File ADV-PE-LandMC 04
4 March 2010

To: All pipeline companies regulated under the *National Energy Board Act* (NEB Act)
All Parties to RH-2-2008 and Participants to Technical Conference

RH-2-2008 Reasons for Decision
LMCI Stream 3, Pipeline Abandonment – Financial Issues
Technical Conference
Revisions to Preliminary Base Case Assumptions

On 26 May 2009, the National Energy Board (the Board or NEB) issued its RH-2-2008 Reasons for Decision that, among other things, established a set of Preliminary Base Case assumptions to facilitate the filing of preliminary estimates of future abandonment costs. In the decision, the Board indicated that it would hold a technical conference in November 2009 to discuss and, if necessary, issue a revised set of assumptions in February 2010.

On 17 November 2009, the Board held the technical conference and on 7 December 2009, the Board issued a Conference Report summarizing the discussion at the conference.

Having considered all information provided by technical conference participants, the Board has revised certain Base Case assumptions. The Board notes that the process for establishing the amount needed for abandonment purposes is an iterative one, and in many cases, the Board and companies are forging new ground. Even though there is not sufficient information before the Board to support publishing estimated cost factors for abandoning pipelines and facilities, the Board sees value in stakeholders continuing to work toward industry values for unit costs with Board staff. Accordingly, the Board will be communicating with stakeholders on a further process to develop specific estimates for Base Case unit cost factors.

Notwithstanding the outcomes of any further process, the Board expects all pipeline companies regulated under the NEB Act to comply with the deadlines for filings set out in the RH-2-2008 Decision. For ease of reference, certain filing deadlines are provided below. Pipeline companies should refer to the RH-2-2008 Decision for the full details of the Board's expectations and requirements.

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Information To Be Filed	Filing Date	
	Group 1	Group 2
An estimate of abandonment costs and the amount of funds required to be set aside for abandonment	31 May 2011	30 Nov 2011
A proposal for the collection of abandonment funds (Group 1 and Group 2 companies that charge tolls)	30 Nov 2012	30 Nov 2012
A proposed process and mechanism to set aside abandonment funds	30 Nov 2012	31 May 2013

Yours truly,

Anne-Marie Erickson
Acting Secretary of the Board

Attachment

National Energy Board
Revision to Preliminary Base Case Assumptions set out in
the RH-2-2008 Reasons for Decision

1. Background

On 26 May 2009, the National Energy Board (the Board or NEB) issued its RH-2-2008 Reasons for Decision that, among other things, established a set of preliminary Base Case assumptions to facilitate the filing of preliminary estimates of future abandonment costs, proposals to collect abandonment funds and proposed process and mechanisms to set aside abandonment funds. The components of the preliminary Base Case assumptions are:

- Inflation Rate;
- Method of Abandonment;
- Estimated Salvage Value;
- Abandonment Cost Information;
- Economic Life; and
- Return on Funds Collected.

In the RH-2-2008 Decision, the Board indicated that it would hold a technical conference in November 2009 to discuss and, if necessary, revise the Base Case assumptions. The technical conference was subsequently scheduled for 17 November 2009. On 22 September 2009, the Board issued a letter containing the procedures for the conference. Due to the technical nature of the material to be discussed and in order to maximize the productivity of the discussion at the technical conference, the Board requested that conference participants wishing to propose refinements to the Base Case assumptions file written submissions in advance of the conference.

Written submissions were filed by Alliance Pipeline Ltd. (Alliance), Enbridge Pipelines Inc. (Enbridge), Imperial Oil Resources (Imperial), Kinder Morgan Canada Inc. (KM Canada), Kinder Morgan Cochin ULC (KM Cochin), TransCanada PipeLines Limited (TransCanada), Westcoast Energy Inc., carrying on business as Spectra Energy Transmission (Westcoast) and L’Union des producteurs agricoles (UPA).

Following the technical conference, the Board issued a draft Conference Report for comment and allowed participants to file reply comments. The Board also invited participants to provide their suggestions regarding cost categorizations that might be expected to account for major proportions of total abandonment costs. Reply submissions were filed by Alliance, BP Canada Energy Company, Enbridge, KM Canada, TransCanada, Westcoast and UPA.

On 17 December 2009, the Board issued a letter to conference participants seeking further information on abandonment unit cost information. Responses were filed on 18 January 2010 by Alliance, Enbridge, KM Canada, TransCanada, Westcoast and UPA.

This report discusses the views of participants and the Board on each of the above six general components of the Base Case, as well as the following two topics raised by participants:

- Frequency and scope of review of the Base Case assumptions; and
- Potential filing guidance.

The Board considers this decision as one more step in the ongoing work among industry, stakeholders and the Board to ensure funds are available when abandonment activities occur. The Board expects that the process for ensuring funds are available, and the information upon which the process depends, will continue to evolve, through and beyond the timeframe for the Action Plan (May 2009-May 2014) set out in the RH-2-2008 Decision.

The Board stated a number of principles in the RH-2-2008 Decision. All of these principles remain relevant; however, the Board wishes to emphasize two of the principles:

- Pipeline companies are ultimately responsible for the full costs of constructing, operating and abandoning their pipelines, and the Board will hold the regulated company responsible for these costs; and
- Landowners will not be liable for costs of pipeline abandonment.

In light of these principles, the Board re-iterates that, while the Base Case is provided to companies to assist them in preparing a cost estimate, ultimately pipeline companies will be responsible for paying for abandonment activities, and therefore for ensuring that appropriate funds are estimated, collected and set aside for such purposes.

As indicated in the RH-2-2008 Decision, pipeline companies that do not wish to rely on the Base Case assumptions may prepare and file their estimates of abandonment costs according to their own pipeline-specific case. Discussion and supporting evidence should accompany any assumptions the company uses that differ from the Base Case assumptions. As noted at the technical conference, pipeline companies that do not use the Base Case assumptions do not have to prove that their use is inappropriate.

In addition, the Board reminds companies and other stakeholders that the Base Case assumptions are provided for use in developing preliminary estimates of abandonment costs; they do not prescribe the ultimate method of physical abandonment that may be undertaken by a company nor do they fetter the Board’s discretion in terms of its assessment of the appropriate method of abandonment in a specific application.

2. Inflation Rate

In the RH-2-2008 Decision, the Board had set an inflation rate expectation of two per cent per year.

Views of Participants

Alliance stated that cost assumptions should be standardized in a year, but indicated it would use whatever year in which it submits its costs. For economy-wide inflation, Alliance recommended use of the Consumer Price Index.

Enbridge recommended presenting cost assumptions in real, likely 2010, dollars, and that an industry-specific inflation rate assumption is not necessary given its context.

KM Cochin and KM Canada recommended the use of the Bank of Canada inflation target. Additionally, KM Canada suggested that a labour-based index would be appropriate for cost increases of abandonment activities as labour will be the primary component of abandonment costs. KM Canada submitted that it believes including inflation is appropriate in estimating costs; however, if inflation is not included, adjustments would be required to the return on funds collected.

TransCanada proposed applying the Bank of Canada's estimate of future inflation rate rather than the fixed two per cent rate proposed in the preliminary Base Case assumptions. It stated that the rate used should be enduring into the future, therefore both past and forecasted or current information should be considered.

Westcoast suggested the two per cent rate is a reasonable starting point.

Imperial suggested a zero per cent inflation rate as periodic reviews of other assumptions will make inflation of lesser importance. TransCanada expressed concerns that a zero per cent inflation rate could result in intergenerational inequities, although the Canadian Association of Petroleum Producers (CAPP) disagreed with this concern. UPA submitted that a zero per cent inflation rate could be hazardous for the following reasons:

- The length of reassessment period has not yet been determined;
- Even if the costs are essentially reassessed at the start of each period, there will still be inflation throughout the period;
- The longer the reassessment period, the more the costs will increase without inflation being taken into account; and
- Including inflation could avoid transferring costs to another generation.

UPA stated that industry-specific inflation could differ from economy-wide inflation. UPA recommended the formation of a committee to determine which inflation index is the most appropriate for abandonment funding estimates.

Generally, submitters commented that it would be better to rely on the Bank of Canada inflation target than on a "hard-coded" number, such as two per cent. All participants noted that regular revisions would be important to properly calculate cost escalation.

Views of the Board

The preliminary value of two per cent set in the RH-2-2008 Decision did not distinguish between general inflation that has some bearing on potential returns from funds invested, and industry-specific inflation used to adjust costs to a future year. Most participants appeared to be referencing general inflation. In the Board's view, there may be a role for two types of inflation assumptions: an industry-specific inflation for cost escalation and a general economy-wide inflation. However, at this time, the same value can be used for each type of inflation.

The Board currently sees value in relying on the Bank of Canada's inflation target to establish the long-term inflation to be used in the Base Case. To the extent that the Bank of Canada inflation target continues to meet the Board's needs as an external benchmark, the Board will continue to give considerable weight to it in setting the inflation component of the Base Case. The Board will revise the inflation estimate when warranted, as discussed later in this report.

For the Base Case, the Board has determined that the current inflation target set by the Bank of Canada of two per cent per year for expected long-term, inflation is appropriate. The Board notes that actual inflation may fall below or rise above two per cent in the short-term, but would be expected to trend towards two per cent over the long-term.

3. Method of Abandonment

The RH-2-2008 Decision included a table, Table 4-3, containing preliminary assumptions on the method of abandonment based on pipeline diameter and land use. These preliminary assumptions were provided to start discussion regarding the Base Case assumptions and as an aid for companies to use in preparing preliminary cost estimates. The Table is set out below for ease of reference.

Land Use		**Pipeline Diameter**	
		Less than or equal to 203 mm (8")	**Greater than 203 mm (8")**
Agricultural	Crop	Assume 90% abandoned in place with no maintenance; 10% removed	Assume 80% abandoned in place with perpetual maintenance; 20% removed
	Pasture	Assume 90% abandoned in place with no maintenance; 10% removed	Assume 80% abandoned in place with perpetual maintenance; 20% removed
All Other		Assume 100% abandoned in place; 50% with perpetual maintenance, 50% with no maintenance	

Views of Participants

Generally, industry participants preferred Table 1 from the Draft Canadian Energy Pipeline Association Report dated September 2006-April 2007 on "Pipeline Abandonment Assumptions" (CEPA Report) over Table 4-3 from the RH-2-2008 Decision. Various reasons were cited for this preference, including:

- It represents the most up-to-date thinking on the issue of pipeline abandonment methodologies;
- It can be reviewed and changed over time as a result of LMCI Stream 4; and
- It provides a set of method of abandonment assumptions that do not presume any fixed percentage of pipe abandoned in place versus pipe removed and thus allows pipeline companies to reflect the unique circumstances each pipeline faces.

CEPA stated that it is working with the NEB to involve other stakeholders such as landowners in addressing the knowledge gaps in the field of pipeline abandonment.

Enbridge disagreed with the method of abandonment assumptions reflected in Table 4-3 from the RH-2-2008 Decision. It stated that the assumptions are arbitrary, disregard the analysis and research that has been undertaken by the industry to date (for example, in the CEPA Report), and fail to adequately reflect the complexity of the factors that would determine the abandonment methods that would be applied in particular circumstances.

UPA stated that it prefers Table 4-3 from the RH-2-2008 Decision over the CEPA Table 1; however, if the NEB opts to use the CEPA Table 1, the data in the table should not constitute a fixed Base Case. UPA noted that is does not agree with the data contained in the CEPA Table 1, particularly leaving pipelines in agriculture and forestry land on a virtually systematic basis, without monitoring them in perpetuity.

UPA stated that as an alternative to perpetual maintenance, all pipe could be removed from the ground. Alliance contended that full removal of pipe would be incredibly expensive. TransCanada submitted that removal of pipeline could be damaging to the environment.

Perpetual Maintenance

KM Canada noted the lack of definition for the perpetual maintenance concept in Table 4-3 of the RH-2-2008 Decision and suggested changing the term to "Post Abandonment Remediation Provision". KM Canada submitted that it would like to see more of an insurance approach instead, to allow for access to funds in the future if there are problems.

TransCanada stated that the notion of perpetual maintenance of pipelines abandoned-in-place also presents difficult practical challenges. TransCanada stated that it recognizes that there is a need to ensure that there are provisions in place to deal with potential complications in the future. However, rather than dealing with the concept of perpetual maintenance, it may be more appropriate to recognize that potential post-abandonment activities may be required for a pipeline abandoned-in-place once it has been taken out of service. TransCanada suggested that the development of a post-abandonment plan, and the funds required to be set aside for that plan, could be dealt with following the conclusion of the LMCI Stream 4 process[1].

CAPP expressed concern that perpetual maintenance could mean infinite funding for shippers.

UPA stated that, without maintenance or monitoring, future problems would be hard to identify. It expressed concerns about the apparent absence of plans for pipelines located in forestry lands. In the absence of full removal of pipes, UPA asked the NEB to include, in its conditions for abandonment, an appropriate level of perpetual maintenance (to be determined) for all pipelines on agricultural and forested lands. To ensure pipelines do not come to the surface during the freeze/thaw cycle, possibly causing machinery damage, UPA recommended building all new pipelines beneath the frost line.

UPA cited, as applicable to pipeline abandonment, the precautionary principle from Quebec's *Sustainable Development Act*, which states: "When there are threats of serious or irreversible damage, lack of full scientific certainty must not be used as a reason for postponing the adoption of effective measures to prevent environmental degradation."

Above-Ground Facilities and Company-Owned Land

KM Canada recommended excluding above-ground facilities that are on company-owned land from the initial preliminary cost estimate. It submitted that additional work is required to determine the company-specific obligations for above-ground facilities. As the Base Case assumptions are intended to be useful for a wide range of pipelines, KM Canada suggested that the time is not right for introducing this specific item as part of the Base Case assumptions.

TransCanada's view was that above-ground facilities should be included in the preliminary cost estimates.

Views of the Board

The Board recognizes that Table 1 in the CEPA Draft Report represents the pipeline industry's most up-to-date information available on abandonment methods and agrees that it provides a better framework for purposes of estimating abandonment costs than Table 4-3 from the RH-2-2008 Decision. Table A-1 in Appendix A of this Decision provides a framework by category of land-use and pipe diameter. It is reasonable to expect that land-use identification is probably the first step in developing preliminary estimates.

As for entries within the cells of Table 1, the Board notes that the disclaimer at the beginning of the CEPA Report states that it was prepared by a working group of CEPA and that the working group included representatives of CEPA member companies. While CEPA stated that it is

1 The LMCI Stream 4 process dealt with the physical aspects of abandonment. An action item coming out of that process was that a multi-stakeholder committee will be established to identify and potentially address knowledge gaps relating to physical abandonment.

working to involve other stakeholders, at the time Table 1 was published, landowners and other stakeholders may not have been involved in the development of Table 1 in the CEPA Report. As a result, the Board has retained some aspects from Table 4-3 in the RH-2-2008 Decision, and has applied these aspects to the refined framework which is based in-part on Table 1. In particular, for Base Case cost estimating purposes for the categories “Agricultural, Cultivated”, “Agricultural, Non-Cultivated”, and “Non-Agricultural, No Future Development Anticipated”, the Board has provided an assumption of 80 per cent of pipeline to be abandoned in place and 20 per cent to be removed. This is reflected in Table A-2 in Appendix A. The pipeline diameter categories are slightly different than those in Table 4-3 of RH-2-2008. The Board has applied the A:80 (R:20) assumptions to all pipe diameters for those three land uses for reasons of simplicity and conservatism.

The Board notes UPA’s comments that the entries in the table should not be set in stone and UPA’s willingness to participate in discussions on the entries to this table on a go-forward basis. The Board encourages industry to consult with landowners and other interested stakeholders regarding modifications to Tables A-1 and A-2 prior to coming to the Board requesting revisions, or prior to any review of the Base Case assumptions that may be undertaken.

Perpetual Maintenance / Post-Abandonment Activities

Many participants submitted that the term “perpetual maintenance” used in the RH-2-2008 proceeding and decision was unclear. The alternative suggested by some industry participants during the technical conference was to change the term “perpetual maintenance” to one which reflects the concept of ensuring there is financial provision for post-abandonment activities. The Board is of the view that the suggested change would clarify the intent of the assumption. Accordingly, one of the cost categories incorporated into the Base Case Table A-3 in Appendix A reflects this change in terminology; it is now entitled “Provision for Post-Abandonment Activities”.

The Board notes that UPA submitted that there should be funds for periodic monitoring and for contingencies for unforeseen events. For greater certainty, the category “Provision for Post-Abandonment Activities” is intended to include both the on-going monitoring of pipelines that are abandoned in-place and contingency funding for any unforeseen events.

The Board acknowledges that the activities that are to be accounted for in "Provision for Post-Abandonment Activities" may not be fully understood by all stakeholders at this time. It is anticipated that this category and the activities it encompasses will be further refined as more information and experience is obtained. Nevertheless, pipeline companies should include a preliminary estimate of costs for post-abandonment monitoring and contingencies in their preliminary cost estimates that are due in May and November 2011.

Above-ground facilities and Company-owned land

Participants at the technical conference requested clarification from the Board whether above-ground facilities and facilities on company-owned land should be included in the estimates of total abandonment costs.

The Board notes that while above-ground facilities were not expressly mentioned in the RH-2-2008 Decision, the definition of "pipeline" in the NEB Act includes "all branches, extensions, tanks, reservoirs, storage facilities, pumps, racks, compressors, loading facilities…". All facilities, above-ground and below-ground, that are part of a regulated pipeline system will be abandoned at some point. The Board's decision in RH-2-2008 therefore applies to all "pipelines" regulated under the NEB Act, whether above-ground or below, although it is recognized that the method of abandonment may be different for above-ground facilities than for below ground pipe. Accordingly, the Board expects the costs of abandoning above-ground facilities to be part of the preliminary estimates of abandonment costs to be filed in 2011.

Further, the same type of facilities could be located on company-owned land or on land that is not company-owned. Facilities on company-owned land will also need to be abandoned at some point and the funding to pay for this abandonment will need to be available at that time. The Board acknowledges that further information, experience and research may be needed to allow companies to fully determine the amount by which the costs of abandoning facilities on company land differ from abandoning facilities not on company land, based on potentially different environmental or legal obligations or abandonment methods. However, all assumptions in the Base Case are, at this point, preliminary. All estimates relying upon such assumptions will benefit from additional information and experience obtained. Such information and experience will play a large role in any future review processes established for Base Case assumptions and abandonment funds. As a result, any lack of certainty today is not sufficient reason to exclude facilities on company-owned land from preliminary estimates. Therefore, the Board expects facilities on company-owned land to be included in the preliminary estimates of abandonment costs to be filed in 2011.

> As noted previously, Table A-2 in Appendix A of this decision may be used by companies to determine the method of abandonment of all facilities for the purpose of preliminary cost estimation.

4. Estimated Salvage Value

The RH-2-2008 Decision set out a preliminary assumption of zero for the value of any facilities salvaged during abandonment activities.

Views of Participants

All written submissions received prior to the technical conference were unanimous in their support for retaining the Board's preliminary assumption of zero salvage value at this time, as it was viewed as a reasonable and conservative assumption. Many submissions suggested there should be periodic reviews of this assumption.

At the technical conference, there was some discussion about the salvage value of above-ground facilities and a value of 15 per cent was mentioned by KM Canada. However, others generally agreed that using a zero value for above-ground facilities was appropriate for now, with regular reviews. For underground facilities, there continued to be general agreement that a value of zero is the conservative assumption and is fine for now, with a suggestion for regular reviews.

> ***Views of the Board***
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> The Board is of the view that the initial assumption in the RH-2-2008 Decision for salvage value of zero remains appropriate at this time, including for above-ground facilities. This assumption will be reviewed over time and could be revised in the future should circumstances or information change.

5. Abandonment Cost Information

Given the lack of better information provided by parties during the RH-2-2008 proceeding, the Board in the RH-2-2008 Decision suggested that pipeline companies use the data in the Oil and Gas Journal Survey (OGJ)[2] as a starting point in estimating abandonment costs. It was anticipated that further information would be gathered on this assumption through the technical conference process.

Over the course of the process to revise the Base Case assumptions, the Board requested that participants provide their suggestions regarding cost categorizations that might be expected to account for major proportions of total abandonment costs. In December 2009, after the technical conference, the Board compiled a draft cost grid and sought input on the table and on unit cost information for each major cost category in the table.

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2 This OGJ Survey was marked as Exhibit C-26-12 in the RH-2-2008 proceeding.

Views of Participants

Many participants suggested that the Base Case unit cost estimates should use principles rather than numbers. Further, some suggested that the Board lead a process to develop these principles. All industry participants strongly recommended that the cost data from the OGJ not be used.

Alliance submitted that abandonment costs should be determined on a case-specific basis, although it did not provide details of how this case-specific determination would relate to the Base Case assumptions. Alliance suggested that the costs of pipeline removal for large diameter pipe could be 50 per cent of pipeline installation cost, rendering removal cost-prohibitive.

Enbridge suggested much more work is required before a cost can be assigned to any post-abandonment requirements, and that the appropriate forum for this is the LMCI Stream 4 process, not the technical conference. Enbridge argued that geographical differences must also be considered with cost-estimates.

KM Canada suggested allowing the large pipelines companies such as KM Canada to produce their own estimates, and industry to collaborate to develop Canadian cost benchmarks (particularly for the benefit of companies with smaller pipelines that are similarly geographically-situated). KM Canada suggested the Board should ask for the abandonment cost information in a fairly detailed manner, which would allow the Board to then use this information to develop averages for Group 2 companies.

TransCanada recommended that the Board develop a process whereby pipeline companies would submit to the NEB, on a periodic and confidential basis, the costs of conducting certain activities that in aggregate would be reflective of the activities required to abandon a pipeline. TransCanada suggested that any pipeline (Group 1 or Group 2) could submit estimates to the Board. TransCanada further recommended that the NEB generate abandonment costs using the submitted data as applied to the factors set out in Table 1 of the CEPA Report. With respect to this proposal, KM Canada, TransCanada, Enbridge and Westcoast all noted that confidentiality of submissions could be a concern.

Westcoast submitted that companies should be able to rely on their own cost data and methods for estimating pipeline abandonment costs, but provided no details as to how this could be reflected in the Base Case assumptions.

Imperial suggested that, given all Group 1 companies appear to have decided to use their own unit cost estimates, cost assumptions would effectively be available after May 2011. After filing of these costs by Group 1 companies, the Board would be able to understand and publish Base Case cost assumptions based on the 2011 submissions for use by Group 2 pipeline companies. Imperial noted that when parties file abandonment plans, shippers will want to see third-party verification of estimates.

While accepting industry reservations about using the OGJ as a starting point for cost estimates, UPA noted that the OGJ provides useful information on the substantial differences between estimated and actual pipeline construction costs.

In response to the Board's post-technical conference inquiries on cost categories, most responders submitted that the Board's December 2009 draft grid was a good step forward. Several pipeline companies provided detailed comments on the list of activities included in each category, as well as refinements in the bases for the cost factors and suggestions to clarify wording.

Enbridge stated that if the categories are specific, rather than general, then the cost factors could prove to be prejudicial to pipelines in their negotiations with potential counterparties (for example, landowners and contractors), irrespective of whether the pipeline in question elected to rely on the Base Case assumptions. UPA submitted that it found the broad categories in the December 2009 draft grid to be appropriate.

Many of the submissions regarding the December 2009 draft grid also proposed that cost categories be combined, although there was no consensus on the appropriate combinations. In addition, many of the submissions requested that further work be done prior to the Board releasing its decision on the values to be used for abandonment costs. The further work could be led by the Board or by industry. All industry participants noted that providing cost factor values at this time is premature and that more time is needed to determine values that are meaningful.

All industry participants suggested a collaborative process with regulated pipeline companies, CEPA and the Board as a way to move forward to attain industry-wide averages. Participants submitted that this process would not impede the May 2011 deadline for Group 1 companies to file cost estimates.

UPA noted that it was not able to assign monetary values to the broad categories, but suggested that the Board exercise vigilance to ensure the funds to be collected are determined as fairly as possible.

Views of the Board

The Board appreciates the assistance provided by all participants on the definitions of cost factors. After considering the submissions, the Board has revised the grid (See Table A-3 in Appendix A of this decision).

The Board accepts most of the wording changes submitted by participants to improve the understanding of cost categories. One exception is the suggestion to include the costs of abandonment fund management in this grid. Abandonment fund management is more appropriately part of the computations for determining revenue requirement to cover costs, and not part of the costs of abandonment activities themselves. Furthermore, the value attributed to abandonment fund management could depend on the number of years funds are collected and the mechanism used to manage the funds. Incorporating such a value into the preliminary estimates of abandonments costs could improperly make the estimate of future Abandonment cost depend on the time period or mechanism used.

Many of the comments regarding combining categories were only partially accepted. Given the absence of filings concerning the value of cost factors, the benefit of certain combinations is unclear. In fact, industry-wide consensus on average values for the cost factors may be more easily attained if the breakdown is maintained. Breaking down the categories may also assist the Board in understanding ranges and divergence of opinion.

A number of ongoing abandonment planning-type costs have been excluded from the grid. The Board recognizes that these may be legitimate costs incurred in the planning of abandonment; however, the Board is of the view that these costs will occur over time and may be more appropriately considered part of operating expenses of the pipeline companies.

Table A-3 provides the updated grid with broad categories and activities that may be included in these categories as well as the basis for the cost factors.

At this time, the Table does not contain any values under the estimated cost factor column, because there is not sufficient information before the Board to support publishing estimates of unit cost factors for abandoning pipelines and facilities. The process for establishing the amount needed for abandonment purposes is an iterative one, and in many cases, the Board and companies are forging new ground. However, the Board is of the view that the lack of adequate information is not sufficient to prevent the Board from releasing a revised Base Case, even if it means releasing a framework rather than the values themselves.

In order to progress from a framework to unit cost values, the Board sees merit in suggestions that stakeholders continue to work toward assigning industry-wide values (averages or ranges) to the categories identified in the Table A-3 rows. Further, the Board sees merit in continued involvement of Board staff. Accordingly, communication will be forthcoming on a further process to continue this effort. If values cannot be obtained through this process in a timely manner, pipeline companies will at least have the framework set out in this revised Base Case for guidance in preparing their preliminary estimate.

Notwithstanding the outcomes of any further process, the Board expects all pipeline companies regulated under the NEB Act to comply with the deadlines for filing set out in RH-2-2008 Decision.

6. Economic Life/Collection Period

Although the Base Case components "Economic Life" and "Return on Funds Collected" do not need to be used for the 2011 filings of estimated abandonment costs, they are part of the Base Case. These assumptions are necessary for the derivation of revenue and toll impacts of the abandonment funding. These later steps, and the deadlines for each step, are set out in Steps 6 to 9 of the Action Plan in the RH-2-2008 Decision.

The RH-2-2008 Decision set out a preliminary assumption of 40 years for the economic life of a pipeline.

Views of Participants

Rather than the term "Economic Life" used in the RH-2-2008 Decision, Alliance recommended that the better term to use in the context of pipeline abandonment would be "Useful Life". It further contended that there are many inherent difficulties in setting a generic value for useful life.

Westcoast proposed the term "Collection Period" to replace "Economic Life". It proposed that the Collection Period could be much longer than economic life used for depreciation of individual assets.

Enbridge contended economic life for abandonment should reflect the life span of the pipeline system. Enbridge stated that use of the term "Collection Period" would lead to less confusion than the term "Economic Life." Enbridge also noted that it is possible that there could be circumstances where the collection period ends before the useful life ends. The setting of a collection period that ultimately proves to be too long results in an unfunded liability. Enbridge stated that this risk is the responsibility of the pipeline company and motivates the pipeline company to collect the right amount of funds. Enbridge also submitted that there should not be a distinction made between new and existing pipelines as the potential life span of any pipeline is tied to the resource base.

KM Canada similarly recommended a change of terminology to "Collection Period". It proposed using two to three times economic life used for depreciation, or approximately 60-90 years. KM Cochin argued that 90 years was a justifiable length. KM Canada submitted that new pipelines use a supply and market study to determine economic life and base estimates on this study.

KM Canada encouraged the Board to set a maximum number of years or a maximizing principle to ensure that i) collection can commence as soon as practical, ii) that all pipelines will commence collection on or about the same time and, iii) the application of the Base Case assumptions results in a meaningful annual contribution to the abandonment fund.

TransCanada proposed the term "Useful Life" and cited support from the Canadian Institute of Chartered Accountants (CICA) Handbook that useful life would ensure that the recovery period will align with the length of time a pipeline system is being used to transport product and generate cash flow. After hearing other participants' submission, TransCanada indicated that it supported the use of the term "Collection Period."

According to TransCanada, in terms of assigning a value to the Collection Period, a "hard-coded" number should not be used. Instead, the collection period should be principle-based, taking into account a number of factors. According to TransCanada the benefits of principle-based guidance are:

- Provides guidance while allowing for flexibility, allowing pipeline companies to reflect their individual circumstances;
- Better represents the practical realities of pipeline abandonment; and
- More easily accommodates changes in relevant technology and economic conditions and decreases the need to continually revise the Base Case assumptions.

TransCanada submitted that the following factors should be considered in determining the collection period. .

- Supply and market outlook (including competitive dynamics);
- Technological progress;
- Future use of the pipeline system;
- Physical wear and tear;
- Environmental; and
- Public policy (e.g. greenhouse gases).

Westcoast supported TransCanada's comments, while UPA proposed different treatment of economic life for new and for existing pipelines: 50-60 years for new pipelines and 40 years or less for existing pipelines, especially if the end of the life is foreseeable.

Views of the Board

Terminology

The Board notes that the term "Economic Life" is used in relation to depreciation studies and asset life and has different definitions attached to it. The term "Useful Life" poses a similar problem in that it also has definitions and uses already attached to it and may only serve to shift the confusion. The Board finds the term "Collection Period" to be clear and better aligned with the intended purpose of this assumption. The Board approves the change in terminology for this assumption.

Principle-based Assumptions

The Base Case assumptions are provided to facilitate the filing of preliminary estimates of future abandonment costs and future collection and set-aside mechanisms filings for those companies that wish to rely on these assumptions. In the Board's view, providing only principle-based assumptions does not provide the assistance that was intended. Additionally, the Board anticipates review of the Base Case assumptions as more information and experience is obtained. The Board sees value in continuing to provide "hard-coded" numbers in the Base Case. Pipeline companies that wish to reflect their own individual circumstances are free to do so in a pipeline-specific filing.

Length of Collection Period

Many of the submissions and comments at the technical conference promoted a reliance on principles or formulas that could result in a collection period greater than the 40-year maximum set out in the RH-2-2008 Decision. In the RH-2-2008 proceeding, suggestions of a longer time period were likewise submitted; however, the Board chose not to follow these suggestions, instead using a 40-year economic life based on the principles in the CICA Handbook. During the process to revise the Base Case, no participant provided persuasive information that another alternative was justified for the Base Case. As a result, the Board has decided to retain the maximum 40 years for the Base Case Collection Period.

The Board reminds companies that they are responsible for ensuring that the assumptions used, including the assumption of collection period, are sufficient to ensure funds are available when abandonment occurs. Therefore, if the 40-year time frame is viewed as being too long, companies should use a shorter span for their Base Case Collection Period.

7. Return on Funds Collected

In the RH-2-2008 Decision, the Board set 4.5 per cent as a Base Case assumption for the rate of return on funds collected. This assumption was based on long-term bonds, and on a period of time with an inflation rate of two per cent, which would make the proposed rate of return and the inflation consistent.

View of Participants

Alliance suggested the Board use the "best available forward-looking material" and not historical averages.

Enbridge offered no specific alternative to the 4.5 per cent assumption, but wanted the companies to be able to seek higher returns through a prudent mix of equity and bonds, especially where the investment horizon is long. Enbridge further explained that a prudent portfolio, properly managed, is to the benefit of the toll-payer.

KM Cochin and KM Canada suggested that the 4.5 per cent assumption reflected an aggressive portfolio structure, possibly appropriate for the long-term, but not appropriate for short-lived pipelines. KM Canada suggested a rate of 1.6 to 1.8 per cent pre-tax or 1.2 to 1.3 per cent after tax for short-lived pipelines. It also requested that it be clarified that any earnings on the funds will be taxable at each entity's corporate tax rate.

TransCanada expressed concern with applying a rate of return based on historical data and suggested that the investment criteria and resulting rate of return be a function of the position of the pipeline in its lifecycle. TransCanada stated that as the pipeline approaches the time for abandonment, the investment criteria should have greater restrictions to ensure the availability of funds.

Westcoast proposed the funds should be invested conservatively and that the use of Bank of Canada long-term bond yields is appropriate at this time. However, it noted that it is open to having a portfolio with a mix of bonds and equity.

Imperial advocated for a portfolio in which capital preservation was the main goal. Additionally, it raised the topic of alignment between the party responsible for managing the risks of the portfolio and the party responsible to pay the shortfall if there is one. It suggested it would be problematic if the pipeline company was taking the portfolio risks and shippers were paying for any shortfall. In response, TransCanada submitted that the pipeline company would not make investment decisions in isolation.

UPA submitted that it favours a low-risk portfolio and proposed that all pipeline companies use guaranteed investments to ensure amounts collected are not jeopardized by market fluctuation. It proposed a 10-year average of the long-term Bank of Canada return, for all periods.

At the technical conference, a question also arose as to whether the rate is a discount rate or a return on funds collected. Participants asked the Board to clarify this aspect of the assumption. Also, several conference participants raised a question of whether the return was a pre-tax or post-tax rate.

Views of the Board

In the Board's view, the language throughout the RH-2-2008 proceeding and Decision supports the position that this rate is a potential rate of return on funds collected and not a discount rate.

Pre-tax or Post-tax Rate

The Board notes that pipeline companies may face different tax rates depending on, among other factors, the province in which they operate. Articulating the return as pre-tax allows companies to reflect the individual tax rates they actually face. It also means that the Base Case would not necessarily need to change with future potential changes in tax rates or policy. The return on funds collected should therefore be considered to reflect a pre-tax rate of return.

Setting a pre-tax rate does not mean, however, that funds would accumulate at the pre-tax rate published by the Board. Each company should estimate their own after-tax rate of return by using their company tax rate and the pre-tax rate of return. Appendix B of this decision provides an example of how this calculation may be done.

Whether to Set One or More Rates over the Collection Period

TransCanada spoke of its interest in using rates of return reflecting investment portfolios appropriate to the life stage of a pipeline. This approach would entail portfolios that become less risky as abandonment nears.

In the Board's view, the option of articulating more than one portfolio risk profile and associated rates of return in the Base Case adds unnecessary complexity to the Base Case. Pipeline companies are free to propose such an alternative to this Base Case assumption in a company-specific filing, should they so desire.

What Rate to Use

The Board is of the view that the rate of return on funds collected for the Base Case should be based on a conservative, low-risk portfolio with a goal of capital preservation. Given this view, the Board has determined that the yield from Government of Canada marketable bonds is an appropriate proxy for that portfolio. Over the past decade, these marketable bonds have averaged 1.4 to 1.5 per cent above the rate of inflation. Given the 2 per cent inflation rate discussed in section 2 above, the Board has decided that 3.5 per cent is the appropriate pre-tax rate of return to be used for the Base Case. The Board reminds pipeline companies that they are ultimately responsible for the full cost of abandoning their pipelines, and an inability to maintain capital would not relieve them of this responsibility.

<u>Potential Higher Return on Funds</u>

The Board notes that companies not satisfied with using the Base Case assumption on the rate of return may propose other assumptions in their 2012 filings. For pipeline companies with sufficiently long collection periods, higher returns may be feasible, with a correspondingly higher risk portfolio. However, in any such proposal, the Board would expect there to be clear articulation of the allocation of risk and return among shippers, the pipeline and any affected public for the Board's consideration as well as a discussion of whether the pipeline company has the support of interested parties for a higher return. Such filings will be decided on their individual merits.

8. Frequency and Scope of Review

In some of the written submissions and at the technical conference, participants indicated that reviews of the Base Case assumptions should occur on a regular basis, for example every five years. TransCanada noted that the Board could set time periods for review of the Base Case assumptions or there could be other factors that would trigger the need for review, for example, after conclusions are released from the LMCI Stream 4 process that might affect the assumptions on method of abandonment.

Views of the Board

The Board's objective is to update the Base Case for as long as it is useful in preparing, revising and evaluating early estimates of costs for abandonment funding. However, the Board will also take into account uncertainty that could result from variables changing too often, especially when several companies might be in the midst of their own updates.

Accordingly, the Board intends to revisit the Base Case assumptions at least every five years. All components of the Base Case will be open to revision at that time. The timing of the update may be at the Board's own initiative in view of new information, based on continuing examination of relevant parameters, or in response to a request from interested parties. The update will most likely occur when new relevant information is available.

This update of the Base Case assumptions is not to be confused with other reporting or updates contemplated in the RH-2-2008 Decision; such as:

- Routine reporting (which could be annual) on the progress of collection and fund performance; and
- Company updates to incorporate new information on their pipeline system, any new parameters, and any updates to proposed proportions of removal used for cost estimation

(which might result from discussions with landowners), which updates are required to be made periodically, but at intervals not longer than five years.

9. Filing Guidance

Enbridge asked whether the Board would provide guidelines for the filing of abandonment cost information and whether the pipeline companies would have the opportunity to participate in the formation of those guidelines.

Views of the Board

As the process for the collection of funds for abandonment is new, the Board sees value in providing guidance for the filing of abandonment cost information. Appendix A contains such guidance on filing, albeit preliminary guidance. The Board has decided that, due to the timeframes for filing set out in the RH-2-2008 Decision, it was important to provide some initial guidance to pipeline companies to assist them in preparing their abandonment cost estimates, and preparing for the subsequent steps set out in the Action Plan in the RH-2-2008 Decision.

While the guidance is provided to assist companies in their filings, the Board notes that the preparation, review (by all parties) and the Board's assessment of filings may be more efficient when information follows a common format as provided in the filing guidance. While individual companies may undertake as detailed assessment as they see fit, the reporting of such assessment would be most helpful to the Board if a common format was followed for filing purposes. Therefore, the Board expects companies to make use of such guidance to the extent possible, or to justify why they are unable to do so.

Tables providing initial filing guidance on developing preliminary estimates of abandonment costs are included in the Appendix A, as Tables A-1 to A-4. Appendix B provides additional guidance on calculating the annual contribution, which companies may find helpful in preparing for the subsequent steps in the Action Plan.

Future Guidance

The Board recognizes that companies and other stakeholders might have additional ideas on future filing guidance that would be useful for all companies. Also, the Board notes that participants have requested an opportunity to comment on the development of filing guidance. Therefore, any regulated company or interested person that has suggestions for further filing guidance related to abandonment funding is invited to contact the Board with their suggestions. The Board anticipates that it could issue some further filing guidance, if necessary, prior to the May 2011 filings of preliminary cost estimates by Group 1 companies, and later as the need arises.

In the RH-2-2008 Decision, stakeholders and the Board were encouraged to look for ways to increase efficiency during the Action Plan timeframe. Building on this, the Board encourages stakeholders to collaborate and to standardize any definitions and components used in investment policies and governance. Such standardization could facilitate the filing, and the Board's assessment of filings, under Steps 6 and 9 of the Action Plan set out in the RH-2-2008 Decision, relating to the process and mechanism to set aside the funds for abandonment purposes.[3] If appropriate, such standardization could be incorporated into future filing guidance.

10. Revised Base Case Assumptions

The following table summarizes the revisions made to the Base Case assumptions as a result of the submissions made during the Technical Conference process and the Board's reasons for decision set out herein.

Table 10-1
Revised Base Case Assumptions

Method of Abandonment	See Tables A-1 and A-2 in Appendix A for the framework and assumptions to use for the purpose of preparing preliminary cost estimates.
Abandonment Cost Information	See Table A-3 for cost factor definitions. Industry-wide cost factor values (averages or ranges) may be incorporated into Table A-3 at a later date.
Estimated Salvage Value	Zero
Inflation Rate	2 per cent (reflects Bank of Canada target)
Collection Period	Maximum 40 years (based on recommendations in CICA Handbook for estimating life of long-term capital assets)
Return on Funds Collected	3.5 per cent, pre-tax

3 Examples of standard elements that could be developed include definitions of the investment options to be made available; the liquidity of the investment options; the level of risk associated with the investment options; the fees associated with the investment options, (regardless of whether they are allowed to be recovered), such as the costs that must be paid when investments are bought or sold; costs associated with accessing or using any of the investment information, decision-making tools or investment advice; investment fund management fees; investment fund operating expenses; record keeping fees; and account fees.

11. Disposition

The foregoing constitutes our Decision and Reasons for Decision on this matter.

L. Mercier
Presiding Member

G.A. Habib
Member

S.J. Snook
Member

Calgary, Alberta
March 2010

Filing Guidance Appendices

This Filing Guidance includes:

Appendix A	Guidance on documenting the estimated cost of future abandonment activities needed for the 2011 filings; and
Appendix B	Guidance on converting the total cost estimate to an estimated annual contribution needed for the 2012 and 2013 filings.

Appendix A Estimates of Abandonment Costs

In order to prepare preliminary cost estimates using either the Base Case or pipeline-specific assumptions, there are generally four steps to follow:

- Land-use analysis (see Table A-1);
- Method of abandonment for the purposes of cost estimates (see Table A-2);
- Cost estimates (see Table A-3); and
- Total costs estimate (see Table A-4).

Step 1: Land-use analysis – Use the following table to determine the number of kilometers of pipeline in each land-use and pipeline-diameter category. For the Above-Ground facilities, determine the facilities and the units (for example, number of tanks or compressors) to be abandoned.

Table A-1: Framework for Land-Use Analysis, For the Purposes of Estimating Preliminary Cost Estimates

Land Use		**Pipeline Diameter**			**Above-Ground Facilities**
		2" to 12" 60.3 to 323.9mm	14" to 24" 355.6 to 610 mm	>26" >660 mm	
Agri-cultural	Cultivated				
	Cultivated with special features				
	Non-Cultivated				
Non-Agri-cultural	Existing Developed Lands				
	Prospective future development				
	No future development Anticipated (e.g. forest)				
Other	Environmentally Sensitive Areas				
	Roads & Railways				
	Water Crossings				
	Other Crossings (Utilities)				

Step 2: If using the Base Case, apply the entries in Table A-2 to the entries in Table 1 to determine the Method of Abandonment for the purposes of cost estimation.

Table A-2: Physical Assumption by Land Use and Facility For the Purpose of Estimating Preliminary Cost Estimates

Land Use		Pipeline Diameter			Above-Ground Facilities
		2” to 12” 60.3 to 323.9mm	14” to 24” 355.6 to 610 mm	>26” >660 mm	
Agri-cultural	Cultivated	A: 80% (R: 20%)	A: 80% (R: 20%)	A: 80% (R: 20%)	R
	Cultivated with special features	R	R	R	R
	Non Cultivated	A: 80% (R: 20%)	A: 80% (R: 20%)	A: 80% (R: 20%)	R
Non-Agri-cultural	Existing Developed Lands	A	A	A	R
	Prospective future development	R	R	R	R
	No future development Anticipated (e.g. forest)	A: 80% (R: 20%)	A: 80% (R: 20%)	A: 80% (R: 20%)	R
Other	Environmentally Sensitive Areas	A	A	A	R
	Roads & Railways	A+	A+	A+	R
	Water Crossings	A	A	A	R
	Other Crossings (Utilities)	A	A+	A+	R

Legend: A = Abandon in place, A+ = Abandon in place with special treatment[4], R = Removal

Step 3: Use the cost definition grid from Table A-3 to determine a cost estimate per category for abandonment.

4 CEPA defined A+ as pipeline is abandoned in place with special treatment to prevent potential ground subsidence (e.g. fill pipe with concrete)

Table A-3 Base Case Cost Definition Grid						
	Broad Category	Method[5]		May Include	Proposed basis for Cost Factor	Estimated Cost Factor Value (2010 C$ per …)
1	Engineering & Project Management	A	R	Regulatory, legal and finance support, external relations and land support, environment, health and safety support, operations support, stakeholder consultation. Detailed cost estimates, planning, applications, detailed engineering and environmental studies. Engineering and project management, Construction management, project & cost control.	Added factor applied to estimated total of all other costs of the project.	For example, 20-30 per cent
2	**Abandonment Preparation**[6]					
a.	Land access and clean up	A	R	Access rights & permits, temporary work space, damages, re-establish survey markers, as-built survey, update GIS, discharge rights.	Cost per diameter (mm) kilometer.	
b.	Pipeline Purging and Cleaning	A	R	Pump or draw down gas; Pipeline pigging, cleaning and purging, including pre-cleaning pig runs. Isolate pipe sections, test pipe for cleanliness. Final cleaning pig runs (in N_2), waste storage and disposal. Cleanliness verifications (testing and analysis).	Cost per diameter (mm) kilometer[7]	
3	**Pipeline Abandonment-in-Place**					
a.	Basic Pipeline Abandonment-in-Place	A	n/a	Install plugs to prevent water movement, removal of some underground appurtenances, backfilling and reclamation of dig sites.	Cost per diameter (mm) kilometer in which pipe remains.[8]	
b.	Provision for Post abandonment activities	A and A+	n/a	Financial provisions for periodic monitoring and for contingencies, such as later removal of some pipeline/associated facilities if problems occur.[9]	Monitoring at cost per diameter (mm) kilometer in which pipe remains, plus contingency for some potential removal (e.g. 5%)	

5 Method A, A+ or R respectively: Abandon in place; Abandon in place with special treatment; and Removal. For purposes of the preliminary cost estimation, the cost factors described here would be applied by companies using the Base Case. For pipelines that are abandoned in place all rows with an A or A+ are applicable, for pipelines that are removed all rows with an R are applicable.

6 The a and b categories in Broad Categories 3, 4 and 6 may only be necessary until further exploration of dollar values for costs takes place.

7 Basis of unit costs will be the volume of gas removed, i.e., dependent on the pipeline length and the square of the pipeline diameter. Pigging costs are dependent on the pipe diameter and length.

8 Cost of plugs is dependent on volumes of material to be used, and therefore related to pipeline diameter squared. The number of plugs to be used is related to the length and angle of the slope, soil type and land use.

9 Includes line locations, as needed, maintain signage, erosion and subsidence, frost heave control, pipe displacement at slopes or river crossings, remediation of contamination, the creation of waterways, or soil drainage problems, weed control (where not dealt with under easement agreements), or any other problem caused by the presence of a pipeline.

Table A-3 Base Case Cost Definition Grid						
	Broad Category	**Method[5]**		**May Include**	**Proposed basis for Cost Factor**	**Estimated Cost Factor Value (2010 C$ per …)**
4	Special treatment	A+	n/a	Filling with cellular material at crossings – road, rail, utility, rivers. Other environmental sensitive areas.	Cost per diameter (mm) kilometer to be plugged with cellular fill.[10]	
5	**Pipeline Removal**					
a.	Pipeline Removal and backfilling	n/a	R	Remove impediments and topsoil stripping, excavation, cutting and capping of pipelines, cutting of pipeline sections and removal to stockpile, loading and hauling of removed lines, disposal of lines, coating and associated facilities, backfill, compaction.	Cost per diameter (mm) kilometer, Or Cost per diameter squared (mm^2) kilometer[11]	
b.	Pipeline Removal – land restoration	n/a	R	Restoration, reclamation and remediation of contamination, fencing and clean-up, soil decompaction, re-vegetation, inspection of removal activities. [12]	Cost per linear right-of-way, factor to vary by land-type, with e.g. distinct cost factors for Agricultural and for Non-agricultural[13] land	
6	**Above-Ground Facilities**					
a.	All above ground	A	R	Purging and cleaning piping and fabrications. Site reclamation, (remediation of contamination, re-contouring, replacement of topsoil, re-vegetation).	$ per unit, e.g. $ per meter station, $ per compressor.	
b.	Portions removed	n/a	R	Demolition (as applicable), haul material away Removal of associated underground tanks.	$ per unit, e.g. $ per meter station, $ per compressor.	
c.	Portions left in place	A	n/a	Securing any facilities left in-place.	$ per unit, e.g. $ per meter station, $ per compressor.	

10 Fill volume (or pipeline volume) depends on crossing length and pipeline diameter squared. Unit cost of concrete, if used, depends the hauling distance from the batching plant.

11 The bases for cost factors in this table are subject to change as more information is obtained on the dollar value of costs and the basis for this Broad Category could be either.

12 Clearing, stripping and grading work is related to the width of right-of- way and temporary work space. Excavation and backfilling depends on to the pipeline volume and depth of cover. Pipeline cutting, removal, loading, hauling and disposal depend on pipeline diameter and wall thickness.

13 Non-agricultural includes forests.

Step 4: Add up the rows of estimated costs to get total estimated costs

Table A-4
Total Estimated costs

	Broad Category	**Method**[14]		**Pipeline Features**[15]	**Average Cost** [16]	**Cost by Category** [17]
1	Engineering & Project Management	A	R	n/a	E.g. 20-30 per cent	
2	**Abandonment Preparation**					
a.	Land access and clean up	A	R	X (Km)		
b.	Pipeline Purging and Cleaning	A	R			
3	**Pipeline Abandonment-in-Place**					
a.	Basic Pipeline Abandonment-in-Place	A	n/a	Y (Km)		
b.	Provision for Post abandonment activities	A and A+	n/a	Y+ ST (Km)		
4	Special treatment	A+	n/a	ST (Km)		
5	**Pipeline Removal**					
a.	Pipeline Removal and backfilling	n/a	R	X - (Y+ST) (Km)		
b.	Pipeline Removal – land restoration	n/a	R			
6	**Above-ground facilities**					
a.	All facilities	A	R	___C_ #		
b.	Portions removed	n/a	R	___C_ #		
c.	Portions left in place	A	n/a	____ #		
Total Cost (e.g. in 2010 dollars) for future abandonment activities						

For example, for a 425 km pipeline with 25 km under roads, and 3 compressors:

X = 425 km
Y = 320 km, or 80% (X-ST) using 80% of 400 from Table A-2
ST = 25 km
X-(Y+ST) = 80 km, or 425 – (320+25)
The 3 compressors to be removed would be entered as C.

14 Method A, A+ or R respectively: Abandon in place; Abandon in place with special treatment; and Removal.
15 Either linear kilometers or count by facility type. Table A-2 facilitates estimating the entries to this column.
16 Entries in this column may come from Table A-3 when available.
17 If using the Base Case cost assumptions, entries in this column are the product of the previous two columns. If using pipeline specific cost estimation, enter the total for each category.

Appendix B Calculating the Annual Contribution

Although calculations of the Annual Contribution were not discussed at the Technical Conference, the Board is providing the following example to enhance clarity around the use of the Base Case components. The example illustrates the calculation of the annual contribution needed to fund the estimated abandonment costs, using inflation, return on funds and collection period. This guidance on using the Base Case may be helpful for companies in preparing their 2012 and 2013 filings under the Action Plan (Steps 6 and following).

Definitions:

M = Collection Period = 40 years in the Base Case
N = number of years from cost estimate date to end of collection period
E = Total Cost Estimated for Abandonment, in Canadian 2010 dollars
FV = Total Future Value, i.e. Cost Estimated in dollars of future year dollars
R = inflation rate (2% in the Base Case)
r_{pt} = pre-tax return on funds collected (3.5% in the Base Case)
r_{at} = company-specific after-tax return on funds collected
AC = annual contribution needed to build sufficient funds

Steps:

1. Develop estimate of total cost (E) as described in Appendix A

2. Convert to target future value (FV) using the following formula:
   $FV = E(1+R)^N$
   Where R = inflation rate (2% in the Base Case) and N = in the Base Case, 4 + Collection Period if the cost estimate is being provided in 2010 dollars.

3. Calculate company-specific after-tax return on funds collected using the following formula:
   $r_{at} = r_{pt}$*(1-company-specific tax-rate)

4. Compute annual contribution (AC) to the abandonment fund using the following formula:
   $AC = (FV*r_{at})/ [(1+r_{at})^M-1]$,
   Where M = Collection Period = 40 years in the Base Case

Example:

1. Preliminary cost estimate in 2010 dollars = $1,000

2. FV = $1000*(1+0.02)^{44}$ = $2 390, with a Collection Period (M) of 40 years and N = 44 as the Collection Period starts in 2014, while the total cost is estimated in 2010 dollars.

3. r_{pt} = 3.5% and if the company-specific tax-rate is 30%
   then r_{at} = [3.5%*(1-0.30)] = 2.45%

4. AC = $(2\ 390*.0245)/[(1+.0245)^{40}-1]$ = $35.9 is needed annually.