013, Enbridge ran a suite of ILI tools on the Line 9 pipeline between the Montreal Terminal and North Westover Station, in order to obtain thorough current data on the condition of the pipeline. These tools provide a high resolution scan of the entire pipeline and identify features such as corrosion, cracks or dents. Using the data from the tool runs, Enbridge then determines the features in the pipeline that require further investigation. For each of the areas identified, Enbridge will visually inspect the pipeline to conduct a direct assessment and make any repairs required.

Enbridge is still determining the final number of digs that it will undertake on Line 9 in 2013. Enbridge currently estimates that approximately 600 digs will take place on Line 9 before December 31, 2013. Enbridge will communicate the results of the ILI tool runs, including the number of digs required, to affected landowners and municipalities.

- c - d) Integrity excavations – including those that are being undertaken, or that have been planned, in respect of Line 9 – are completed on a systemic basis as part of the normal operation and maintenance of the pipeline. They are selected, developed and executed by project teams independent of other projects, including the Project that is the subject of the present Application.

Environment Matters

3.13 *Management of Change procedures*

Reference: Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.10 (Adobe page 16 of 46).

Preamble: In the reference, Enbridge states that it updates components of its environmental protection program documents on an ongoing basis. Enbridge uses a management of change (MOC) assurance system to manage changes to its processes and policies.

Request: Please provide records or documents that clearly demonstrate that the MOC process mentioned above has effectively tracked and implemented changes in Enbridge's Environmental Protection Program (EPP) with respect to the Line 9 reversal (for both Line 9A and Line 9B).

Response: To date there have not been any changes required to Enbridge's Environmental Protection Program as a direct result of the Line 9 reversal.

3.14 GHG emissions and energy efficiency

- Reference:** i) Filing A3D7J9 Attachment 9 – ESEIA Part 2, Section 5.1 Air Quality and Greenhouse Gas Emissions (Adobe page 6 and 7 of 37).
- ii) Enbridge’s Corporate Social Responsibility commitment to a Neutral Footprint
<http://www.enbridge.com/AboutEnbridge/CorporateSocialResponsibility/NeutralFootprint.aspx>.
- iii) NEB Filing Manual – Table A-2 GHG Emissions http://www.neb-one.gc.ca/clf-nsi/rpblctn/ctsndrgltn/flngmnl/fmgdA_2-eng.html.

Preamble: Reference i) provides a discussion of the predicted Project interactions with the environment. In Section 5.1.2, Enbridge states that:

As the Project-related changes in total pump horsepower and associated changes in indirect GHG emissions are expected to be less than 1%, the Project is not expected to contribute substantively to a change in GHG emissions on a provincial or national scale.

The Board notes, however, that no quantitative assessment of GHG emissions was provided to support this statement. The Board also notes Enbridge’s public commitment to generate a kilowatt of renewable energy for every kilowatt consumed by Enbridge’s operations as explained in reference ii).

Reference iii) provides guidance for NEB regulated companies on quantitative GHG assessments for projects that result in an increase in GHG emissions.

Request: Please provide the following:

- a) A quantitative assessment of energy use related to Line 9, including:
- a.i) The kilowatt use of the existing Line 9, including, but not limited to, the pump horsepower; and,
- b.i) The kilowatt use of the proposed Line 9B reversal and capacity expansion of Line 9, including but not limited to the changes in pump horsepower.
- b) An analysis of the current energy efficiency of Line 9, a comparison of the existing efficiency and the anticipated efficiency of the proposed Project, and any opportunities to reduce emissions and/or increase efficiency that were incorporated into the design of the proposed Project

- c) A quantitative assessment of GHG emissions from Line 9, including:
 - a.i) The GHG emissions associated with the proposed construction at the Project Sites;
 - b.i) The GHG emissions associated with the on-going, planned operation and maintenance of Line 9 (i.e., integrity digs, etc.);
 - c.i) A discussion of the GHG emissions related to the generation of the energy used in the operation of Line 9; and
 - d.i) A detailed explanation of which emissions from the operation of Line 9 that Enbridge reports in compliance with the applicable provincial and federal GHG reporting requirements.
- d) A discussion of how the energy-use footprint of the proposed Project will be incorporated into Enbridge's corporate commitments, whether the kilowatt for kilowatt commitment can be realized within the region where the electricity for the Project is drawn, and whether the resultant GHG emissions of the energy sources are taken into consideration when the offset kilowatts are selected.

- Response:**
- a.a.i) The kilowatt (KW) use of the existing Line 9 system is approximately 1,500 KW in consideration of current line flow rate of 600 m³/hr and operating philosophy of the system where two mainline pump units and one booster pump unit are required.
 - a.b.1) The aggregate kilowatt (KW) use of the Line 9 System incorporating the proposed Project is approximately 9,500 KW. The increase in kilowatt use is attributable to the increased flow rate of the proposed system.
 - b) The proposed Project will optimize operation of the Line 9 system to increase the efficiency of operating equipment at the expected annual flow rate of 300,000 bpd. This will be achieved through impeller trims of existing pump units at intermediate pump stations resulting in a higher operating efficiency on each unit. Another opportunity to increase efficiency incorporated in the Project design is a plan to procure and install electric motors for the new pump units at each pump station that are more efficient than existing motors currently being used to operate the Line 9 system.
 - c.a.1) GHG emissions as a result of fuel combustion during construction

activities at each Project Site are expected to be localized in extent, short-term in duration, minor in magnitude relative to overall ambient levels, and therefore no quantitative assessment of construction related GHG emissions was conducted.

- c.b.1) Direct emissions from Enbridge operations are associated with the fuel combustion, fugitive emissions, and venting. Indirect emissions from Enbridge operations are associated with the generation of electricity. A quantitative assessment of operational direct GHG emissions associated with Line 9 is problematic, as direct emissions from terminal operations are shared by more than one pipeline and Enbridge calculates direct emissions for the company as a whole. Enbridge has minor direct GHG emissions, and historically emissions related to the Enbridge Eastern Region have been between 1.2 – 1.8kt CO₂e annually.

Indirect GHG emissions will vary depending on pipeline throughput and subsequent pump utilization. The 1% increase in GHG emissions referenced in the ESEIA is based solely on pump horsepower increase. Considering all stations and terminals along the pipeline, the total pump horsepower will increase from about 46,550 hp to 47,000 hp as a result of the Project; this represents a change of 1%. Changes in maximum potential indirect GHG emissions due to electricity consumption are expected to be proportional to changes to the required pump horsepower. Recently, Enbridge has not consumed maximum power along Line 9 due to lower flow rates. Therefore, changes in recent actual and Project expected maximum emissions will be greater than 1%. Actual emissions related to electricity generation for Line 9B have been between 0.75 and 5.4 kt CO₂e. Based on the response to NEB IR 3.14.a.b1 and assuming that the pipeline is operated continuously, it is expected the indirect GHG emissions would be approximately 6.7kt CO₂e. Within a regional context, Line 9B is a low GHG contributor to the provinces of Ontario and Quebec where total GHG emissions related to electricity generation have historically been between 15,000kt CO₂e and over 30,000kt of CO₂e¹, respectively.

Routine maintenance that occurs at terminals and pump stations is accounted for in the current direct emissions and is not expected to change with the Project.

The GHG emissions associated with pipeline maintenance activities, such as integrity digs, depends greatly on the following factors:

¹ Environment Canada (2013) *National Inventory Report, Greenhouse Gas Sources and Sinks in Canada, Part 3*. Canada: Library and Archives Canada Cataloguing in Publication

- type of equipment;
- amount of each type of equipment;
- hours of operation for each piece of equipment required per activity;
and
- type of fuel used in equipment.

Enbridge utilizes local contractors and therefore equipment varies across the system. Predicting emissions from right of way maintenance activities is hypothetical, as the type of equipment varies among contractors. However, these emissions are localized in extent, short-term in duration, and small in magnitude (i.e., similar to local emissions from local roadways).

- c.c.1) Enbridge uses the published average emission factors from Environment Canada to calculate GHG emissions. Provincial average emission factors as well as provincial electrical generation can be found in Tables A13-6 (Quebec) and A13-7 (Ontario) of Environment Canada's latest National Inventory Report, Part 3¹. Based on the annual energy use, Enbridge consumes less than 0.01% of the electricity in Ontario and Quebec, which can also be interpreted as 0.01% of the GHG emissions created through energy generation.

Response: c.d.1) Ontario, Quebec and Environment Canada have GHG reporting requirements, which are based on a direct emission threshold per facility. The thresholds are as follows:

- Quebec: 10 ktonnes of CO₂e
- Ontario: 25 ktonnes of CO₂e
- Environment Canada: 50 ktonnes of CO₂e

Enbridge does not meet the reporting threshold in any of these cases and does therefore not report to these agencies. Please refer to response to NEB IR 3.14.c.b1.

- d) Project-related changes in total pump horsepower and associated increases in electricity consumption will adhere to Enbridge's Corporate Social Responsibility voluntary commitment to a neutral footprint. Enbridge applies its neutral footprint voluntary commitments nationally and offsets

¹ Environment Canada (2013) *National Inventory Report, Greenhouse Gas Sources and Sinks in Canada, Part 3*. Canada: Library and Archives Canada Cataloguing in Publication

its increased electricity consumption from its renewable electricity generation facilities located across the country. GHG emissions are not part of Enbridge's Neutral Footprint program; however they are indirectly addressed through Enbridge's Tree for a Tree commitment.

3.15 *Areal extent of additional lands*

Reference: Filing A3H3T6 B12-6 – Attachment 5 – ESEIA Addendum (Adobe page 3 of 24).

Preamble: The above reference states that additional lands not originally incorporated in the Project scope will be required at the North Westover Station, Hilton Station, Cardinal Station and at the Montréal Terminal. Although the additional lands are located outside the limits of the currently fenced-in facilities, lands for each of the Ontario Project Sites are located within the limits of the Enbridge property boundaries. The additional lands required at the Montréal Terminal will be outside the current Enbridge property boundaries.

Request: Please provide:

- a) The areal extent (square meters) of the additional land required at the North Westover Station, Hilton Station, Cardinal Station and at the Montréal Terminal;
- b) The areal extent of clearing which will be required at each site listed above; and
- c) The areal extent of any permanent footprint expansions.

Response:

- a) Each site will require a temporary area of approximately 4,800 square metres.
- b) No clearing will be required at any of the sites listed above.
- c) No permanent footprint expansions will occur for any of the sites listed above.

Markets and Transportation Matters

3.16 Crude Oil Supply

- Reference:**
- i) Filing A3D7I1 Line 9B Reversal and Line 9 Capacity Expansion Project – Application (Adobe page 24 of 54)
 - ii) Filing A3G4R8 Enbridge Response to NEB Information Request No. 1.5
 - iii) NEB Filing Manual, A.3.1 Supply
 - iv) NEB Filing Manual, A.3.2 Transportation Matters; Projected Throughput.

Preamble: In reference i) Enbridge states that the reversal of Line 9B to Montréal would provide western Canadian and U.S. Bakken producers access to the Québec refining market.

In reference ii) Enbridge states that it is unable to disclose the exact expected throughput to Montréal as it is confidential shipper contractual information. Enbridge also stated that it expects a significant amount of the light crude oil transported on Line 9 will be sourced from the Bakken region and supplemented to a lesser extent with light crude oil sourced from Western Canada. In addition, Enbridge commented that the final types and proportions of Western Canadian and Bakken crude delivered to Montréal will be ultimately determined by the Line 9 shippers.

References iii) and iv) provide NEB Filing Manual requirements.

Request: Please provide:

- a) An approximate range of the projected total oil throughput that would be delivered by Line 9B to Montréal, once the reversed Line 9B is in service (expressed in thousand cubic meters per day with a tolerance of plus or minus 3,000 cubic meters per day).
- b) The approximate relative proportions (in a per cent basis) of western Canadian versus U.S. sourced crude that would make up the throughput given in a).

Response

- a) The projected total oil throughput that would be delivered via Line 9B into Montreal would be determined by the shippers utilizing the pipeline. However, Enbridge anticipates that the majority of the capacity would be

utilized for deliveries to Montreal, which would be approximately 47.7 thousand m³/day.

- b) Enbridge has no direct knowledge of the type/source of crude to be transported into Montreal via the Project as this will ultimately be determined by those shippers that utilize the pipeline. However, in an effort to be responsive to this question, Enbridge contacted the shippers for the Project, who indicated that the type of crude sourced and transported on the pipeline would be determined on a month-to-month basis.