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MEMORANDUM TO THE MINISTER

ECONOMIC BENEFITS OF OIL PIPELINES

(Information)

SUMMARY

- This note provides an overview of the benefits of new oil pipeline infrastructure in Canada.
- Despite the recent decline in oil prices, Canada's oil production is forecast to grow from 3.9 million barrels per day in 2014 to 4.9 million barrels per day in 2020, and 6 million barrels per day by 2040. Production capacity growth during this timeframe is primarily from projects already under construction.
- Canadian pipeline infrastructure is already operating at its fullest potential. As such, approximately 1 million barrels per day of new pipeline capacity will be required by 2020 to reduce the reliance on rail.
- The Department of Finance estimated that a lack of infrastructure to access global markets cost Canadian producers an average of \$7 billion annually from 2011-2013, or a cumulative loss equivalent to 1 percent of GDP.
- While the differential between Canadian and global crude oil prices has narrowed in recent months, producers remain vulnerable to widening differentials as production continues to grow.
- In addition to the jobs and investment associated with constructing major new pipelines, new pipeline capacity would have the broader benefit of reducing transportation costs, improving netbacks to producers and assisting companies in advancing projects under development. Further details on the economic benefits of pipelines are provided in Attachment 1.

- 2 -

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Deputy Minister

Attachment: (1)

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ECONOMIC BENEFITS OF OIL PIPELINES

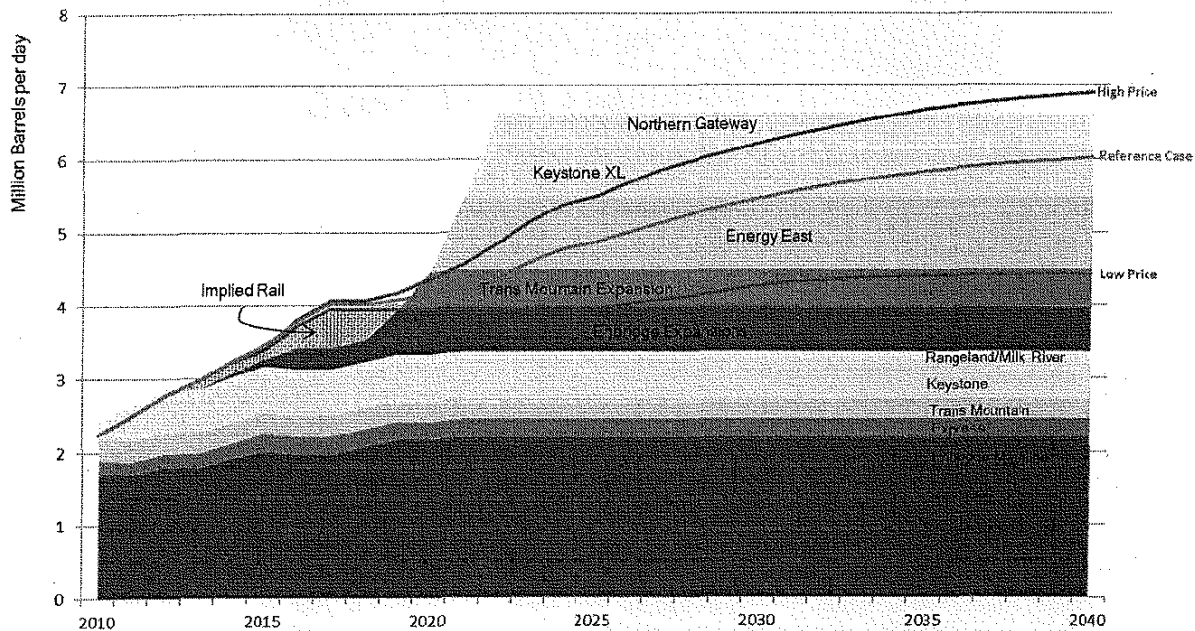
BACKGROUND

Need for Market Access

Canada's pipeline infrastructure has the nameplate capacity to transport over 3.9 million barrels per day and is currently operating at its fullest potential (at a rate of 85-90% utilization). Pipelines typically cannot operate at 100% of their capacity every day. Despite the recent decline in oil prices, Canada's oil production is expected to continue to grow. In the National Energy Board's Report on Canada's Energy Future 2016, the Board's Reference case forecasts oil production to grow from 3.9 million barrels per day in 2014 to 4.9 million barrels per day in 2020, 5.8 million barrels per day in 2030 and to just over 6 million barrels per day in 2040.

Without new pipeline infrastructure, reliance on rail will continue to grow. To keep up with production, approximately 1 million barrels per day of new pipeline capacity would be required by 2020 and 2 million barrels per day by 2030. The graph below illustrates the Board's forecast for Western Canadian oil production available for export under High, Reference, and Low price cases along with existing and proposed effective pipeline capacity out of Western Canada, (effective capacity assuming 85-90% capacity utilization rates).

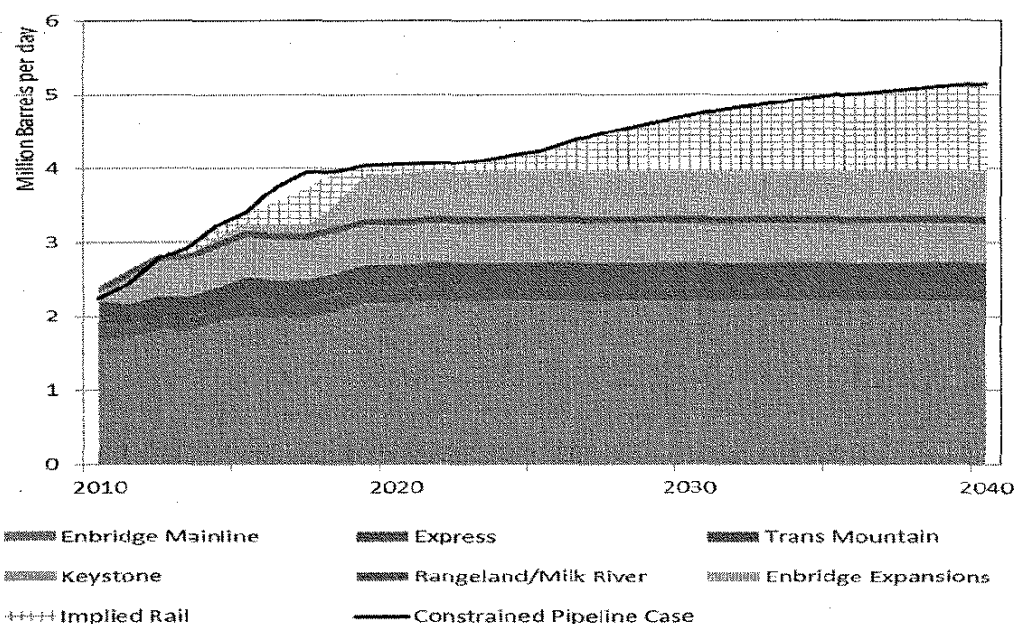
Forecast oil available for export out of Western Canada and pipeline capacity



While differentials between North American and global prices have closed recently, Canadian producers remain vulnerable to widening differentials as production continues to grow.

The Board also forecast oil production if no new major oil pipelines are built except for expansions of Enbridge's Mainline, which would increase capacity to 2.9 million barrels per day by 2019. This includes the completion of a 120,000 barrel per day expansion in 2014 and another 230,000 barrel per day in 2015. It also includes the restoration of Line 3 to its full capacity in 2019, which would increase throughput on the Mainline by another 370,000 barrels per day. As of April 2016, Enbridge has completed 350,000 barrels per day of these expansions. The Line 3 Replacement Program which would add another 370,000 barrels per day is still expected to occur in 2019.

Forecast oil available for export out of Western Canada



Source: National Energy Board

The graph above illustrates total Western Canadian oil production available for export out of Western Canada under the Board's Constrained Case, if no new pipelines are built¹². Oil

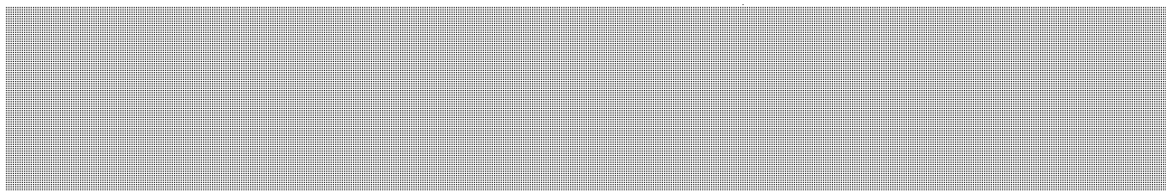
¹² The oil exports in the Constrained Case are based on projected crude oil production, need for diluent, and domestic refinery consumption. If heavy oil and bitumen are moved by rail, the need for diluent for blending is less than for oil transported by pipeline. Thus, the total diluent required for blending varies with the proportion of rail versus pipeline. Domestic refinery consumption of crude oil is the same as in the Reference Case.

exports in this scenario are based on a lower need for condensate or diluent for blending with heavy oil for pipeline transport, as more oil would be moved by rail, which requires less diluent.

Economic Benefits

The lack of infrastructure to access global markets led to a significant differential between North American and global prices from 2011 to 2013. Had Canadian prices kept pace with that of imported oil from early 2011 through the end of 2013, the Department of Finance estimated the value of Canada's crude oil exports would have been approximately \$7.3 billion higher per year, on average. This represented a cumulative loss of \$21.9 billion, or 1 percent of nominal GDP.

In the current low oil price environment, the difference between sending oil by rail or by pipeline significantly impacts netbacks for producers (e.g., it costs \$5 per barrel more for rail than pipe when shipping from Alberta to the Canadian West Coast, \$6 per barrel more to Canada's East Coast and up to \$10 per barrel more to the US Gulf Coast). Building new pipeline capacity would reduce transportation costs and assist companies in advancing production projects under development.



s.21(1)(a)

More broadly, the Conference Board of Canada has released recent studies on the broader economic benefits of proposed oil export projects (construction and operations).

Economic Benefits of Proposed Oil Pipeline Projects

	Capital Investment	GDP	Government Revenues, Taxes (federal and provincial)	Employment (person-years)
Trans Mountain Expansion (Combined construction, 20 years operations) (2012\$ millions)	\$6,800	22,126	\$28,229	123,221

² Production of condensates in western Canada in 2040 is slightly lower in the Constrained Case than in the Reference Case. In both cases, there is greater demand for condensates than there is domestic production. Due to less oil production and more crude-by-rail transportation, the need for imported condensates in 2040 is reduced from about 800 Mb/d in the Reference Case to about 654 Mb/d in the Constrained Case. Note that because blending of imported condensate with domestic production, the need for pipeline capacity will exceed production.

Energy East Project (Combined construction, 20 years of operation) (2013\$millions)	\$19,300	55,458	\$80,923	260,695
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Source: Conference Board of Canada

Building Support for Pipelines

The primary opportunity for new projects to ensure market access is through projects currently undergoing regulatory reviews. To facilitate development, the Government has committed to reviewing federal environmental assessment processes and modernizing the National Energy Board to build public confidence in the development of new infrastructure proposals including providing certainty through a transition plan.

Other key actions underway to create the conditions to facilitate infrastructure development include strengthening marine and pipeline safety; enhancing engagement with Indigenous peoples and advancing a National Climate Change Framework. All of these actions would fall within a new spirit of cooperation taken with the provinces through a Canadian Energy Strategy.

Major Oil Pipeline Projects

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- **Keystone XL** – On November 6, 2015, the United States Government denied the application for the pipeline. TransCanada has filed both a court and North American Free Trade Agreement challenge on the decision. The project is not expected to advance in the near-term [REDACTED]
- **Northern Gateway** – The Government has announced its intent to establish a moratorium on crude oil tanker traffic in Northern British Columbia. This could impact the viability of the project.
- **Trans Mountain Expansion** – The Board is currently completing its review and has to make its recommendation by May 20, 2016. Kinder Morgan is targeting start-up of operations by late 2019. British Columbia has indicated that the project does not meet its conditions for provincial support. Some environmental groups and Aboriginal communities and the city of Burnaby also oppose the project.
- **Energy East** – An amended application was filed with the Board in December 2015. TransCanada is targeting an in-service date in 2020. Proposed extensions to the Board review process would push this in-service date to 2021. The provinces of Ontario and

- 5 -

Quebec have announced conditions, including economic benefits for the two provinces, for the project to earn their support.

- **Line 3 Replacement** – The Board is currently reviewing this application and has to make a recommendation by May 4, 2016. Enbridge was targeting an in-service date in the second half of 2017. Recent regulatory delays in the state of Minnesota are anticipated to push back start-up of the project by at least one year.
- **Line 67 (Alberta Clipper) Expansion** – The expansion requires a Presidential Permit in the United States and has been under review by the State Department for over two years. Timing of the decision is uncertain in light of the recent decision on Keystone XL.

CONSIDERATIONS

According to the National Energy Board's Reference Case for oil production, Canada requires approximately 1 million barrels per day of new pipeline capacity by 2020. This is equivalent to:

- Energy East (1.1 million barrels per day); or
- Trans Mountain Expansion (590,000 barrels per day) + Enbridge's expansion projects (Line 3 + Alberta Clipper Expansion - 370,000 barrels per day); or,
- Keystone XL (830,000 barrels per day) + one of the other projects.

Even in the Low Price case, over 730,000 barrels per day of incremental oil is forecast to be available for export by 2020.

Enbridge's proposed expansions to its existing mainline system are anticipated to be the first to come on line, subject to regulatory approvals in Canada and the United States. The second phase of the Alberta Clipper expansion in Canada was completed in 2015 and added 230,000 barrels per day of capacity. Once completed, the Line 3 replacement would add another 370,000 barrels per day of capacity.

A west coast pipeline (e.g., Trans Mountain or Northern Gateway) is key to expanding trade with fast growing Asia-pacific markets, and [REDACTED]

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TransCanada's proposed Energy East project would provide access to new markets in Europe and India, but would also strengthen Canada's long-term energy security by providing eastern Canadian refiners with reliable access to domestic crude supplies.

- 6 -

CONCLUSION

Despite the recent decline in oil prices, expanding Canada's pipeline capacity would have important economic benefits, which is even more imperative in the context of the current oil market decline.

Approximately 1 million barrels per day of pipeline capacity is needed by 2020, and 2 million barrels per day by 2030. Absent this capacity, more oil will be shipped by rail, and some production will be restricted. As such, almost all major oil pipeline currently proposed will be needed before 2030. Proposed pipelines to Canada's east and west coast have additional advantage of diversifying our markets.

Government efforts to build public confidence that Canada's oil and gas resources can be development and transported in an environmentally sustainable manner will be key to new infrastructure development.