



4 February 2016

By Email to:

The Right Honourable Justin Trudeau, Prime Minister of Canada
The Honourable James Gordon Carr, Minister of Natural Resources
The Honourable Catherine McKenna, Minister of Environment and Climate Change
The Honourable Hunter TooToo, Minister of Fisheries and Oceans

Re: Energy East Pipeline Conversion

Dear Prime Minister Trudeau, Minister Carr and Minister McKenna:

Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for several stewardships, organizations, and private and First Nation citizens who have come together to protect, conserve and restore healthy river ecosystems.

ORA has applied to the National Energy Board (NEB) for Intervenor Status and funding for the Energy East Pipeline, and is awaiting approval. Only through the news did it come to our attention that government consultation with stakeholders and environmental organizations had recently commenced, and yet ORA has not been notified, or invited to take part. ORA has been a registered stakeholder for two years, and has been very engaged in the consultation process.

ORA requests an opportunity to have input and to be consulted on the future regulatory policy and processing of the TransCanada Energy East Pipeline (EEP) application, and in finding an acceptable way of increasing confidence in the environmental assessment and approvals process.

This letter will address our specific concerns regarding the EEP application and the NEB review process.

Environmental Concerns with Crude Oil Spills

ORA has specific concerns regarding the environmental impacts of a converted pipeline in the event of an inevitable spill over its lifetime. A spill would have the potential to contaminate, and possibly permanently destroy key sources of drinking water that municipalities and First Nation communities rely on. While ORA is concerned about all spills that would occur, we will specifically address the spills of a larger and more environmentally significant volume that will occur over the life of the pipeline. What follows is an examination of the following questions:

1. What is the expected frequency and volume of spills, based on historical data?
2. Can the proponent's proposed design credibly detect, contain, and effectively respond to environmentally significant leaks?
3. Does the proponent's application address the technical issues and risks that could arise from a conversion project that has already been in service for up to 40 years and was not designed to carry crude oil in the first place?
4. Are the number of rivers, lakes, streams and wetlands adequately accounted for in the EEP documentation?
5. Will the current NEB review process instill stakeholder confidence, and result in credible information on which this government can base its final decision?



1. Spill Frequency and Volume:

ORA determined the frequency and volume of spills that may be anticipated, based on the Alberta Open Data Oil Spills – 1975 to 2013¹. This database covers thousands of spills of all kinds of material, and from pipes of all sizes. For the purposes of this letter, ORA is particularly addressing larger environmentally significant spills and, in fact, none of the legislation governing pipelines defines just how large of a spill would be considered to be ‘environmentally significant’. Clearly, the current legislation needs to be amended to define an ‘environmentally significant’ volume. Lacking such a definition, for the purpose of discussion, we have chosen a threshold with which few would argue - 100 m³, (based on the minimum spill reported in the Alberta database), above which leaks would be of unequivocal environmental significance. ORA suggests that the eventual number should actually be much lower than 100 m³.

In a series of emails with Gary Houston, Vice President of Energy East, with regard to leaks, he indicated that “*our target is zero and we think it is achievable*”. However, if in fact leaks do take place, “*one could calculate a volume of about 250m³ per incident using the design flow rate of 175,000 m³/day*”. TransCanada has also publicly claimed that in the event of a detected spill, the pipeline will be shut down within 10 minutes. As demonstrated below, these claims are simply not credible, based on the industry’s track record.

At Mr. Houston’s suggestion we limited the dataset to pipelines of 16” in diameter or over, and to spills involving crude oil. This resulted in 8 spills over a 22-year period, ranging from 150 m³ to 4,500 m³, with an average volume of 1,440 m³. The average pipeline size was 24” in diameter.

Considering that the converted line will have a diameter of 42”, the average spill size for such a pipe, based on this Alberta data, would be 4,400 m³, since the spill volume is proportional to the cross sectional area of the pipe. Response time to control room indications of a possible leak tends to be in the order of hours, not minutes.

Therefore, ORA’s position is that a release rate of zero is not achievable with current technology. ORA further submits that, based on the technologies cited in the proponent’s application, there will be approximately one release every 10 years, and these releases will average 4,400 m³. This assumes that the material from which the pipeline is constructed is new, and that the pipeline is designed to carry crude oil – and we know this is not the case for the Ontario stretch of pipe. As we will see below, there is reason to believe that this number is optimistic in the case of a converted line.

2. Detection and Containment of Environmentally Significant Leaks

Once an ‘environmentally significant’ spill volume has been determined and included in the regulations, a logical consequence is that one of the key design requirements for any pipeline should be that the design shall include measures to detect leaks and limit them to less than a volume which is ‘environmentally significant’. There is no such requirement in the current standards for pipeline design.² The proponent is required to have a leak detection system, but no performance requirements are mandated for this system. On the recently approved Mountain Gateway pipeline, the only condition placed on the leak detection system was that its design must be submitted 90 days prior to the line going into service.

One should note that it is the total volume of the spill that is of environmental significance. It matters little whether the release happens over a period of 10 hours or 10 days. Looking at the proponent’s proposed leak detection system (LDS) technology, we see that it senses leak rate, rather than total volume, and that the threshold for leak detection is 1.5% of full flow. Anything less, by definition, will continue until the leak is detected by some other means – typically visual inspection, either on foot or from the air. These inspections are days apart.



The proposed line will carry 175,000 m³ per day, so a 1.5% leak amounts to 118 m³ per minute. Thus, to limit a spill to our 100 m³ figure, the leak would have to be detected and contained within just under one minute. Leaks below 1.5% full flow could go undetected for days, so the volume released in these lower flow incidents could be many times the 100 m³.

The proponent's leak detection system relies on data sent from a number of instrumented locations, typically separated by tens of kilometres. The algorithm used to detect leaks computes differences between mass flow into and out of a given segment of the pipeline. Thus, it is looking for a small difference between two large numbers – the estimated mass flow at the nearest upstream and downstream locations to the leak. These numbers are subject to considerable measurement uncertainty. The performance of the proposed LDS system would have to be improved in the order of 500 times to provide adequate protection. This will not be achieved using the proposed technology. A different LDS technology is required, based on detection of small amounts of hydrocarbons outside the pipe, rather than the difference between two large amounts inside it.

Products exist that can detect leaks externally. The External Leak Detection Experimental Research (ELDER) facility in Edmonton³ is tasked with evaluating several technologies. It is funded by TransCanada and Enbridge. To date, the results of this evaluation have not been made public. Nor are they likely to be, since deployment of such technologies would be much more expensive than the proposed system, are they are not required by the current regulations.

We would like to point out that it is not in the proponent's interest to detect small leaks, as they have to be cleaned up no matter how small they are, and cleanup is an expensive process. The 1.5% full flow threshold chosen in this case may well represent the lower limit where it is not in the proponent's economic interest to detect a leak.

Reading the incident reports for a number of pipeline spills in Alberta, it is clear that pipeline operators are skeptical of the leak indications provided by their LDS. Typically, the shutdown decision is not made until an eyewitness report of the incident by a passerby is received.

In the Plains Midstream Canada incident, this delayed the shutdown for 8 1/2 hours. The released flow rate was about 30% of full flow; therefore, a response to a leak close to the 1.5% threshold is likely to take much longer. The cited report concludes that "*the Plains' alarm response protocol...*" exhibited a "*potential bias towards inaction*"⁴.

ORA's position is that the current regulations need to be amended to define an 'environmentally significant release volume', and to include a requirement that the LDS be able to limit releases to less than this volume. The fact that existing industry practice cannot achieve this performance is no excuse for not imposing the requirement. The technology to meet the requirement should be developed and deployed.

3. Technical Issues with Conversion Design

A review of the proponent's application reveals a number of factors that have not been taken into account in the proposed conversion design, all of which would lead to an increase in the predicted release frequency.

Pipeline Not Designed to Carry Crude Oil: The converted line has not been purpose-designed to carry crude oil. Rather, it was designed to carry natural gas, which is 18 times lighter. There is no indication in the proponent's application that any analysis has been carried out to confirm that this change in density will or will not adversely affect the safety of the line due to the increased static and dynamic loads. Moreover, at 42" in diameter, the converted line will be one of the largest oil pipelines in the world. The design is pushing the envelope of pipeline technology, yet doing so with 40-year-old materials not initially meant to carry crude oil.



Parallel Gas and Oil Pipelines: The converted line will run parallel to one or more gas pipelines throughout the entire length of its run through Ontario. Gas pipelines have a history of explosive failure (e.g. Rupture and Fire on Two Natural Gas Pipelines at Station 30, near Rapid City, Manitoba⁵). No analysis has been performed to confirm that failures of the adjacent gas line will not pose a threat to the converted oil line. No standards exist in Canada to define minimum lateral separation requirements for parallel pipelines. The converted line will be pieced together from segments of the existing gas lines that use the best available, Fusion Bonded Epoxy material. Consequently, in some segments, the remaining parallel gas line will be fabricated from inferior, tape wrapped pipe, making it particularly susceptible to failure

Aging Pipeline: The converted line will use material which has already been in the ground for up to 40 years. There is no indication that the effects of stress and aging on this pipeline have been considered in the conversion design. In areas where the line is subject to seasonal variations in buoyancy, a portion of its fatigue life will have been used up, making it more prone to metal fatigue failures. Over the years, pipelines are subjected to repairs. These repair sites are more susceptible to failure than newly installed pipe. Thus, the failure frequency of older pipe will increase. There is no evidence that this factor has been considered in the conversion design.

Seismic Activity: For much of its length, the line runs through the Ottawa River Valley, an area of known relatively high seismic activity⁶. Yet there is no mention that the design of either the original or converted line has been subjected to a seismic analysis, an approach that is considered routine in many other engineering projects.

ORA's position is that the factors listed above have the potential to substantially increase the failure frequency over the number predicted previously. Analysis should be conducted to determine what this increase will be. The adequacy of the analysis should be confirmed by industry experts outside of the pipeline industry, since that industry apparently considers lack of such analysis to be inconsequential.

4. Waterbodies at Risk

The Energy East application does not include a proper list of all the waterbodies that the Energy East Pipeline would cross or place at risk. Therefore, the potential environmental and socio-economic impacts of an oil spill cannot be adequately and objectively assessed. The application only lists a total of 41 named river crossings in Ontario and only 11 of these were listed as requiring a site specific design. Only 11 lakes are listed, and only in terms of ecoregions, and 5 wetlands that have been designated as provincially significant.⁷

With the help of a GIS expert, it has been determined that the pipeline would in fact directly cross 140 lakes and rivers, 826 streams, and 469 wetlands – a total of 1,435 waterbodies in Ontario. When you take into account the required environmental buffers for the area of impact and zone of impact, the numbers of waterbodies increase substantially. It is essential that the application include a comprehensive list of all waterbodies that would be crossed and placed at risk, and extent of the areas of these bodies that would be contaminated by a 4,400 m³ spill.

Considering that the application so grossly underestimates the number of waterbodies that would be crossed, and that would require site specific design at pipeline crossings, it causes the stakeholder to wonder what else has been left out, underestimated or unaccounted for.



5. National Energy Board

ORA is encouraged by the additional review mechanisms announced by your government for new pipeline applications and how they will be assessed. It was also welcome news that there is now a requirement to look at upstream greenhouse gas (GHG) emissions resulting from these types of projects. However, the transition requirements for existing pipeline applications did not include an overhaul of the NEB review process – which is absolutely necessary.

ORA questions the independence of the NEB, given that most of its staff, including those at the highest levels, are drawn from the oil and gas industry. Of course, that is where the experience lies, but there appears to be a tendency to assume that the status quo is by definition ‘good enough’. The information presented below will demonstrate that this is not acceptable. ORA recommends that the NEB be restructured to rely on review by industrial experts from other high risk sectors.

It is important to note that the NEB has allowed the proponent to begin the NEB process when the application is not complete. Additionally, the documentation presented to date is very lacking in the areas listed above. Even the mapping provided by the proponent is very zoomed out, and of low resolution, which makes it impossible to see any detail of the water bodies that the pipeline would place at risk. Before the NEB review commences, the proponent’s application must be complete, compiled into one searchable document, and in sufficient detail to fully inform the public and First Nations of what the trade-offs could be.

The federal government has promised to review the environmental legislation and regulatory process that was gutted through the 2012 omnibus bill, and this is absolutely necessary to instill any confidence in the outcome of the NEB process. This move weakened the NEB process, and undermined both its effectiveness and legitimacy with the public.

It is absolutely necessary to apply any new rules to the Energy East Pipeline as the application is still not complete, and the NEB review process has not yet begun. The proposed interim measures for the NEB pipeline review fall short if they are intended to build confidence in the process and ultimate decision.

ORA submits that in order to gain confidence in the final outcome of the EEP application, it is necessary to initiate a complete overhaul of the NEB’s review process to ensure the concerns of all stakeholders are adequately addressed.

Conclusion

The Ontario Energy Board (OEB) commissioned the Mowatt Centre to review the Economic Impact of the Energy East Pipeline in Ontario, and their conclusion was that the environmental risks of the Energy East Pipeline outweighed the potential benefits to Ontario. They found that the projected economic benefits for the province may have been over-estimated, and “*any claims about substantial GDP growth and job creation in Ontario from pipeline construction should be viewed critically*”⁸. Additionally, just last week several Mayors in Quebec came to the same conclusion as the OEB.⁹

ORA has serious concerns around what happens when the pipeline inevitably leaks, especially after the National Academy of Sciences recently released a landmark study that shows pipelines carrying diluted bitumen need special spill response measures¹⁰ that currently do not exist. This is especially true for a pipeline that cuts through the Canadian Shield, as well as numerous fast flowing and ice covered rivers throughout the north. The potential for a successful crude oil clean-up on our rugged and remote northern Ontario rivers, especially during the winter months through the ice, would be extremely challenging, and catastrophic to riverine ecosystems for many kilometers downstream.



Documents recently obtained under the Freedom of Information Act revealed that GHG emissions in Canada are much higher than previously admitted by the previous government, and a substantial increase is expected over the next several years unless major reduction targets are put in place.¹¹

Canada has also agreed to come up with a pan-Canadian plan to limit global warming to a 1.5 or 2-degree Celsius increase, as well as adoption of the United Nations Sustainable Development Goals. The provincial, territorial and federal governments will need to make some tough decisions if Canada intends to meet its GHG emission reduction targets and commitments. The extraction process for tar sands oil requires the burning of large amounts of fossil fuel, making the overall GHG contribution of such oil much greater than that incurred for conventional crude. Approving any project that encourages tar sands oil production would thus seem to be particularly counter-productive.

It is also important that the public understands that it is not either rail or pipeline transport of crude, or that transport of crude oil by rail will decrease if a pipeline is built. Gary Houston informed ORA and attendees of a special forum we hosted in North Bay in February of 2015 that, even if a pipeline was built, or not, rail transport would not decrease.¹²

As ORA has set out above, the EEP application has not provided all the facts, and the NEB review is lacking the necessary credibility to restore public confidence. If the federal government is serious about its mandate to restore public confidence, and improve Canada's reputation for environmental stewardship, then it is crucial that the first order of business will be to ensure our environmental rigour and protections are restored, and that the NEB is reformed.

It is imperative that Canada walks the talk, and follows up on its promise to ensure that the Energy East Pipeline project has social license. This can only be done through a more robust and rigorous approvals process.

ORA looks forward to an opportunity to be consulted and to have meaningful input into this proposed project.

Respectfully,

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