SPECIAL REPORT

TD Economics

December 17, 2012

PIPELINE EXPANSION IS A NATIONAL PRIORITY

Highlights

- Western Canada's oil industry faces a serious challenge to its long-term growth. Production growth will become constrained unless more pipeline capacity is built to access new markets. Western Canadian producers are already facing significantly lower prices due to being largely reliant on one market – the U.S. Midwest.
- There are various routes new pipeline capacity could take to increase market access: west to the coast of B.C. to access the Pacific Rim, south to the large U.S. Gulf Coast refining market, or east to fuel refineries or reach ports in Quebec or New Brunswick. This report explores the merits and challenges of each option.
- There is a role for government to play in ensuring timely regulatory review, thorough environmental assessments and stringent safety regulations which are enforced. Governments could also champion the economic opportunities that increased production and diversification of markets would provide.
- Canada's oil sector can be a major contributor to Canadian economic growth over coming decades. The realization of its potential is particularly positive for oil-rich provinces; but, it can also provide enormous benefits more broadly across the country. Investment and growth in the sector can create jobs, fuel industrial production, boost income growth and generate tax revenues to help fund many social priorities.

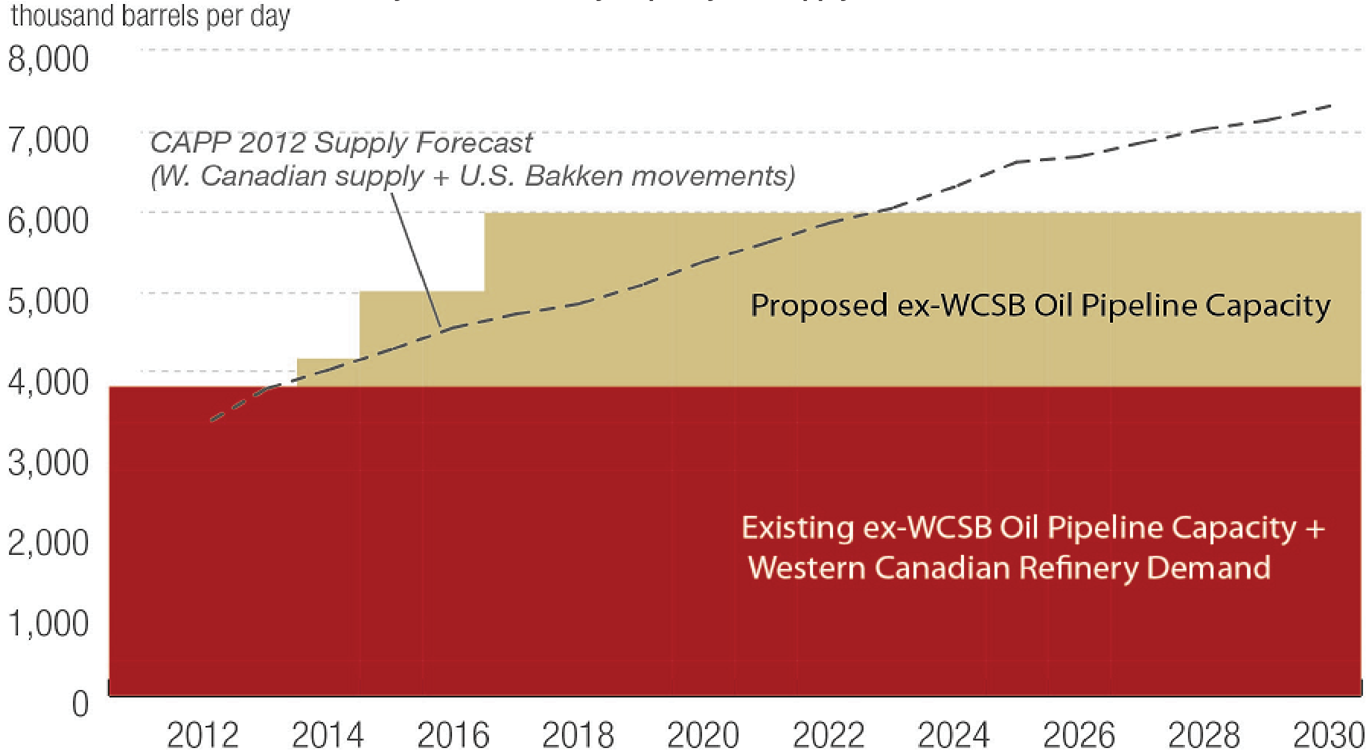
Canada's oil industry is facing a serious challenge to its long-term growth. Current oil production in Western Canada coupled with the significant gains in US domestic production have led the industry to bump against capacity constraints in existing pipelines and refineries. Production growth can not occur unless some of the planned pipeline projects out of the Western Canadian Sedimentary Basin (WCSB) go ahead (see Chart 1). Not doing so would create significant economic loss for the country. TD Economics has previously calculated that the contribution from increased investment in Canada's oil and gas sector accounted for 20% of Canada's economic growth experienced in 2010 and 2011. And, can be a major contributor to growth in the future, but only if new markets are accessed. In a 2012 report, the Canadian Energy Research Institute (CERI) estimated that if the current major pipeline expansion projects which are in the works do not get built, thereby constraining future oil production in Western Canada, Canada would forego as much as $1.3 trillion of GDP (in 2010 Canadian dollars) and $276 billion in taxes from 2011 to 2035.

Canada needs increased pipeline capacity and access to new markets

While capacity is an issue, Canada also needs to access new markets if it is to grow its energy sector. The laws of economics are alive and well. High oil prices prior to the recession have led to improvements in efficiency and has changed consumption habits on the demand side. They have also fostered technological change which enabled the growth of "tight" oil production on the supply side. Energy demand in the United States, particularly for refined petroleum products, like gasoline, has not recovered from the recession. Moreover, U.S. oil demand is expected to grow only moderately over the coming decades. The potential for significantly greater U.S. oil production, particularly from unconventional

Craig Alexander, SVP & Chief Economist 416-982-8064
David Bouckhout, Senior Commodity Strategist 403-299-8649
Linda Ezergailis, Pipelines, Power, & Utilities Analyst 416-983-7784
Leslie Preston, Economist 416-983-7053

Chart 1. Western Canada Sedimentary Basin Takeaway Capacity vs. Supply Forecast



(Source: CAPP Crude Oil Forecast, Markets & Pipelines Report – June 2012)

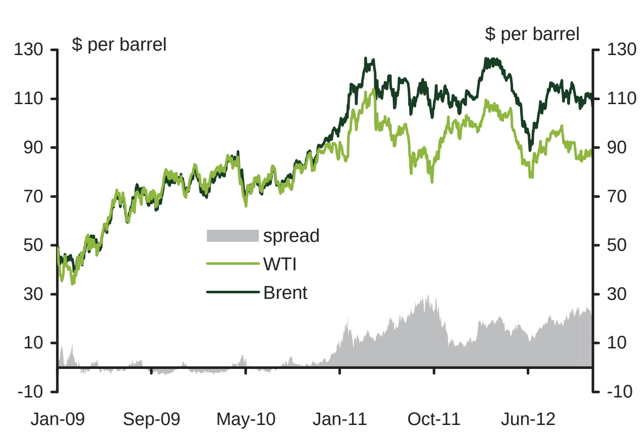
sources, has spurred speculation that the United States could become energy independent by 2030. The implication is that while there is still room for Canada to expand oil exports to the U.S., there is greater potential from diversifying our markets.

Canada's lack of diversity has cost the economy dearly in recent years. Western Canada's oil exports go overwhelmingly to the U.S. Midwest, where expanded Canadian imports and rising domestic production have produced a supply glut. That glut has resulted in the benchmark West Texas Intermediate Crude (WTI) price of crude oil being on average $17/bbl lower than the global Brent price over the last two years (see Chart 2). As a result Western Canadian producers have received lower prices for their oil in that market, costing Canada billions of dollars in lost revenues. To illustrate the economic loss, if Canadian oil producers could have foreseen the future supply glut and had responded in advance by building additional pipeline capacity (500,000 barrels per day (bpd) for example) to a port for export or domestic refineries in Eastern Canada, then the spread between Brent and WTI in recent years might have averaged $5 to $7 per barrel less, providing $5.5 to $7.7 billion in additional revenues to the economy.

The main message is that the sustained nature of the price differential drives home the need for Western Canadian oil producers to diversify their customer base.

In order to access rapidly growing overseas markets, Canada needs access to a port where oil can be shipped by supertanker. It is surprising just how economic it is to ship around the world once loaded on today's largest tankers.

CHART 2. CRUDE OIL PRICE DIFFERENTIALS



Source: Bloomberg

While the natural location of a port to tap growing Asian demand is the west coast, tanker rates for shipping oil from the east coast of North America to Asia could run below $2.50/bbl at today's tanker rates.

Canada can sell at home and abroad

In terms of expanding the market for Canada's oil, broadly speaking, there are two options. We can export more; or, we can sell more at home. In terms of the latter, Eastern Canada relies largely on imported crude, and Canada imported roughly 680,000 barrels per day in 2011. In 2011, Québec imported $10.9 billion of oil, while the Maritimes imported $13 billion. At the time, Canada had a merchandise trade surplus of $0.9 billion. So all else equal, Canada's trade surplus could have been a greater $24.8 billion in the year. And, Canada's trade deficit today would be a lot smaller if we imported less oil. However, demand growth in Eastern Canada in the future is likely to be only moderate. This is where the discussion changes to export prospects for Canada to ship crude oil to Asia, Latin America or even Europe. However, there is minimal pipeline capacity to facilitate exporting to these markets.

Four pipeline options

Ultimately, Canada needs additional pipeline capacity. Essentially, there are four possible options:

1. Pacific Rim via the west coast of B.C. – There are currently two proposals that would see more oil shipped off of B.C.'s west coast; Enbridge's Northern Gateway pipeline and Kinder Morgan's Trans Mountain Expansion (TMX) pipeline project.

2. U.S. Gulf Coast – The Gulf Coast is home to over 8 million bpd of refining capacity, or around 50% of total U.S. refining capacity. Many refineries there are configured to process heavy/medium, sour grades of crude produced in Alberta, and companies are eager to replace the declining supplies from Mexico and Venezuela. This was the case for TransCanada's Keystone XL pipeline, which was denied the permit it needed to cross the U.S. border earlier this year, although TransCanada has since reapplied with a new route. The southern leg of the pipeline, from Cushing to the Gulf Coast is currently under construction and should help lessen the supply glut at Cushing, but the Northern portion, key to greater Canadian exporters, is expected to have a decision this spring. Enbridge's Flanagan South pipeline will connect the Enbridge mainline to a twined and expanded Seaway pipeline, which runs from Cushing to the U.S. Gulf Coast, in Q3 2014. This will allow an initial 600K b/d of Western Canada crude oil to access the Gulf Coast market, and the pipelines can ultimately transport 900K b/d.

3. Eastern Canadian market of Québec – Reversing Enbridge's existing Line 9 pipeline (capacity of 300K b/d) from Sarnia to Montréal would provide enough capacity to fuel the refineries in Montréal and Québec City. Since the pipeline ends in Montréal, oil would be shipped on to Québec City by tanker. TransCanada also has a proposal to convert a portion of its existing Mainline natural gas pipeline to oil and ship between 500K – 1 million b/d to Montréal, and building an additional leg of pipeline to Québec City to fuel the refinery there or be exported by tanker. However, the St Lawrence Seaway limits the size of the tankers that can operate out of the port and winter conditions could create restrictions, but it is a better port for export than Montréal.

4. Continue from Montréal to Saint John, New Brunswick – No applications have been made yet, but building a pipeline to Saint John, New Brunswick has significant advantages. A pipeline could serve both the Irving refinery – the largest in Canada – and the port at Saint John is a deep-water/non-freezing tidal port, which can accommodate the largest crude oil super tankers (ULCCs).

The Economics of the Pipeline Options

The question is how the relative economics of these routes stack up. TD Bank has estimated costs per barrel for the various pipeline options.

The estimated costs are shown in Table 1 (following page). The west coast pipeline is the most economic choice, which should not be a surprise because the distance is shortest, and would provide access to rapidly growing Pacific Rim markets. Due to the existing infrastructure, reversing the existing pipeline (Enbridge Line 9) to Montréal is quite economic, and building a pipeline to Québec City could offer some export potential since the port is able to handle Aframax size oil tankers. Moreover, it would reduce Canada's required imports from abroad and could improve Canada's trade balance. Piping oil to the U.S. Gulf Coast

Table 1. Cost of Shipping Western Crude Oil by Pipeline

Destination	Cost ($ per barrel)*
U.S. Gulf Coast	7
West Coast of B.C.	3
Montréal, QC	5
Québec City, QC	6.5
Saint John, New Brunswick	8
Estimated by TD Bank	

is the next most economic choice, which is why Keystone XL was pursued. However, a subject that only recently has been explored is the idea of shipping more crude oil to Saint John, which opens the possibility for increased economic activity through additional investment in refining capacity and greater scope for exporting. There has been speculation that Irving might consider expanding its operations and add a coker. The refinery in Saint John can handle heavier types of crude oil. There is greater scope for exports from the port of Saint John than via the St Lawrence Seaway. And, the higher relative cost of Saint John versus Québec City can be reduced by the fact that larger tankers can be used from the former – indeed, it is possible that roughly half the cost differential could be closed by using the largest ships.

There is more to consider than just how much it costs to ship to a destination, but also the desirability of market in terms of size or growth potential. For example, the huge refinery market in the U.S. Gulf Coast is very desirable for Canada due to its size and capacity to process heavier crude from Canada's oil sands. Looking at Québec, if both Enbridge and TransCanada's proposals go through, there would be more than enough capacity to fuel refineries at current capacity (see Table 2). Québec's imports of refined petroleum products have increased in the wake of refinery closures in recent years, and increased pipeline capacity could fuel refinery expansion. Excess crude oil could potentially be shipped to the U.S. along the existing Portland-to-Montréal pipeline, which currently carries imported crude oil to Québec.

Portland, Maine is the second largest oil port on the east coast, and Western Canadian oil could be shipped elsewhere along the eastern seaboard from that point, including the Irving refinery in Saint John, New Brunswick. Exporting Canadian crude abroad from that port, however, may be problematic as crude oil exports from the U.S. are essentially prohibited. Furthermore, a cross-border pipeline reversal might trigger regulatory complexity. There would also likely be an additional $1/bbl toll, and Portland cannot accept the

Table 2. Oil Refinery Capacity in Québec & the Maritimes

Name	Location	Capacity (bpd)
Suncor	Montréal, QC	137
Ultramar	Lévis, QC	265
Irving	Saint John, NB	300
Imperial*	Dartmouth, NS	82
	Total	**784**
Source: The Canadian Association of Petroleum Producers		

** The Dartmouth refinery is currently up for sale and it is uncertain whether operations will continue.*

largest crude oil tankers.

Some might raise the option to ship crude oil by rail from Québec to Saint John using existing CN rail infrastructure; but, the cost for this would be much higher than a pipeline (ignoring construction costs), at roughly $6-9/barrel in addition to the pipeline costs to Québec (but could be lower depending on contracts). Cost aside, pipelines are a far safer means of oil transport than rail.

The bottom line is that there are clear advantages to meeting Eastern Canadian oil demand with Western Canadian crude oil. Beyond the domestic market, the prospects for increasing exports requires pipelines to deep water ports, in the Gulf of Mexico, British Columbia, Québec, or New Brunswick.

Many challenges are present

One of the core challenges to projects requiring construction of new pipelines is the long timelines. And, this requires long-term contracts, so buyers and sellers need to consider the outlook for pricing over the next decade or longer. Essentially, oil producers need to believe that the current differentials that are hurting netbacks are going to persist over the long term.

Obviously there is a great deal of uncertainty over what oil prices will be over the coming years. One source of guidance for expectations of prices over the medium term is the futures market. Under the current futures market pricing the differential between Brent and WTI narrows over the next few years, falling below $9 per barrel in 2015 and below $5 per barrel by 2019. However, the futures price could be misleading, as investors have likely assumed the approval and future completion of Keystone XL and/or a west coast pipeline, which is why the spread declines over time. If pipeline capacity is not increased, spreads will likely remain much higher.

There are also key political challenges. While the economics look attractive, or at least reasonable, for the various proposals, there is more to the world than economics. Indeed, all of the current proposals have encountered challenges, primarily due to local fears of spills and other environmental concerns about enabling production growth in the oil sands.

The Keystone XL pipeline is the furthest along in the regulatory processes with a decision expected on the new routing this spring. But, approval is by no means a certainty. Enbridge's Northern Gateway pipeline is currently being reviewed by the National Energy Board (NEB), but faces opposition from various stakeholders, most importantly from First Nations groups whose ancestral lands the pipeline would cross. Kinder Morgan's Trans Mountain expansion project does not expect to seek regulatory approval until late 2013. Since it would follow existing right of ways, approval from an environmental standpoint could potentially be more straightforward than Northern Gateway. However, it will likely face local opposition to increased oil tanker traffic in the port of Vancouver.

Given the hurdles faced by these projects, interest in west-to-east pipeline options has increased. Comments from the Québec Premier have been supportive of shipping more western crude oil to Québec refineries. Enbridge's Line 9 reversal project filed an application with the NEB in November, and expects to be in eastbound service in Q3 2014. The question is whether there will be local opposition to increase pipeline activity and/or potential increased tanker traffic in the St. Lawrence Seaway. There is also uncertainty over support for a pipeline to New Brunswick, partly due to the fact that there are no proposals on the table at the moment.

The role of public policy

The recent opposition to pipelines in the U.S. and to West Coast options in Canada creates an opportunity to have a national discussion on how to proceed on the policy front. In our opinion, the best thing that the Canadian governments can do to help create economic opportunity and diversify Canada's international market access is to ensure a timely and thorough regulatory process for approvals for pipeline projects like these. Timely, so that producers have greater certainty in their planning horizons. Governments also have a role in ensuring that thorough environmental impact assessments are conducted, safety regulations are stringent and adequately enforced, and spill response plans are robust. There is significant public opposition to pipeline projects, particularly in the wake of a few high profile spills in recent years, and governments could help assuage public concerns about pipeline spills. Pipelines remain the safest way to transport crude oil, but there is a role for government to play to ensure industry is held to the highest standard, to improve public confidence in pipeline expansion.

In an ideal world, the pipeline development would be pursued by the energy sector, under sound regulatory oversight. However, there are times when markets fail to invest adequately in strategic infrastructure. If so, governments have many tools available to help incent strategic energy projects. This was the case in the development of Muskrat Falls, the Oil Sands, Hibernia, and the North West Upgrader. These tools include the use of bitumen royalty in kind, royalty relief, interest write downs and loan guarantees.

It is perhaps worth stressing the economic benefits from additional infrastructure investment. Consider that the Keystone XL project is estimated by the U.S. State Department to create 5,000 to 6,000 direct jobs in the construction. The implication is that a $4 billion pipeline from Montréal to Saint John might create 3,500 jobs. And, this is a conservative estimate. Using Statistics Canada employment multipliers from the Input-Output tables would generate an even larger number. Similarly, the $4 billion pipeline might boost GDP of the two provinces by as much as $3 billion. Then there are the future jobs to maintain and operate the pipeline, the scope for refinery employment expansion and jobs at the port facilities.

Bottom Line

Canada's oil sector can be a major contributor to Canadian economic growth over coming decades. The realization of its potential is particularly positive for oil-rich provinces; but, it can also provide enormous benefits more broadly across the country. Investment and growth of the sector can create jobs, fuel industrial production, boost income growth and generate tax revenues to help fund many social priorities. Conversely, the development of the oil sector is at risk if Canada cannot open up new markets for its growing production through additional pipeline capacity. Western Canadian producers are already suffering price discounts due to their reliance on the U.S. Midwest market, and more diversified market access would help ensure Canadians get the best price for their resources. To achieve this Canada needs to get its crude oil to a port where oil can be shipped by tanker to overseas markets.