

MATERIAL RISKS: HOW PUBLIC ACCOUNTABILITY IS SLOWING TAR SANDS DEVELOPMENT



Material Risks: How public accountability is slowing tar sands development

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This is the first of a series of collaborative papers on the tar sands industry in Canada. The paper is intended to identify issues, data and trends, which will be developed in greater detail in the coming months.

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The Institute for Energy Economics and Financial Analysis (IEEFA) conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy and to reduce dependence on coal and other non-renewable energy resources.

Oil Change International (OCI) exposes the true costs of fossil fuels and identifies and overcomes barriers to the coming transition towards clean energy. Oil Change International works to achieve its mission by producing strategic research and hard-hitting, campaign-relevant investigations; engaging in domestic and international policy and media spaces; and providing leadership in and support for resistance to the political influence of the fossil fuel industry, particularly in the United States.

Cover image: Protestors against the Keystone XL pipeline conducting a sit in outside the White House during the Tar Sands Action, September 3, 2011. ©Josh Lopez.

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IMPORTANT INFORMATION

This report is for information and educational purposes only. It is intended solely as a discussion piece focused on the topic of the tar sands industry and the impact of public accountability efforts and market forces and the implications for industry profitability. Under no circumstance is it to be considered as a financial promotion. It is not an offer to sell or a solicitation to buy any investment referred to in this document; nor is it an offer to provide any form of investment service.

This report is not meant as a general guide to investing, or as a source of any specific investment recommendation. While the information contained in this report is from sources believed reliable, we do not represent that it is accurate or complete and it should not be relied upon as such. Unless attributed to others, any opinions expressed are the current opinions of Oil Change International (OCI) and the Institute of Energy Economics and Financial Analysis (IEEFA) only.

Certain information presented may have been provided by third parties. OCI and IEEFA believe that such third-party information is reliable, but do not guarantee its accuracy, timeliness or completeness; and it is subject to change without notice. If there are considered to be material errors, please advise the authors and a revised version can be published.

OCI has entered into a contract with Rystad Energy for the use of its UCube database. The database represents Rystad's compilation of industry data and trends. Much of the data used in this report is derived from that database and, where appropriate, supplemented with independent sources from the tar sands industry, individual tar sand producer financial filings, governmental publications and business trade publications. The summary and conclusions in this paper are those of OCI and IEEFA. The summary and conclusions are not to be construed as the opinion of Rystad Energy.

EXECUTIVE SUMMARY

The Keystone XL tar sands pipeline is one of the most talked about North American energy and political issues of the era. Once thought inevitable, the project and Canada's plan to expand tar sands production have been confronted by an accumulation of economic and political risks creating a veritable 'carbon blockade.'

As Canadian leaders and citizens wrestle with an industry plan to more than double the daily output of tar sands crude, stakeholders in and outside of Canada have created a debate over local environmental and global climate costs. U.S. and Canadian decision makers have taken a second look as project delays take a financial and political toll on proposed projects. The delays and cancellations have exposed the fact that tar sands investments, once thought to be highly lucrative, are showing signs of financial weakness. With growing public awareness and market hesitancy, expansion of tar sands production in Canada will remain contested terrain for the foreseeable future.

If Canadian oil producers are able to succeed with their large scale build out plans, over 21 billion barrels of tar sands crude will be produced over the next sixteen years (to 2030). In that time, industry intends to increase daily production from current levels of 2 million barrels per day (mbpd) to possibly as high as 4.8 mbpd or even more.

Tar sands production is landlocked. Expansion of transport infrastructure is essential to production growth. The Keystone XL pipeline campaign has, to date, delayed this pipeline infrastructure project for over five years. Additional campaigns have effectively delayed every proposed export pipeline project, including Northern Gateway, Alberta Clipper, and Energy East. The delays have cost producers money and time, reducing the price they have received for tar sands crude as supply has outpaced the capacity of transport infrastructure to carry tar sands crude to new markets.

During the debate over Keystone, market changes have taken place that are also weakening the financial viability of tar sands projects. In 2014 alone, three significant projects have been canceled and more are in significant financial distress. Junior tar sand producers are, as a group facing capital market access problems. In addition, the industry faces a growing constellation of risks as project economics become pressured by low oil prices and shrinking revenues, rising costs, smaller profit margins, tougher capital markets, transport constraints, environmental challenges and protectionist legislation.

Most analysts consistently cite "transportation and infrastructure constraints" and "lack of international market access" as major reasons for concern. These factors are directly linked to public accountability efforts around climate and other environmental issues that appear certain to only grow stronger in the coming years. In addition, the recent fall in oil prices only reduces margins, thus further undermining the viability of project finance. Tar sands producers need pipelines to move their product as cheaply as possible to the most lucrative markets more than ever before.

This report is a joint effort by the Institute for Energy Efficiency and Financial Analysis and Oil Change International to describe the changes happening in the tar sands market, discern the reasons for these changes, and forecast the impacts of continuing trends. Our principal findings are:

- ❑ **Lack of market access, caused in large part by public accountability actions driven by pipeline campaigns, has played a significant role in the cancellation of three major tar sands projects in 2014 alone- Shell's Pierre River, Total's Joslyn North, and Statoil's Corner Project.**
- ❑ **Combined, these projects would have produced 4.7 billion barrels of bitumen that would in turn have released 2.8 billion metric tonnes of carbon dioxide (CO₂) into the atmosphere.** This is equivalent to the emissions of 735 coal plants in one year, or building 18 new coal plants that will last 40 years each.
- ❑ **After years of increased spending in the tar sands, capital expenditure (Capex) has peaked and has begun to decline.** We project that this erosion of Capex spending levels from current plans will continue as tar sand producers increasingly acknowledge the constellation of risks described in this report.
- ❑ **Public accountability in the form of pipeline campaigns has been a major factor in reducing revenues to tar sands producers.** Overall, tar sands producers lost \$30.9 billion between 2010-2013 due to wider price differentials caused by transportation bottlenecks and the flood of crude coming from tight oil fields. Of that, \$17.1 billion or 55 percent can be credibly attributed to the impact of public accountability campaigns.
- ❑ **Tar sands producers are underperforming the stock market.** Nine of ten leading tar sands producers in Canada have underperformed the stock market in the last five years.
- ❑ **Leading industry experts have recently downgraded their outlook for future tar sands production.** This downgrade takes place as transportation constraints persist.

In addition to evaluating current impacts of public accountability to date, we also have constructed a forecast model to estimate what continued public pressure on pipeline infrastructure may do to tar sands production. Our forecast analysis projects trends out to 2030 and finds that:

▣ If pipeline campaigns and associated public accountability efforts continue to drive transportation constraints, up to 6.9 billion barrels of tar sands oil could be left underground. In other words, if no new pipelines are built, our forecast predicts that an additional 4.1 billion tonnes of CO₂ will not be released into the atmosphere. Spread over the 16 years of this forecast, these emissions are the equivalent of the emissions from 67 average U.S. coal plants or nearly 54 million average passenger vehicles.

▣ Capital expenditure (Capex) is expected to decline steadily for years and our forecast does not envision it returning to current levels for at least 15 years, if ever. Increased investment in the tar sands is only likely to take place if all or most market access issues are solved.

Tar sands pipeline campaigns are a recent example of how public advocacy efforts can alter capital investment decision making. The Keystone XL campaign has managed thus far to delay a final governmental decision on the project while raising public awareness about the environmental costs of tar sands development. These citizen interventions have resulted in increased diligence by government agencies with public health and environmental mandates, impaired the project development process of the capital markets and mobilized a permanent, political constituency in support of alternatives to tar sands expansion.

“There is no way we could have ever predicted that we would become the lightning rod for a debate around fossil fuels and the development of the Canadian oil sands.”
Russ Girling, CEO, TransCanada, 2011

PUBLIC ACCOUNTABILITY MAKES A DIFFERENCE: SHIFTING MARKETS, INCREASED SCRUTINY AND CHANGING OPINION

Tar sands and pipeline campaigns are a recent example of how public advocacy efforts can shape capital investment decision making. The Keystone XL campaign to stop the project has managed thus far to delay final governmental decisions on the project while raising public awareness about the environmental costs of tar sands development. These activist interventions have resulted in increased diligence by government agencies with public health and environmental mandates, impaired the project development process of the capital markets and mobilized a permanent, political constituency in support of alternatives to tar sand expansion. This report documents the detailed interplay of public advocacy efforts and market forces in the Canadian tar sands.

KEYSTONE XL: PUBLIC ACCOUNTABILITY AS AN INVESTMENT RISK

When the TransCanada Keystone XL pipeline was originally proposed in 2008, there was an expectation that it would receive necessary approvals quickly and

be up and running by late 2011. Public policy, public opinion, and capital market allocations were in alignment to promote the Keystone storyline of investment growth and economic progress in the tar sands.

Time and events changed this storyline. By 2011 Russ Girling, the CEO of TransCanada, said *"There is no way we could have ever predicted that we would become the lightning rod for a debate around fossil fuels and the development of the Canadian oil sands."*¹ Public advocacy efforts were already driving significant shifts in public opinion and political debate in 2011. Today, public opposition to the pipeline has continued to grow and support for the pipeline has declined.²

In Canada, campaigns to raise awareness around tar sands and pipelines are clearly having an impact on public opinion as well. Polling completed for the Canadian Association of Petroleum Producers (CAPP) in late 2013 showed that the majority of Canadians (51%) believe that, "while there is a need for

energy in Canada, it does not outweigh the environmental risks with oil sands development." The same survey also indicated that 80% of Canadians would assign the tar sands industry a grade of C or less when it comes to protecting the environment.³ Finally, recent Nanos polling, also in Canada, shows that support for the Keystone XL pipeline in Canada has dropped from 60% to 47% between April of 2013 and January of 2014.⁴

It is expected that sometime during late 2014 or early 2015 the United States government will make a critical decision that could move the project forward or cause its cancellation or further delay. Whatever the decision, the storyline of unfettered growth attached to Keystone and other tar sands projects has been permanently altered. Growing public sentiment to find alternatives to fossil fuels will drive much of the dialogue. Future institutional decisions be they: international agreements on climate change, shifts of capital allocation, change in law or regulation, and/or adoption of new paradigms by elected leaders and

1 Cattaneo, C. "TransCanada in eye of the storm." *The Financial Post*. September 8, 2011. http://business.financialpost.com/2011/09/08/transcanada-in-eye-of-the-storm/?__lsa=bf5b-4bd4

2 Droitsch, D. "New poll on Keystone XL tar sands pipeline indicating growing opposition, waning support." *The Energy Collective*. January 30, 2014. <http://theenergycollective.com/danielle-droitsch/334201/new-poll-keystone-xl-tar-sands-pipeline-indicating-growing-opposition-pipel>

3 "Here's what Canadians think of the oil sands industry." *National Post*. October 30, 2013. http://business.financialpost.com/2013/10/30/heres-what-canadians-think-about-the-oil-sands-industry/?__lsa=21a3-b64e

4 "Support for Keystone XL pipeline on the decline: Nanos." *CBC News*. January 16, 2014. <http://www.cbc.ca/news/politics/support-for-keystone-xl-pipeline-on-the-decline-nanos-1.2498835>

the public are moving toward economic models that combine profitability with protection of public health, climate, and the environment.

These factors are material risks to the current alignment of capital investment and project development. This paper asserts that the risks, typically understood as political risks, are known, permanent, predictable within reasonable standards of probability, shape the behavior of investment stakeholders and, are ultimately quantifiable.

LESSONS IN THE PUBLIC ACCOUNTABILITY RISK FACTOR FROM U.S. COAL EXPERIENCE

One of the clearest areas where popular mobilization has demonstrated significant impact on investment decision making relates to coal plant investments in the United States. In 2007 the United States planned for 150 new coal plants to replace old ones that were aging out.⁵ From its inception the new plan ran into financial headwinds and public opposition led by the Sierra Club. By 2010 it was clear that most of the coal plants were not going to be built.

Daniel Yergin, the prominent oil industry consultant, emphasizes that energy markets are driven to a large extent by a complex nexus between capital markets, government support, and political interests. According to Yergin, public campaigning against coal was a primary driver in challenging the plans of this politically protected energy source in the U.S. into financially toxic and unbuildable unprofitable projects:

In 2011 about 25 coal fired plants were under construction in the United States. But political and regulatory opposition to coal on grounds of global warming has mounted to a level that makes it difficult to launch new conventional coal plants.⁶

New coal plant proposals originally had the backing of elected officials, investment banks, utility companies, and public service commissions and environmental regulators. In many cases investment was sunk and permits acquired before proposals were dropped. Investors and an increasing list of other stakeholders found the mounting risks of changing market conditions, increased regulation⁷ and anti-coal campaigns too numerous to manage. The canceled plants involved an estimated \$273 billion in new capital investment and the termination of support for new plants by key energy stakeholders across the nation.⁸

Most of these coal plant cancellations occurred despite utility and coal industry efforts to have them approved. A combination of challenging market conditions and public accountability advocacy overshadowed industry efforts to expand coal fired generation in the United States.^{9,10} The cumulative impact of these risks has effectively made new coal plants unbankable.¹¹

Without achieving any noteworthy public policy goal during that period (in fact federal climate legislation was defeated), the climate movement successfully initiated actions that directly and indirectly contributed to a shift in perception that new coal plants were not profitable and

drove the cancellation these new energy investments. Climate activists are today engaged in a similar effort to shift the perception of inevitability, which continues to surround tar sands development.

What the U.S. coal plant experience suggests is that in the absence of an international or national response to the challenge of energy and climate, local leaders and investors stepped in to fill the policy void and adopted strategies that led to the defeat of significant new levels of coal fired generation. The blunt, frank message of this uniform rejection of new coal plants to policy makers and the capital markets was: Find Another Way. The impact of these advocacy efforts highlighted to decision makers the climate and environmental costs and increasingly brought to bear financial perspectives that showed a weak economic outlook for coal. In a significant number of instances it is apparent that coal and utility interests would have built highly risky coal plants if not for the advocacy challenges.¹² In the broader sense the industry's 183 failed coal plants¹³ created its own storyline of a downward spiral – a storyline that would hinder their future efforts.

5 National Energy Technology Laboratory (NETL). *Tracking new coal-fired power plants, coal's resurgence in electric power generation*. 2007.

6 Yergin, D. *The Quest: Energy, security and the remaking of the modern world*. New York: Penguin Books, 2011.

7 Barradale, Merrill Jones, "The Logic of Carbon Risk: A Practitioners' Perspective on Investment Under Uncertain Climate Policy." June 21, 2013. USAEE Working Paper No. 09-037.

<http://ssrn.com/abstract=1529471> or <http://dx.doi.org/10.2139/ssrn.1529471>

8 National Energy Technology Laboratory (NETL). *Tracking new coal-fired power plants, coal's resurgence in electric power generation*. 2007. NETL's plan would have created 90 GW of electricity and cost approximately \$145 billion. For the purposes of this paper, the cost of construction is assumed to be for a 600 MW coal plant at a cost of \$2500 kw. The full cost for the original portfolio of 150 new plants is estimated at \$225 billion. The 183 plants would conservatively be valued at \$273 billion. Not all plants were sponsored by investor owned utilities. Some were sponsored by public power authorities, others by rural electric cooperatives – all require access to capital markets where return on investments is calculated against risk.

9 Hertsgaard, Mark. "How a Grassroots Rebellion Won the Nation's Biggest Climate Victory." *Mother Jones*, April 2, 2012. <http://www.motherjones.com/environment/2012/04/beyond-coal-plant-activism>

10 Ward, Beth. "On lack of coal build-up, enviros tout wins, industry lists several factors," *Platts Coal Outlook*. April 18, 2011.

11 Edison Electric Institute *Financial Review (of Investor Owned Utilities)*, Construction, 2013, p. 49.

12 Sanzillo, Tom. "Power4Georgians Plant Washington: Too High a Price for Consumers." *TR Rose Associates*, 2011, pg. 41-43.

13 In addition to the 150 original plants other coal plant proposals were also announced and canceled. According to the Sierra Club as of September 14, 2014, 183 new coal plant proposals have been defeated. <http://content.sierraclub.org/coal/environmentallaw/plant-tracker>

TROUBLING TRENDS: PUBLIC ACCOUNTABILITY IMPACTS TO DATE

The debate over the Keystone XL pipeline has brought increased interest in the tar sands industry and the companies involved with it. The delays on Keystone, and other tar sands projects are a response to public demands for greater accountability and market forces now calling for a second look at Canada's aggressive plans for expanded supply and shipment of tar sands products.

This section of the paper identifies financial benchmarks and risks to industry and demonstrates how deteriorating corporate and project finance is diminishing the likelihood that Canadian tar sands producer's plans for expansion will materialize.

Grant Ukrainetz of the Korean state-owned oil company, summarized the market perception of tar sands production in October, 2013:

Capital cost pressures in the oil sands have tripled, operating costs in the oil sands at least doubled, we had a change in the oil sands royalty regime, we had greater environmental regulations, costs of compliance have increased, we had continued delays in pipelines

that allow us to move products out to maximize revenue, (there is) negative public sentiment toward the oil sands, plus you have the emergence of other opportunities in the U.S. and elsewhere.¹⁴

UNDERPERFORMING STOCKS

An analysis of major tar sands companies' stock reveals that a large majority, while profitable, are underperforming relative to market benchmarks. The ten top tar sands operators in Canada produce 85% of all tar sands production that occurred in 2013. Five of the top ten producers are Canadian based and the remainder are based in the United States, Netherlands and China. ExxonMobil, Shell and Conoco Phillips are global leaders in the oil and gas industry.

Most tar sands producers in Canada are engaged in a broad range of oil and gas extraction, processing, marketing, and distribution. For some of the companies, like ExxonMobil, Canadian tar sands represent a significant share of overall Canadian production but only 9% of the company's annual production.

A review of each company's stock performance over the last five years

reveals the following patterns (see Figure 1).¹⁶ Only one of the companies, ConocoPhillips¹⁷ (see footnote below) consistently led the Dow Jones Industrial Average. The remaining companies, while largely profitable lagged those market benchmarks. Large oil companies command significant investment from individual and institutional investors. These companies are traditionally relied upon to lead the global economy and the major stock markets. Any indication that these companies are not leading economic growth is cause for concern.

The stock performance of the ten top tar sands producers in Canada raises these concerns:

- ❑ Despite growth, tar sands producer share prices have significantly lagged behind the Dow Jones Industrial Average (DJIA).
- ❑ The DJIA has increased by ~57% since 2010. Only ConocoPhillips has posted stock performance that exceeded this growth metric (130% of the DJIA). The other nine companies ranged in growth from -44% to +33%.
- ❑ The Standard and Poor's Toronto Exchange Index rose by -19% during

¹⁴ Catteano, Claudia. "Oil sands investment slowing because of tough market, not new SOE rules, execs say." The Financial Post, April 4, 2014. http://business.financialpost.com/2014/04/04/oil-sands-investment-slowing-because-of-tough-market-not-new-soe-rules-exec-say/?__lsa=698a-6a9b7840-5316

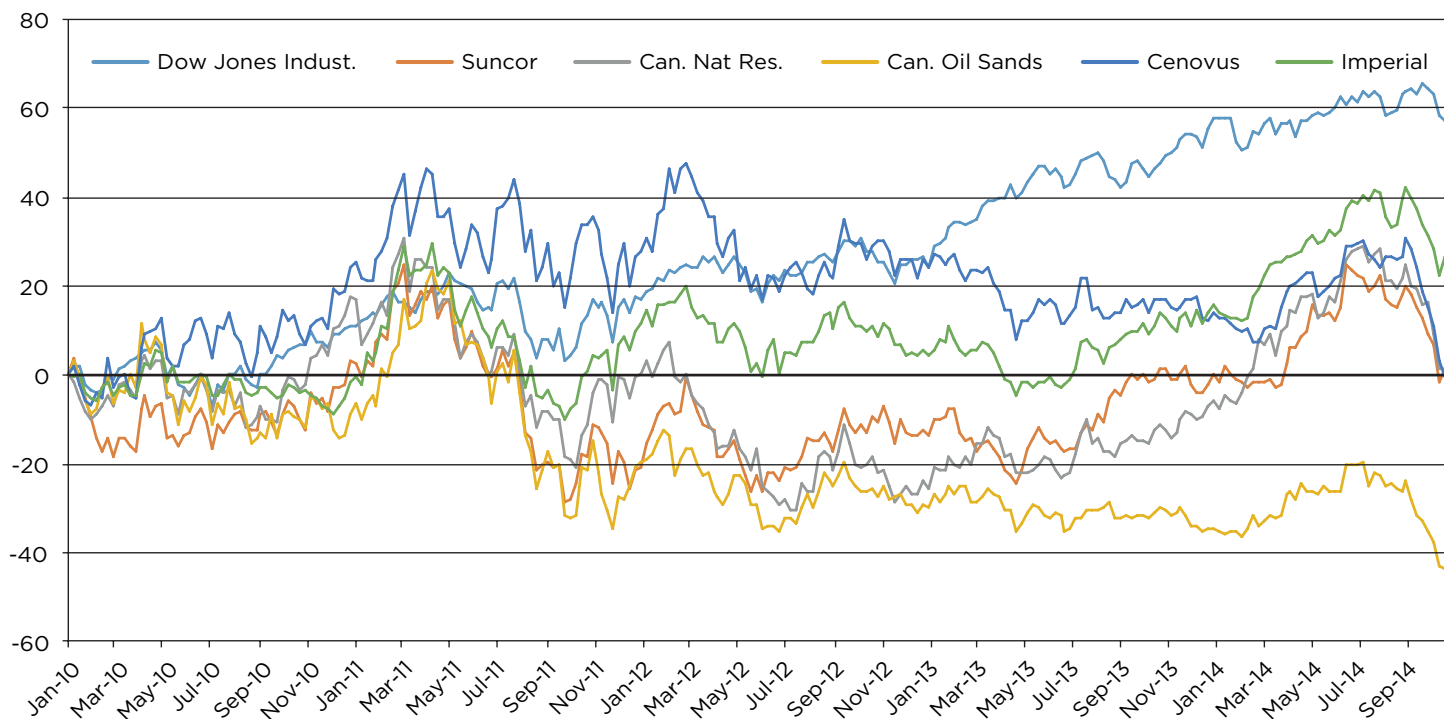
¹⁵ Rystad Energy UCube (Sept. 2014)

¹⁶ For the purpose of this analysis individual company stock performance was compared to its peers, and the Dow Jones Industrial (DJIA) average from 2009 to the present. The impact of tar sands performance within each of the companies has a relatively different weight given the importance of the tar sands operating segment to the enterprise as a whole. This analysis is meant to be used in combination with the other financial metrics provided in this report to provide a broader understanding of company and market performance.

¹⁷ Conoco's gains are more attributable to its broader restructuring plan including its intensified investments in North American tight oil and spin-off of its refining operations. The aggressive growth is not attributable to its Canadian tar sands operation.

Table 1. Top 10 Tar Sands Producers in Canada¹⁵

| Company | Country | 2013 Production (thousands bb/day) |
|------------------------------------|-------------|------------------------------------|
| Suncor | Canada | 398 |
| Canadian Natural Resources | Canada | 196 |
| ExxonMobil | U.S.A. | 172 |
| Shell | Netherlands | 145 |
| ConocoPhillips | U.S.A. | 115 |
| Cenovus Energy | Canada | 103 |
| Canadian Oil sands | Canada | 98 |
| Imperial Oil | Canada | 71 |
| Devon Energy | U.S.A. | 57 |
| CNOOC | China | 49 |
| Top 10 2013 Production | | 1,403 |
| Total 2013 Production (All) | | 1,656 |
| Top Ten Percentage of Total | | 85 |

Figure 1: Stock Performance of Top 5 Tar Sands Companies between 2010 and 2014 Relative to the Dow Jones Industrial Average

Source: Company financials, IEEFA

this same period. Of the five Canadian based companies only Imperial Oil surpassed this Index.

- ❑ If ConocoPhillips is removed from the equation, the average of the top nine producers grew by only -7% during the period 2010-2014, compared to the DJIA at +57%.
- ❑ Suncor, Canada's leading tar sands producer grew by -2.4% -- just 4% of the growth level of the DJIA and 12% of the Toronto Index.

SPENDING MORE, MAKING LESS

Each of the top ten tar sands companies has integrated operations such as conventional and unconventional production, refining and midstream assets in addition to their tar sands portfolios. Tar sands investments are considered long-lived assets that should produce revenue for decades. In the current climate the industry is showing signs of weakness. As demonstrated by Figure 2, tar sand producers are spending more on capitals projects, pressured by rising operational

expenditures and faced with diminished cash flow.

A more detailed analysis of the specific companies in Canada's tar sands portfolio demonstrates how these underlying dynamics play out in each company. Large industry leaders and the smaller junior companies in the Canadian tar sands industry have been expanding their programs of capital expenditure. Seven of the top ten leading companies have negative free cash flow (see Figure 3 and 4). A similar trend is occurring with regard to the junior tar sands producers (see Figure 5). This trend where companies run a negative cash balance (while facing rising operational expenses) in order to finance future capital investment is a warning signal and requires additional diligence by investors.

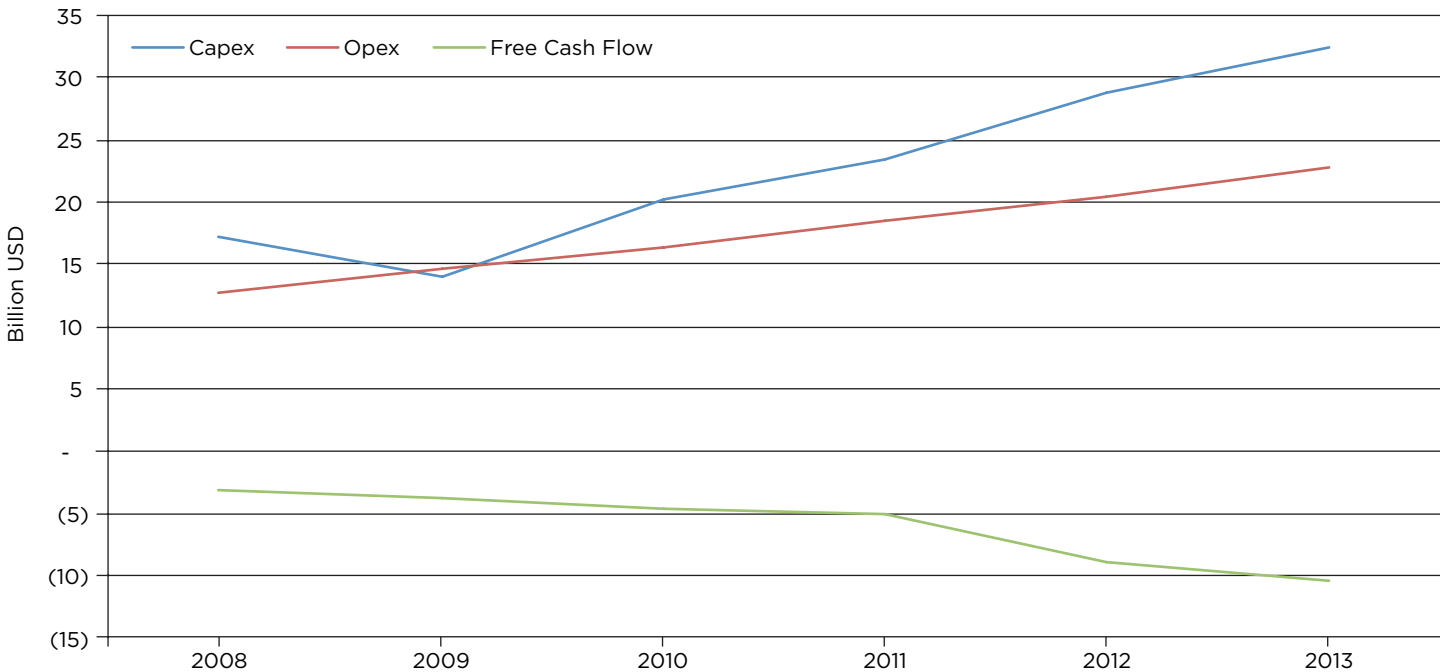
Additional analysis shows that the revenue side of the equation for tar sands producers has tightened in the last few years. Tar sands production is heavily dependent upon high crude prices. Since

2011 the Western Canadian Select (WCS) (Canadian oil sands product) has traded at a consistently discounted price to West Texas Intermediate and Maya (Mexican) oil (See Figure 6). This is not anticipated to change.

The discount between WCS and WTI increased from \$17.10 in 2011 to \$25.11 in 2013. WCS's weakened price position tightened operating margins for the industry. In 2012, when global crude prices dropped, Canadian Exploration and Production corporate profits fell more than 50 percent to \$7.1 billion, the lowest level seen since 1999.

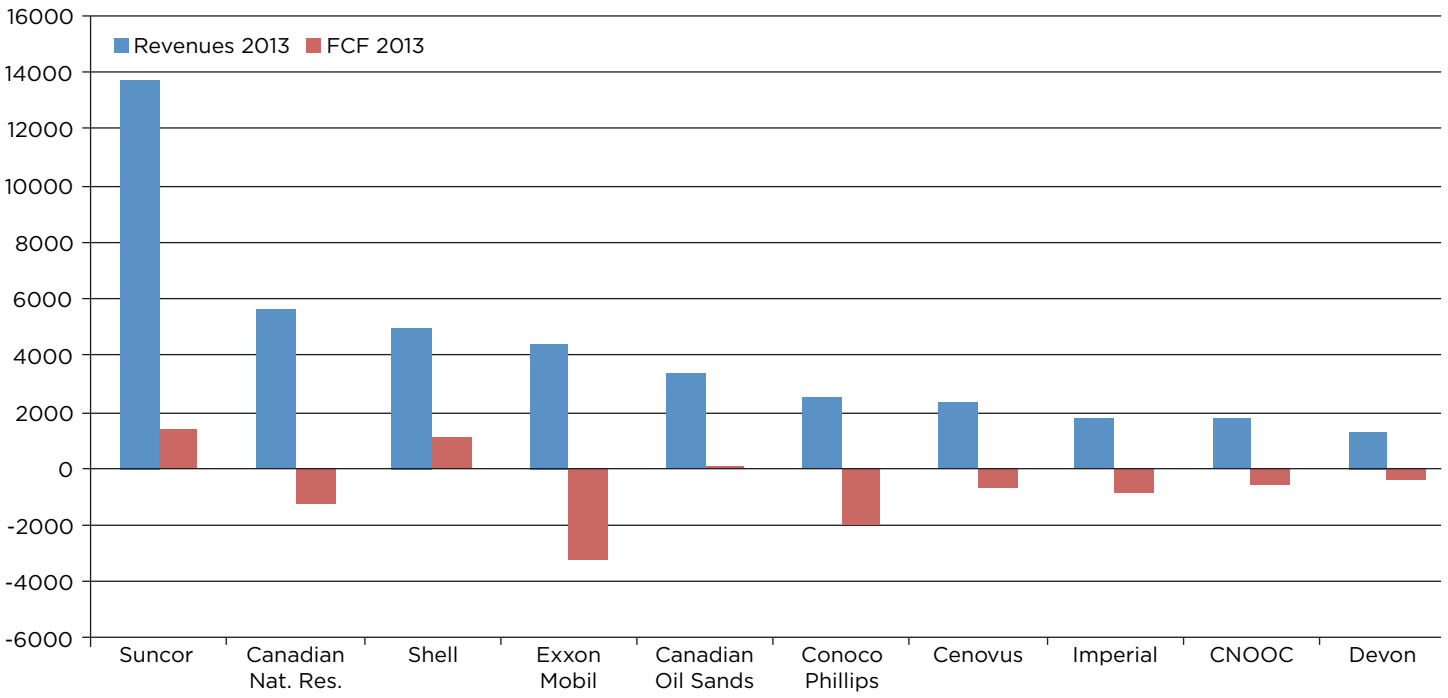
Relatively weak stock performance, high capital and operational expenditure, and falling prices suggest a scenario of weakening long term performance. Coupling such margin constraints with transportation bottlenecks and other troubling trends raises a reasonable argument that oil sands investments may not be the best place for investors to seek returns.

Figure 2: Spending versus income in the tar sands 2008-2013



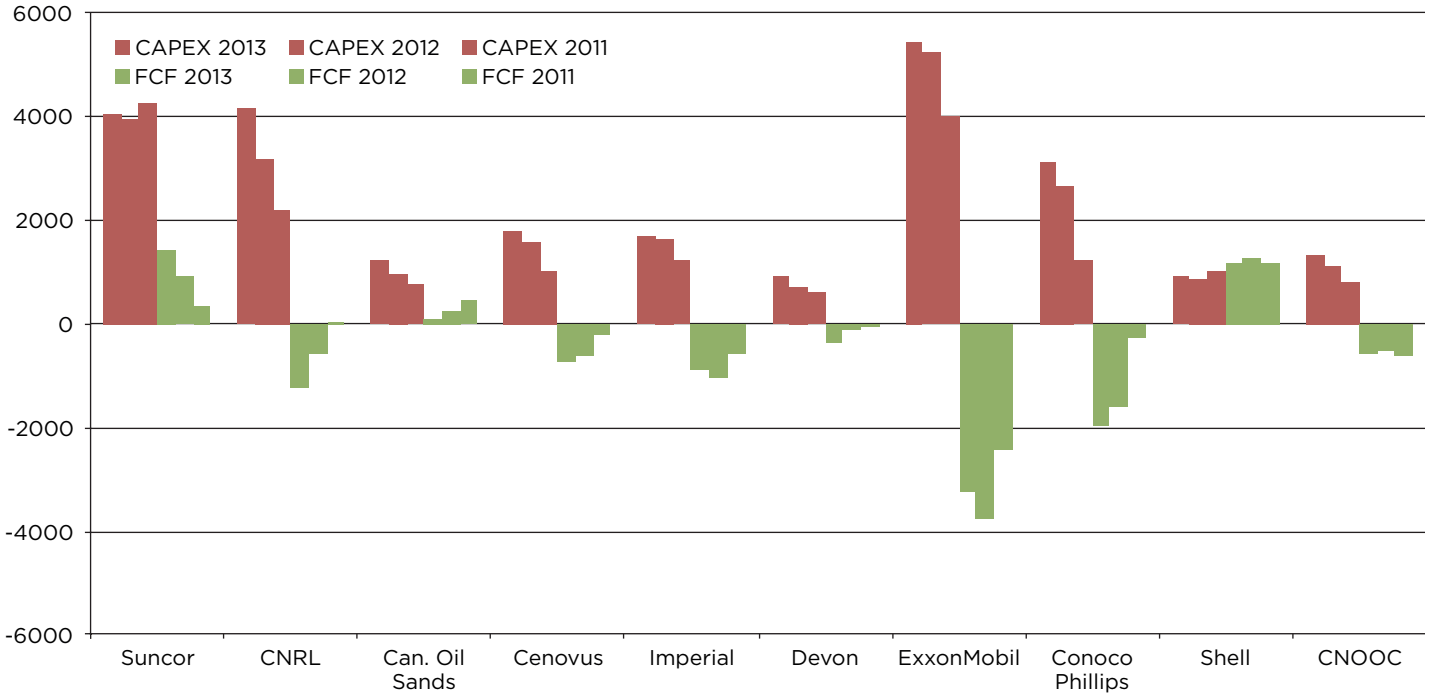
Source: OCI/IEFFA (Rystad Energy UCube, Sept. 2014)

Figure 3. Tar Sands Revenues vs. Free Cash Flow 2013



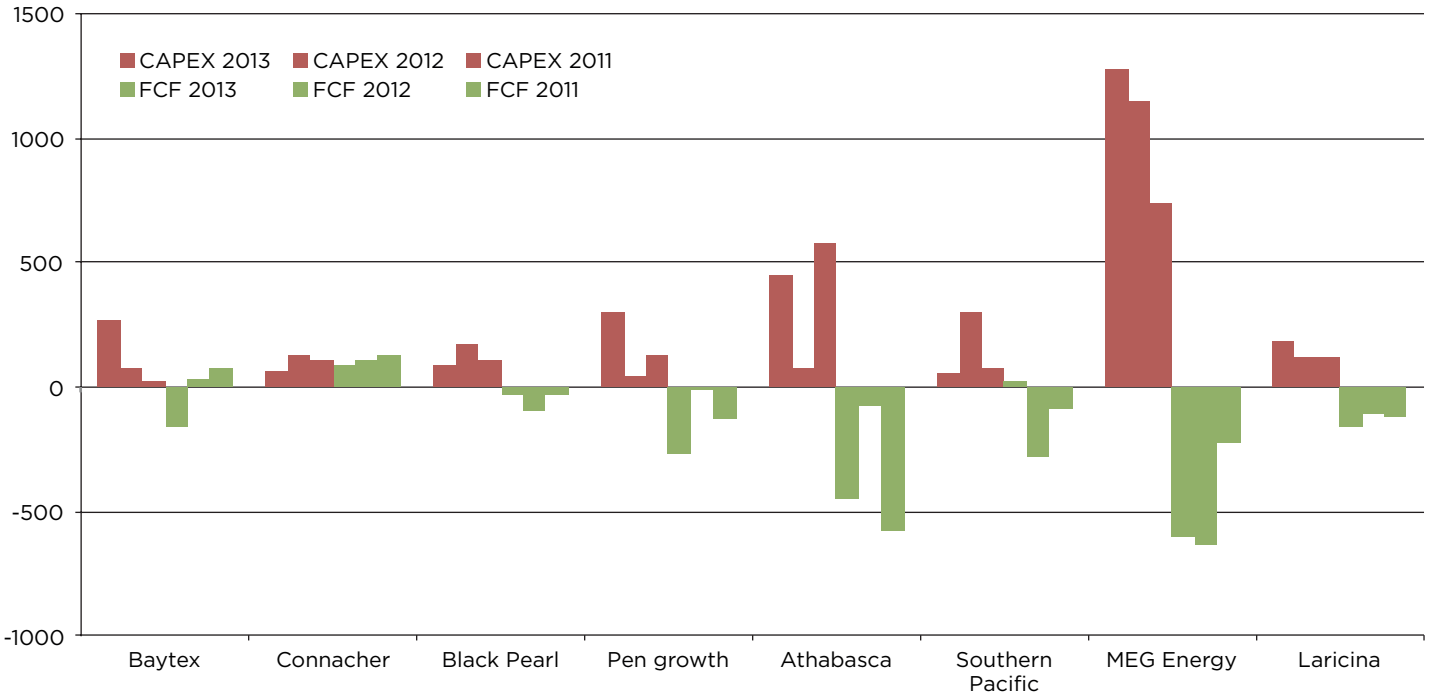
Source: Company financials, IEEFA

Figure 4. Tar Sands CAPEX vs. Free Cash Flow



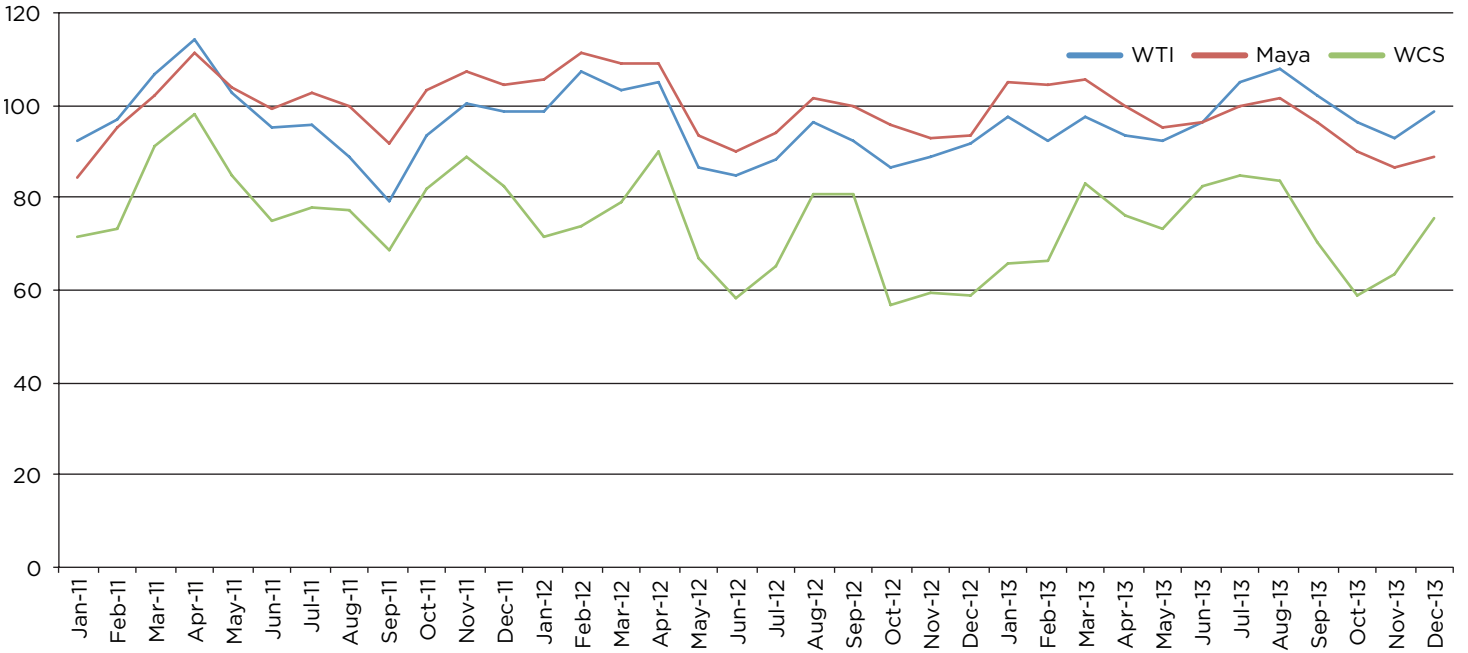
Source: Company financials, IEEFA

Figure 5. CAPEX vs. Free Cash Flow - Tar Sands Juniors



Source: Company financials, IEEFA

Figure 6. Price Differential between Maya, WTI, and WCS (\$/bbl), (2011-2013)



Source: Bloomberg

Falling Oil Price

Since July of 2014, the price of all crude oils has been dropping quite sharply. The U.S. oil boom together with a slowing in global oil demand growth has fueled a glut in global supply, which has resulted in a sharp drop in prices. In October of 2014 the price of Western Canada Select was in the mid \$70 range, a level that if maintained would present serious problems for many tar sands producers. Investment analysts at Raymond James wrote the following to clients in early October:

*"If there is one segment of the Canadian oil sector that we believe has most felt the squeeze in recent months it is likely oil sands producers. Not only are falling oil prices weighing on one of the higher costs of oil supply globally, but we believe producers are beginning to feel the effects of meaningful cost inflation in the region once again."*¹⁸

And the Financial Times noted:

*"...a drop in revenues amid weaker margins would add to pressure on oil companies that have already been battling higher costs and a drop in capital expenditure may impact future growth. Other various deepwater, arctic, international shale and tar sands projects could also be sidelined."*¹⁹

Depressed oil prices harm company balance sheets in the short term. The persistence of low oil prices sends a market signal that further capex investment is less profitable and requires constant reevaluation. In a period of tight revenue and margins oil companies are more likely to drop marginal, high cost projects. Further delays and cancellations of tar sands projects is a likely outcome of these new market realities.

ADDITIONAL IMPEDIMENTS AND RISKS

The financial performance of tar sands companies in the current market raises concerns as well. The forward looking risk scenario contains logistical, financial, economic, and political risks. Taken individually and cumulatively the risks suggest that the current softness in company profitability is likely to continue. Tar sands CAPEX spending is clearly facing changing conditions.

Transportation by rail

Transportation bottlenecks driven by market forces and pipeline campaigns have had significant material costs for the industry. As a result, some companies are placing greater emphasis on rail transport. Rail adds considerably to the overall cost for bitumen, a commodity that already trades at a discounted price due to lower quality. There is growing concern within industry circles that transportation bottlenecks will not resolve themselves. In 2014, Deloitte states:

*"It's also still possible that outstanding transportation projects like the Keystone XL and Northern Gateway pipelines will never break ground. Indeed, the majority of a group of industry experts we surveyed in mid-2013 expect that neither pipeline will be built."*²¹

Transport of bitumen by rail also faces a host of risks as preparation costs for transport are complicated. Weather, route congestion and safety regulations also create additional risk factors (See Box: Why Rail is Not the Answer for Transporting Tar Sands).²²

"The oil sands are probably the one challenging (sector)... There are a couple of headwinds against that business overall. The first is really global perception ... it's not viewed as a favorable investment in lots of places."
Dan Barclay, head of BMO Capital Markets

¹⁸ Raymond James Canada Research Canadian Energy Midweek: A Story Of Divergence Within A Broader Theme Of Fear October 8, 2014

¹⁹ <http://www.ft.com/intl/cms/s/0/691032d4-5053-11e4-9822-00144feab7de.html#axzz3G2H9DSM8>

²⁰ Hussain, Y. "Foreign investors 'scared off' from the oil sands, M&A expert says." *The Financial Post*, 2014. http://business.financialpost.com/2014/06/24/foreign-investors-scared-off-from-the-oil-sands-ma-expert-says/?_lsa=ae6b-8492

²¹ Deloitte. *Gaining ground in the sands 2014: Five rites of passage for an industry in pursuit of operational maturity*, p. 5. <http://www2.deloitte.com/content/dam/Deloitte/ca/Documents/international-business/ca-en-ib-gaining-ground-in-the-sands-2014.pdf>

²² Stockman, L., *Wrong side of the tracks: why rail is not the answer to the tar sands market access problem*. Oil Change International, 2014. http://priceofoil.org/content/uploads/2014/09/OCI-Wrong-Side-of-the-Tracks_Final.pdf

Why Rail is Not the Answer for Transporting Tar Sands²³

Tar sands proponents claim that blocking pipelines will not impact production because the bitumen can go by rail instead. However, the idea that rail can profitably deliver the roughly 4 million bpd capacity of currently proposed pipelines is uncertain at best. Rail is beset with capacity limitations, financial uncertainty, and political opposition.

Industry officials are also concerned that the promise of rail as a pipeline alternative is overstated. When Steve Hanlon, President and CEO of Gibson Energy Inc., a company that operates a number of crude-by-rail terminals including one that loads tar sands bitumen in Alberta, said, "Crude by rail is not a panacea. It's not going to replace pipe," he was right.

In fact shipping bitumen to the Gulf Coast by rail has been losing money for much of 2014 and only shipments tied to long-term contracts have made the 3,000 mile journey. In the first five months of 2014, only about 45,000 bpd arrived at the Gulf Coast by rail. This is less than six percent of the capacity of the proposed Keystone XL pipeline. While another 80,000 bpd went to other parts of the U.S. by rail, the industry needs a profitable multi-million barrel per day pathway to coastal markets and rail simply is not it.

A combination of high costs and poor returns is working against bitumen-by-rail being much more than a niche activity. These are summarized as follows:

Gulf Coast crude oil prices are being suppressed by the flood of crude from fracked oil fields across America. Prices for tar sands crude on the Gulf Coast do not cover the additional cost of shipping dilbit 3,000 miles by rail.

Rail is an above ground mode of transport that is vulnerable to weather and other unpredictable delays. Tar sands producers must compete for access to capacity with oil producers in North Dakota as well as shippers of commodities such as grain, coal and manufactured and imported goods. Unlike pipelines, price and service is not locked into decade long contracts and is vulnerable to inflation and disruption. In addition rail congestion in the United States is already having a negative impact on coal producers.²⁴

Large-scale terminals need to be built to handle the quantity of crude and load multiple unit trains per day.

Transporting raw bitumen can save producers the cost of shipping the diluent required for pipeline transport. However, no unit train terminal currently possess the equipment to load large volumes of raw bitumen.

The reduced profitability of shipping bitumen by rail means that tar sands producers are less able to grow their production capacity because they cannot profitably deliver bitumen to distant markets.

While the transport of tar sands bitumen by rail may grow to accommodate near-term production growth plans, weaknesses in investment scenarios and rail capacity suggest U.S. rail networks are insufficiently positioned to absorb 4 million bpd of new oil sands product.

Legal access to the resource and transportation routes

Canadian First Nations have a unique set of constitutionally recognized legal rights that have important implications for governments in relation to tar sands and tar sands infrastructure development. This includes rights that can constrain access to both the resource itself as well as transportation routes.

Recently, as an example, First Nations in Canada filed no fewer than nine legal challenges to the federal government's decision to approve the Northern Gateway

pipeline project.²⁵ First Nation claims related to the Enbridge Northern Gateway pipeline have created sufficient headwinds to the point where it is widely regarded as being unbuildable.²⁶ In addition to this, the Canadian Government is facing various constitutional challenges from First Nations and civil society organizations related to tar sands and infrastructure expansion and restrictive legislative changes to the public hearing process.

First Nations are also mounting legal challenges to tar sands development and expansion on traditional territory. For

example, the Athabasca Chipewyan First Nation, whose traditional territory is rich in tar sands deposits, are, "actively engaged in a multi-prong legal strategy to challenge public policy, individual tar sands projects and inadequate environmental protection in Alberta's Athabasca tar sands region."²⁷

The above are just a few examples of various First Nations lead legal initiatives in Canada. In the United States, Nebraskan landowners have successfully asserted land rights claims in the face of the Keystone XL pipeline.^{28,29}

23 For more details and all references, please see Stockman, L. *Wrong side of the tracks: why rail is not the answer to the tar sands market access problem*. Oil Change International, 2014. http://priceofoil.org/content/uploads/2014/09/OCI-Wrong-Side-of-the-Tracks_Final.pdf.

24 Cox, Charlotte and Darren Epps, "PRB coal deliveries to upper Midwest hit again in Q2 as rail issues persist." SNL, September 9, 2014.

25 Lanellaa, M. "Northern Gateway pipeline: First Nations outline constitutional challenges." The Canadian Broadcasting Corporation, 2014. <http://www.cbc.ca/m/touch/news/story/1.2706376>

26 Moore, D. "Despite federal approval, Northern Gateway faces legal and political hurdles." The Canadian Press, 2014. <http://www.theprovince.com/business/waits+federal+decision+Northern+Gateway+pipeline+proposal/9947153/story.html>

27 Athabasca Chipewyan First Nations. Honour the Treaties. <http://www.honourtheacfn.ca/>

28 Stueck, W. "B.C. First Nations challenge Northern Gateway pipeline in new court action." The Globe and Mail, 2014. <http://www.theglobeandmail.com/news/british-columbia/first-nations-challenge-northern-gateway-pipeline-in-new-court-action/article19608617/>

29 "Nebraska judge blocks Keystone XL route." Al Jazeera America. February 19, 2014. <http://america.aljazeera.com/articles/2014/2/19/nebraska-law-thatallowedkeystonexlstruckdown.html>

Canadian action on foreign ownership

In 2012, the Canadian government introduced new foreign ownership regulations regarding investment in Canadian oil resources. The laws, designed to protect Canada from foreign influence had the impact of restricting capital investment into the country at a time when companies were looking to expand investment in oil sands.

This change and the host of other issues create a worrisome investment climate. William Quinn, head of merger and acquisitions at TD Securities stated, "Five years ago, the oil sands had the greatest scope for non-Canadian investments in Canada. That's changed dramatically."³⁰

Quinn was primarily referring to the new regulatory framework that was put in place in 2012 to protect Canadian assets from foreign ownership. Each transaction involving foreign capital is vetted by the government to assure that Canadian interests are protected. Consequently, capital expenditure is proving exceedingly challenging particularly for the juniors as they have less ability to access the capital markets than do their larger peers.³¹ The new Canadian protectionist legislation dried up capital almost immediately for this segment. Given that tar sands production is very capital intensive, a ready access to large sums of money is needed. Canadian capital markets are simply not large enough to fund such production. Some foreign capital is necessary to exploit these assets making this a thorny issue for government officials.

The junior part of the tar sands industry in Canada produces less than 25 percent of total annual production. There are however several dozen companies in the business. A structural weakness for a significant segment of the industry only underscores

the expectation that planned production will be slow to market. Persistent market access problems increases the potential for a market shake out with mergers, buyouts, bankruptcies and other events that suggest a less than robust production increase.

Cost inflation

The single greatest factor placing upward pressure on production costs is the remote location of most of the production sites. Remote locations place a premium on labor, steel and cement costs on both the construction and operations side.

Growing market uncertainty in the tar sands is exacerbated by cost inflation.³² Jeff Lyons, a partner at Deloitte Canada, stated:

"Oil sands are economically challenging in terms of returns...Cost escalation is causing oil sands participants to rethink the economics of projects. That's why you're not seeing a lot of new capital flowing into oil sands."³³

Cost curves, carbon risk and stranded assets

Tar sands are considered high cost, mega projects that could conceivably provide returns for decades. This long term investment scenario is clouded by long term cost increases and carbon risk. The International Energy Agency estimates that capital costs, in real terms, have more than doubled since 2000 in oil, gas, and coal extraction.³⁴

Examining a cost curve analysis by JPMorgan,³⁵ it becomes apparent that the various tar sands projects in Alberta have high breakeven costs associated with them. For instance, only two projects, Christina Lake and Foster Creek have breakeven costs in the \$50-60/ barrel range. The overwhelming majority of tar

sand projects fall in the breakeven range of \$70-100/barrel.

Recent analysis by the Carbon Tracker Initiative (CTI)³⁶ confirms that the tar sands are home to the highest risk oil plays in the world, with some projects requiring crude prices as high as \$150 per barrel to breakeven. CTI states, "In order to sustain shareholder returns, companies should focus on low-cost projects, deferring or cancelling projects with high break-even costs."³⁷

More and more analysts are concerned about potential downgrades based on stranded assets. Should global targets be put into place for GHG emissions, many hydrocarbon assets currently on the books of oil and gas companies will not be burned. This makes them stranded assets. Tar sands would most likely be at the top of this list due to their inherently high GHG emission profile. Deloitte acknowledged such a possibility in its 2014 report on tar sands when it stated, "...some analysts are predicting credit downgrades as a result of rising carbon constraints."³⁸

In March, 2013, Standard & Poor's suggested that rising carbon constraints would alter the credit quality of many smaller companies. S&P predicted, "a deterioration in the financial risk profiles of [smaller] companies to a degree that would potentially lead to negative outlook revisions and then downgrades over 2014-2017."³⁹

Carbon Tracker Initiative has identified 1.2 trillion USD of global oil investment that will become stranded assets if governments act to tackle climate change according to a two degree Centigrade commitment. Of this 1.2 trillion, over 40 percent is concentrated in the Alberta tar sands.⁴⁰

30 Haggett, S. "Canada energy deals rebound as shale plays trump oil sands in investors' eyes." *Reuters*, July 2, 2014. http://business.financialpost.com/2014/07/02/canada-energy-deals-rebound-as-shale-plays-trump-oil-sands/?__lsa=ae6b-8492

31 "Junior oilsands producers remain blocked from access to project-making equity markets, while nearly 1.5 million barrels per day of capacity hangs in the balance," *Oil Sands Review*, August, 2014.

32 Gutscher, Cecile. "Oil Sand dream evaporates with bondholders facing 40% loss." *Bloomberg News*, August 25, 2014. http://business.financialpost.com/2014/08/25/oil-sands-dream-evaporates-with-bondholders-facing-40-loss/?__lsa=ae6b-8492

33 Yadullah Hussain "Cost-cutting fever grips oil sands players as economics called into question" *The National Post*, August 22, 2014 http://business.financialpost.com/2014/08/22/fp-energy-aug-22-cost-cutting-fever/?__lsa=6b9e-9dfe

34 International Energy Agency. *World energy investment outlook 2014 factsheet overview*. 2014. http://www.iea.org/media/140603_WEOinvestment_Factsheets.pdf

35 Carbon Tracker Institute. "Carbon Supply Cost Curves: Evaluating financial risks of oil capital expenditures", CTI, May 2014, p.21

36 Carbon Tracker Initiative. "Oil & gas majors: Fact Sheets." 2014 http://www.carbontracker.org/site/wp-content/uploads/2014/08/CTI_Oil_Gas_Majors_Company_Factsheets_August_2014_FULL.pdf

37 Carbon Tracker Initiative. "Oil & gas majors: Fact Sheets." 2014 http://www.carbontracker.org/site/wp-content/uploads/2014/08/CTI_Oil_Gas_Majors_Company_Factsheets_August_2014_FULL.pdf

38 Deloitte. *Gaining ground in the sands 2014: Five rites of passage for an industry in pursuit of operational maturity*.

39 Standard & Poor's Ratings Services. "What A Carbon-Constrained Future Could Mean For Oil Companies' Creditworthiness." March 1, 2013.

40 Carbon Tracker Initiative. *Carbon supply cost curves: Evaluating financial risk to oil capital expenditures*. May 2014. <http://www.carbontracker.org/wp-content/uploads/2014/09/CTI-Oil-Report-Oil-May-2014-13-05.pdf>

Stranded assets are of increasing concern to investors, a recent initiative saw over 70 institutional investors representing 3 trillion USD in assets request 45 companies to calculate the risks of extracting so-called unburnable carbon.⁴¹ While companies are slow to respond to acknowledge these risks, the pressure is clearly growing.⁴²

The medium and long term institutional actions that cloud long term oil and gas investment scenarios stem from: international agreements to restrict carbon, national government actions responding to climate change, broad private sector consensus to shift capital to low carbon investments and continued targeting of companies, lending institutions and governments by demanding restrictions on carbon use.⁴³

Environmental and other regulatory risks

In addition to climate and carbon law, increased regulation related to environmental and public health protection as well as enforcement represent additional constraints on the future of tar sands profitability going forward. Although Canadian law and enforcement has historically sought to provide a low cost environment for investment, heightened scrutiny and pressure stemming from increased public awareness for new laws and enforcement of existing laws is growing. Some notable areas where increased regulations, stringency, and enforcement should be expected are:

- ❑ Water use and adverse water quality impacts;⁴⁴
- ❑ Land use and mining reclamation;⁴⁵
- ❑ Lack of compliance with local air pollution standards, particularly for

sulfur dioxide, nitrogen dioxide and particulates;⁴⁶

- ❑ Human health impacts from tar sands chemicals leaking from tailings lakes, as well as airborne chemicals;⁴⁷
- ❑ Lack of compliance with tailings management agreements;^{48, 49}
- ❑ Increased regulation and stringency to prevent rail spills and other accidents.⁵⁰

A more robust and stringent regulatory environment will also raise costs and reduce tar sand's companies' profit margins.

RISING COSTS AND CANCELLED PROJECTS

The hurdles to growth outlined in the above sections are altering the outlook regarding future production. Recently the Canadian Association of Petroleum Producers has revisited its 2030 production forecast, downgrading its tar sands forecast from 5.2 million bpd by 2030 to 4.8 million bpd.⁵¹ The revised forecast still assumes medium term resolution of transportation bottlenecks, but the downward forecast adjustment from Canada's leading oil and gas trade association and industry advocate is a significant concession to mounting market realities. Interested readers will note that this revision was published one month prior to the current decline in oil prices.

Chinese oil companies are also reviewing their investments. Many of their projects have met with significant delays, soaring operational expenses, and weak returns – with experts confirming that there are strong feelings of, “buyer’s remorse” following over \$30 billion in investments in recent years.⁵² Two major mining projects and one in situ project have been canceled

(formally “put on hold”) this year and another major mining project remains unsanctioned amid skepticism that it can be made viable. Dozens of other planned tar sands projects hang in the balance as producers struggle to contain rising costs while waiting to see if transportation constraints will ever be solved.

Capex is declining in the tar sands

In the current market context Capital Expenditure (Capex) in the tar sands is an indicator of not only investment but also confidence in the future of the sector. From 2000 Capex in the sector grew steadily until 2006 when it tailed off and then dipped sharply during the first full year of the recession in 2009. Since 2010, Capex has grown vigorously again, partly due to the confidence in future project profitability and partly due to the rising per barrel cost of production. However, in the last year the rapid rise in tar sands Capex of recent years has plateaued and begun to decline.

According to the Alberta Energy Regulator (AER) oil sands capital expenditure peaked in 2012 at \$27.2 billion CAD, decreased to \$24.2 billion CAD in 2013, and is predicted to decrease further to \$23.7 billion CAD in 2014.⁵³

Recently, the market price for oil has declined to a level that is below the breakeven price of many proposed tar sands projects. The AER reported in May 2014 that the average WTI oil price needed for tar sands commerciality in 2013 was up \$5 per barrel for in-situ production and up to \$20 per barrel higher for mining over 2012.⁵⁴ According to the AER, the WTI price now needed for a tar sands mining project to turn a profit is \$105/bbl. WTI

41 Douglass, Elizabeth. "Investor group presses companies on 'unburnable carbon.'" *Inside Climate News*. October 24, 2013. <http://www.bloomberg.com/news/2013-10-24/investor-group-presses-oil-companies-on-unburnable-carbon-.html>

42 The most important discussion in this area is occurring between Carbon Tracker Initiative and Shell Oil. See: <http://s02.static-shell.com/content/dam/shell-new/local/corporate/corporate/downloads/pdf/investor/presentations/2014/sri-web-response-climate-change-may14.pdf> and the Carbon Tracker response: http://www.carbontracker.org/wp-content/uploads/2014/07/CTI_Shell_Response_Final_030714_Full2.pdf

43 Fenton, Cameron. "How students are leading the fight against climate change." *The Huffington Post*. March 28, 2013. http://www.huffingtonpost.ca/cameron-fenton/student-climate-change_b_2967164.html

44 Environmental Defence. "Reality check: water and the tar sands." Accessed on October 6, 2014: <http://environmentaldefence.ca/realitycheck>

45 Oil Sands Reality Check. *Oil Sands Reality Check Website*. Accessed on October 6, 2014: <http://oilsandsrealitycheck.org/factcategory/land-species/>

46 Environmental Defence. "Reality check: water and the tar sands." Accessed on October 6, 2014: <http://environmentaldefence.ca/realitycheck>

47 Cotter, John. "Environmental health risks of Alberta oil sands likely underestimated: study." *The Globe and Mail*, February 3, 2014. <http://www.theglobeandmail.com/news/national/environmental-health-risks-of-alberta-oilsands-probably-underestimated-study/article16667569/>

48 Cryderman, Kelly. "Oil sands firms warned on tailings ponds." *The Globe and Mail*, June 12, 2013. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/oil-sands-firms-warned-on-tailings-ponds/article12485574/>

49 McKinnon, Hannah. "Failing on tailings - again." *Environmental Defence*, February 21, 2014. <http://environmentaldefence.ca/blog/failing-tailings-%E2%80%93-again>

50 Phillips, Matthew. "Trains that go boom." *Bloomberg Businessweek*, February 13, 2014. <http://www.businessweek.com/articles/2014-02-13/oil-train-explosions-u-dot-s-dot-regulators-slow-to-react>

51 Howell, David. "CAPP trips oilsands production numbers in latest crude forecast." *Edmonton Journal*, June 9, 2014. <http://www.edmontonjournal.com/CAPP+trims+oilsands+production+numbers+latest+crude+forecast/9922760/story.html>

52 Jones, Jeffrey. "China faces buyers remorse in Canada's oil patch." *The Globe and Mail* August 17, 2014. <http://www.bnn.ca/News/2014/8/17/China-faces-buyers-remorse-in-Canadas-oil-patch.aspx>

53 <http://www.aer.ca/documents/sts/ST98/ST98-2014.pdf> p 1-16 AER foresees a Capex recovery in 2016, but that is based on optimism regarding the resolution of market access issues and a higher oil price.

54 Alberta Energy Regulator. ST98-2014: Alberta's Energy Reserves 2013 and Supply/Demand Outlook 2014-2023. 2014. Pg. 3-26. <http://www.aer.ca/documents/sts/ST98/ST98-2014.pdf>

has been below \$100/bbl since August 1, 2014 and at time of writing (mid-October) is trading at \$85/bbl. In the last 18 months WTI has been over \$105/bbl for roughly a month total.

In late July of 2014, Suncor, the top tar sands producer, announced an additional reduction of \$1 billion in planned Capex for 2014.⁵⁵ Similarly Canadian Oil Sands dropped its first half 2014 capital expenditure by \$99 million compared with the first half of 2013.⁵⁶

While falling oil prices and risks for increased costs on a variety of fronts clearly play a role, it's also clear that delays in solving the market access problem – completing pipelines – has caused a chill in the investment climate in Alberta. In May of 2014 the CEO of URS, a construction and engineering firm heavily involved in the tar sands noted on an earnings call that:

"In the first quarter, Oil & Gas revenues were \$758 million, a 6% decrease from the same period last year. Uncertainty of a takeaway capacity and the decision of the -- uncertainty of the decision with the Keystone XL pipeline is causing some of our Canadian customers to delay capital expenditure programs."⁵⁷

The most concrete sign of the change in weather for tar sands producers is the wave of project cancellations that has just started.

Cancelled projects

Lack of market access, caused in large part by public accountability actions driven by pipeline campaigns, has played a significant role in the cancellation of three major tar sands projects in 2014 alone- Shell's Pierre River, Total's Joslyn North, and Statoil's Corner Project.

Two of these are large tar sands mines that have been planned for years - Royal Dutch Shell's Pierre River Mine and Total SA's Joslyn Mine. In addition, one of Statoil's in situ projects was also canceled in September. This last is of particular note because of the generally more favorable economics enjoyed by in-situ projects.

While the industry refers to all three technically as "on hold", we do not foresee market conditions changing to the degree necessary to restart these huge projects.

In announcing the cancellation of the Corner Project, a Statoil spokesman noted that:

"Costs for labour and materials have continued to rise in recent years and are working against the economics of new projects. Market access issues also play a role - including limited pipeline access which weighs on prices for Alberta oil, squeezing margins and making it difficult for sustainable financial returns."⁵⁸

In February 2014, Shell announced that it had withdrawn its ongoing application for a permit for the 200,000 bpd Pierre River Mine. The project's application had been in process since late 2007. The mine would have disturbed over 10,000 hectares and is located across the Athabasca River from Shell's ongoing Muskeg River and Jackpine mining operations. Chevron and Marathon Oil are minority partners in all three projects.

Pierre River production was estimated to peak in the 2030s and 40s at around 120,000 bpd with a total of almost 1.5 billion barrels of bitumen produced during its lifetime.⁵⁹ Producing, processing and consuming that bitumen would have sent an estimated total of ~900 million tonnes of CO₂ into the atmosphere.

In May 2014, Total announced that it was putting the CAD11 billion Joslyn Mine on indefinite hold. The project was approved by the Alberta regulator in 2011 and was expected to begin producing 100,000 bpd in 2020.⁶⁰ Total was the lead operator with partners Suncor, Occidental and Inpex Canada. Over USD 400 million has been spent on the mine so far.⁶¹ Andre Goffart, head of Total's Canadian division stated in a press conference that:

"Joslyn is facing the same challenge most of the industry world-wide [is], in the sense that costs are continuing to inflate when the oil price and specifically the netbacks for the tar sands are remaining stable at best - squeezing the margins."⁶²

The project's production would have peaked in the 2040s at around 155,000 bpd.⁶³ By 2100, the project could have produced over 1.9 billion barrels of bitumen. Producing, processing and consuming that bitumen would have sent a total of 1.1 billion tonnes of CO₂ into the atmosphere.

Sinopec and Total's Northern Lights project is another project at risk of cancellation.⁶⁴ The mine boasts over 1 billion barrels of recoverable bitumen and was initially scheduled to start operations in 2010 with a capacity of 100,000 bpd.⁶⁵ An analyst told Canada's National Post in July 2014 that Sinopec "is having trouble with Northern Lights like everybody else," [...] "You can't throw money into a black hole forever."⁶⁶

Independent estimates of the project finances show it fails to meet profitability standards.⁶⁷ Project viability could be enhanced if costs decrease or a long-term turn around in oil prices occurs. There is no sign of either development in the near future.

55 <http://www.suncor.com/en/newsroom/5441.aspx?id=1863740>

56 <http://www.marketwatch.com/story/canadian-oil-sands-announces-second-quarter-results-and-a-035-per-share-dividend-2014-07-31-161735313>

57 URS CEO Martin Koffel on Q1 2014 Results - Earnings Call Transcript

May 13, 2014 <http://seekingalpha.com/article/2216113-urss-urs-ceo-martin-koffel-on-q1-2014-results-earnings-call-transcript?page=2>

58 http://www.statoil.com/en/NewsAndMedia/News/2014/Pages/25Sept_CornerPostponement.aspx

59 Rystad Energy, *UCube Database*, (Sept. 2014).

60 Lewis, Jeff. "Total SA suspends \$11B Joslyn oil sands mine in Alberta, lays off up to 150 staff." *The National Post*, May 29, 2014. http://business.financialpost.com/2014/05/29/total-sa-suspends-11b-joslyn-oil-sands-mine-in-alberta-lays-off-up-to-150-staff/?_lsa=6798-9b33

61 Rystad Energy, *UCube Database*, (Sept. 2014).

62 Tait, Carrie. "Total shelves \$11 billion Alberta tar sands mine." *The Globe and Mail*, May 29, 2014. <http://www.theglobeandmail.com/report-on-business/joslyn/article18914681/>

63 Rystad Energy, *UCube Database*, (Sept. 2014).

64 Lewis, Jeff. "Sinopec may back away from Northern Lights tar sands lease: source." *The National Post*, July 9, 2014. http://business.financialpost.com/2014/07/09/sinopec-may-back-away-from-northern-lights-oil-sands-lease-source/?_lsa=6798-9b33

65 Synenco Energy Inc. "Northern Lights, Oil sands Mining and Extraction Project: Public Disclosure Document, Project Update." October 2005. http://environment.alberta.ca/documents/Synenco_Energy_Northern-Lights-Oil-Sands-Mine_PDD.pdf

66 Lewis, Jeff. "Sinopec may back away from Northern Lights tar sands lease: source." *The National Post*, July 9, 2014. http://business.financialpost.com/2014/07/09/sinopec-may-back-away-from-northern-lights-oil-sands-lease-source/?_lsa=6798-9b33

67 Rystad Energy, *UCube Database*, (Sept. 2014). Note that Rystad Energy metrics categorize these projects as Uncommercial.

Table 2: Bitumen and CO₂ Sequestered by Three Cancelled Tar Sands Mines

| Companies | Project | Peak Production (bpd) | Total Potential Barrels Produced by 2100 | Total Potential CO ₂ Emitted (tonnes) |
|--------------------------|------------------------------|-----------------------|--|--|
| Shell, Chevron, Marathon | Pierre River | 120,000 | 1.5 billion | 900 million |
| Total, Suncor, Inpex | Joslyn | 155,000 | 1.9 billion | 1.1 billion |
| Statoil | Kos Kai Deseh (Corner Phase) | 40,000 | 1.3 billion | 777 million |
| | | TOTAL | 4.7 billion | 2.78 billion |

Source: OCI/IEEFA with data from Rystad Energy UCube (Sept. 2014)

The three canceled projects contain over 4.7 billion barrels of potential bitumen production and represent potentially over 2.8 billion tonnes of CO₂ that may never be emitted.

Revenue losses and market access

The Canadian tar sands industry has ambitious expansion plans. It does this at a time of substantial financial and economic headwinds. It is assumed by the industry that prices on the global market will be sufficient to improve profitability. For this, the industry must build significant new pipeline capacity to take landlocked bitumen to ports for transport to other countries.

Ernst and Young, one of the world's leading accounting and business consulting firms puts the challenge this way:

"With the rise of globalization in the economy it's becoming more and more important for Canada's oil and gas market to break into new markets around the world rather than solely relying on the US for trade."⁶⁸

The failure to expand market access internationally forces tar sands producers to sell their product cheaply in North America. Tar sands production is already a very expensive business, with much more energy and capital needed to produce a barrel of tar sands crude than standard

crude. Tar sands producers have long known that their projected profits depend on access to international markets.

The lack of pipeline capacity available to take tar sands crude to Gulf Coast refineries or to Canadian ports for export created a glut of tar sands crude in Canada and the U.S. Midwest that began to impact the price received beginning in mid 2010.

The cost of delays

Pipeline delays impede the ability of tar sand producers to get their product to market. The inability to meet project timelines reduces the amount producers can receive from bitumen and syncrude sales. The losses can be quantified by isolating the actual difference between West Canadian Select (WCS) crude and West Texas Intermediate (WTI) or Mexican Maya crude, adjusting for crude quality and other factors.

For the purpose of this discussion we measure first the price of the Canadian benchmark heavy crude Western Canadian Select (WCS) with the price of Mexican Maya crude, the recognized benchmark for heavy crude on the Gulf Coast and sold internationally. We then conduct the same exercise for syncrude by looking at the difference in price between WTI and the international light crude benchmark, Brent. The first measure quantifies the differences in the heavy crude market, while the second measures

the light crude differential. Taken together a reasonable estimate of losses attributed to project delays can be derived.

Over the three years from 2011 to 2013, the average spread between Maya and WCS was \$24.27. Of this, we assign a value of \$16 per barrel to the portion of the spread caused by infrastructure constraints and delays driven by public accountability.^{70,71}

In the three-year period, tar sands producers that sold their production into the market as dilbit pegged to the WCS price, produced 693,760,400 barrels of bitumen. Therefore these producers lost \$11 billion in revenue due to public accountability efforts.

The light oil market is also important to examine. Tar sands producers that did upgrade their bitumen to synthetic crude also took a hit during this period as their product is sold into the market at prices linked to the U.S. light oil benchmark WTI. WTI has historically sold at a premium to Brent. This relationship started to flip in 2010 and widened out substantially from 2011 to 2013 (see Figure 8).

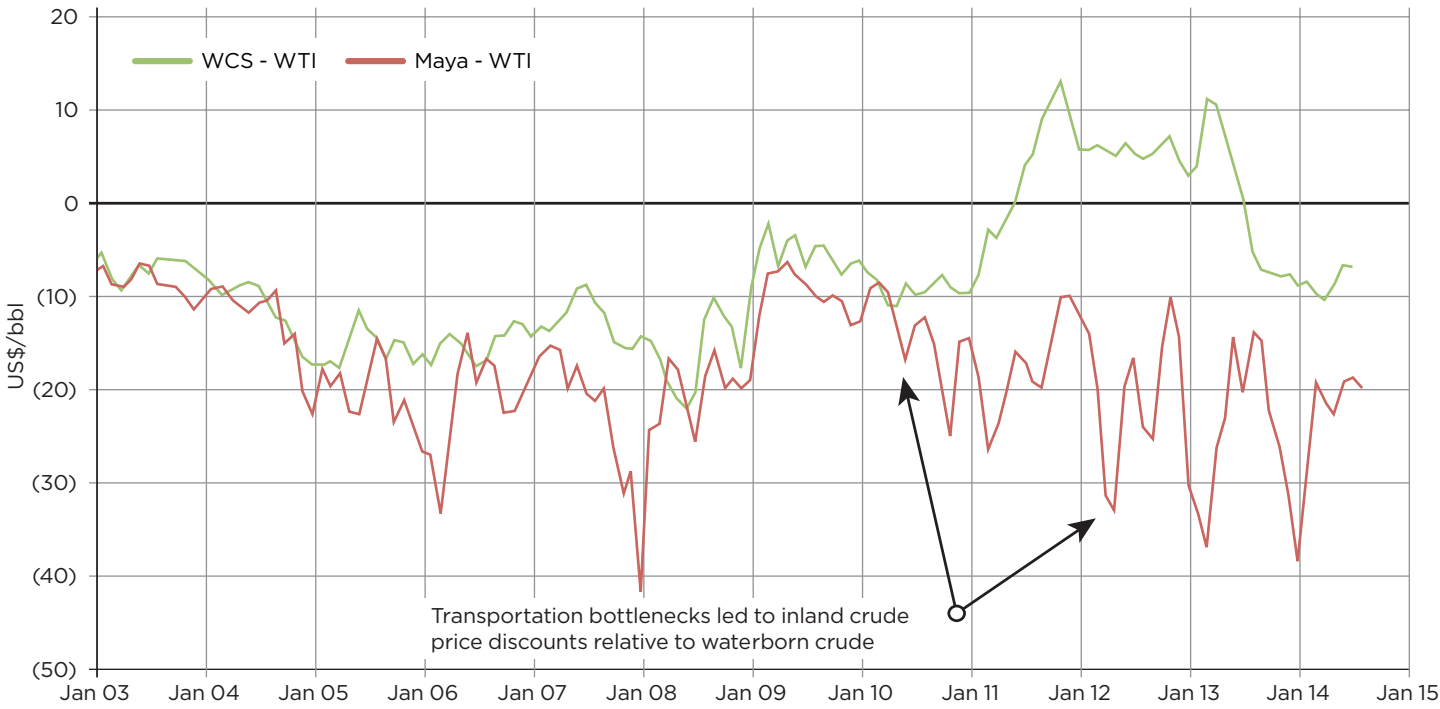
We assign only 35 percent of this spread to a lack of pipeline capacity to export markets, because the major factor has clearly been the growth in US light oil production. Therefore tar sands producers upgrading their bitumen to synthetic crude took a \$4.62 per barrel hit in those

68 Ernst and Young, *Exploring the top 10 opportunities and risks in Canada's Tar sands*. 2011, p. 2. http://www.acee-ceaa.gc.ca/050/documents_staticpost/cearref_21799/83869/Part_6.pdf

70 OCI and IEEFA judge that the "optimal" spread or quality discount is the average from 2008 to 2010 (\$4.43), when market access was not an issue for expanding tar sands production. Thus the true difference is \$19.84. Not all of this differential can be attributed to the inability of producers to access global pricing. Other factors such as maintenance and delays at heavy oil refineries and increased onshore production from other sources play a role. We assign 80 percent of the value of the spread to the inability to obtain international market access, and this the portion of the spread caused by infrastructure constraints and delays driven by public accountability averaged an estimated \$16 per barrel during the period 2011 to 2013.

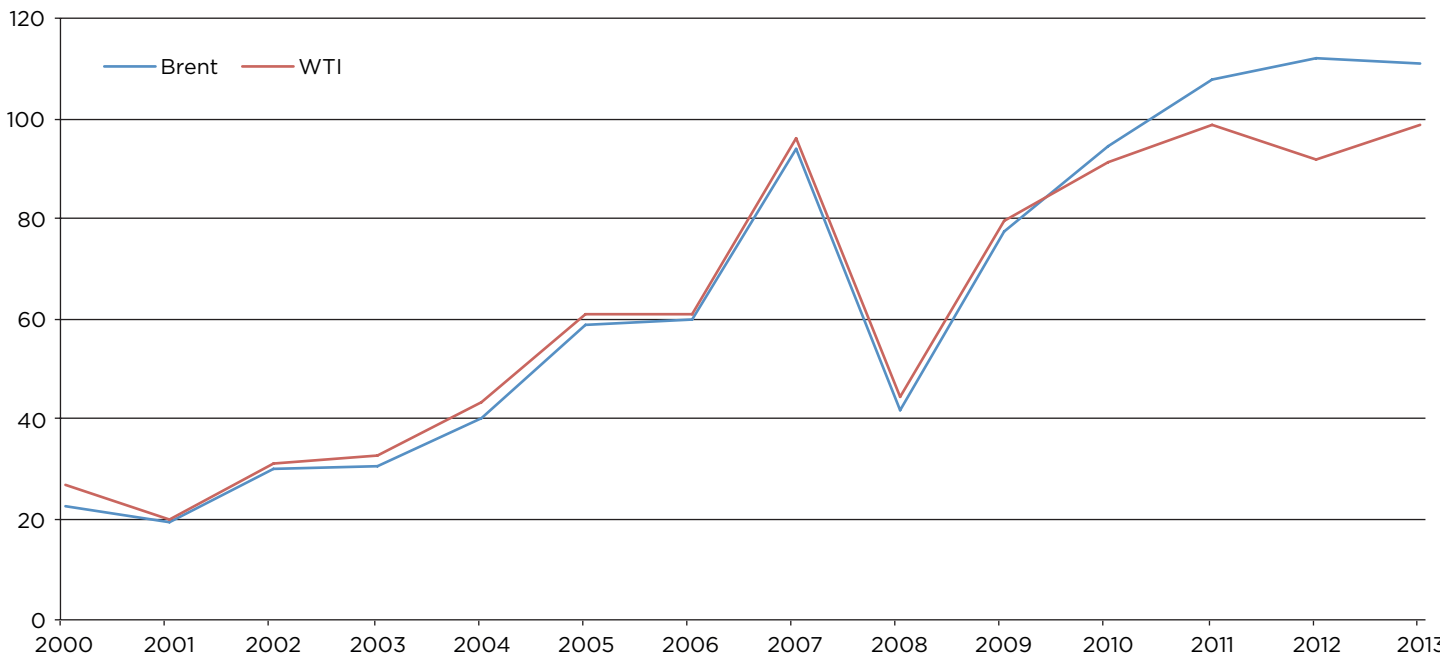
71 Several attempts have been made to estimate the losses in revenue to tar sands producers from the price differential caused by bottlenecks. See <http://ceo.ca/2013/02/13/canada-losing-wealth-on-price-differential/>. Substantive criticisms of those estimates have been made for failing to appreciate and disclose the difference between quality discounts and market price, transparency in the analysis, political motivation of tar sands proponents, the ability of companies to extract value from other parts of the economic chain and the differing impacts of price differentials on company's based on the degree of company integration between production and refining. See, for example, <http://www.robynallan.com/wp-content/uploads/2013/04/Bitumens-Deep-Discount-Deception-April-2-2013.pdf>. There will be substantial differences in ultimate valuations of lost revenue based on financial assumptions underlying the preparation of any estimate. These differences should not distract from the point that tar sands producers see future markets and profitability linked to wider participation in the process of globalization. The CapEx investments are designed to access that value and time lost in development is revenue lost to company bottom lines. See <https://www.yumpu.com/en/document/view/11263854/wcs-price-spread-impactpub-rbccom>

Figure 7. Price Differential between Maya, WTI, and WCS (\$/bbl), Over Preceding Decade



Source: Baytex Energy Corp.⁶⁹

Figure 8: Brent-WTI Spread 2000 - 2013⁷²



Source: Bloomberg

four years. In that period they produced 1.3 billion barrels of synthetic crude. The loss due to public accountability from 2010-2013 amounts to \$6.1 billion. Public accountability in the form of pipeline campaigns has been a major factor in reducing revenues to tar sands producers. Overall, tar sands producers lost \$30.9

billion between 2010-2013 due to wider price differentials caused by transportation bottlenecks and the flood of crude coming from tight oil fields. Of that, \$17.1 billion or 55 percent can be credibly attributed to the impact of public accountability campaigns.

This is a significant impact, and it has caused cancelled projects, slowed expansion, and avoided emissions. As concern over climate continues to grow, these public accountability campaigns, and their impacts on tar sands expansion, will also grow.

⁶⁹ Baytex Energy Corp, Presentation "EnerCom's The Oil & Gas Conference," August 17 - 21, 2014, Slide 25. http://www.enercominc.com/downloads_TOGC_2014/Baytex-Energy.pdf
⁷² The average spread between 2000 and 2009 was \$2.15 per barrel in favor of WTI. From 2010 to 2013 it was \$11.05 in favor of Brent. The difference is \$13.19.

FORECAST MODEL: IMPACT OF MARKET PRESSURES AND PUBLIC ACCOUNTABILITY ON TAR SANDS PRODUCTION

Tar sands production is landlocked. Expansion of transport infrastructure is essential to production growth. The Keystone XL campaign has, to date, delayed this pipeline project for over five years. Additional pipelines to Canadian ports are also delayed. The delays have cost producers money and time, reducing the price they have received for tar sands crude as supply has outpaced the capacity of transport infrastructure to carry tar sands crude to new markets.

Tar sands industry estimates are focused on a large build out of projects in the face of deteriorating financial conditions. Various forecasts expect tar sands production to more than double by 2030 and the industry plans further aggressive growth in the decades that follow.

But public questioning of this level of growth will certainly continue. If opposition to tar sands infrastructure continues to be successful, it could lead to dozens of project cancellations, several billion barrels of bitumen left in the ground and billions of tonnes of carbon dioxide averted.

This section uses industry data models to estimate what the impact of continued campaign success might be. The conclusions should both trigger serious questions for investors and encourage those opposing the tar sands that their efforts will lead to significant carbon savings.

INCREASED PIPELINE CAPACITY CRITICAL TO ACHIEVEMENT OF PRODUCTION GOALS

In order for the industry to achieve its production goals it must develop new transportation capacity.

Figure 9 shows the importance of new pipelines for expansion and illustrates a gap of roughly 4 million bpd between today's pipeline capacity and the projected transport requirement in 2030 according to the Canadian Association of Petroleum Producers (CAPP).

While one could simply compare projected production with pipeline capacity to ascertain how much tar sands crude could be stranded by the failure of pipeline projects, it is reasonable to assume that some lesser amount of production will find other ways to market. This would be primarily via rail or potentially through some degree of development of local markets, i.e. increased upgrading and refining in western Canada.

However, these options add cost and capital risk to operating tar sands projects. OCI's analysis of the economics of bitumen-by-rail shows that rail is not only more expensive than pipeline but also faces numerous logistical hurdles that indicate it cannot provide enough reliable and affordable capacity to satisfy the future production ambitions of large-scale tar sands producers (see Box: Why Rail is Not the Answer for Transporting Tar Sands).

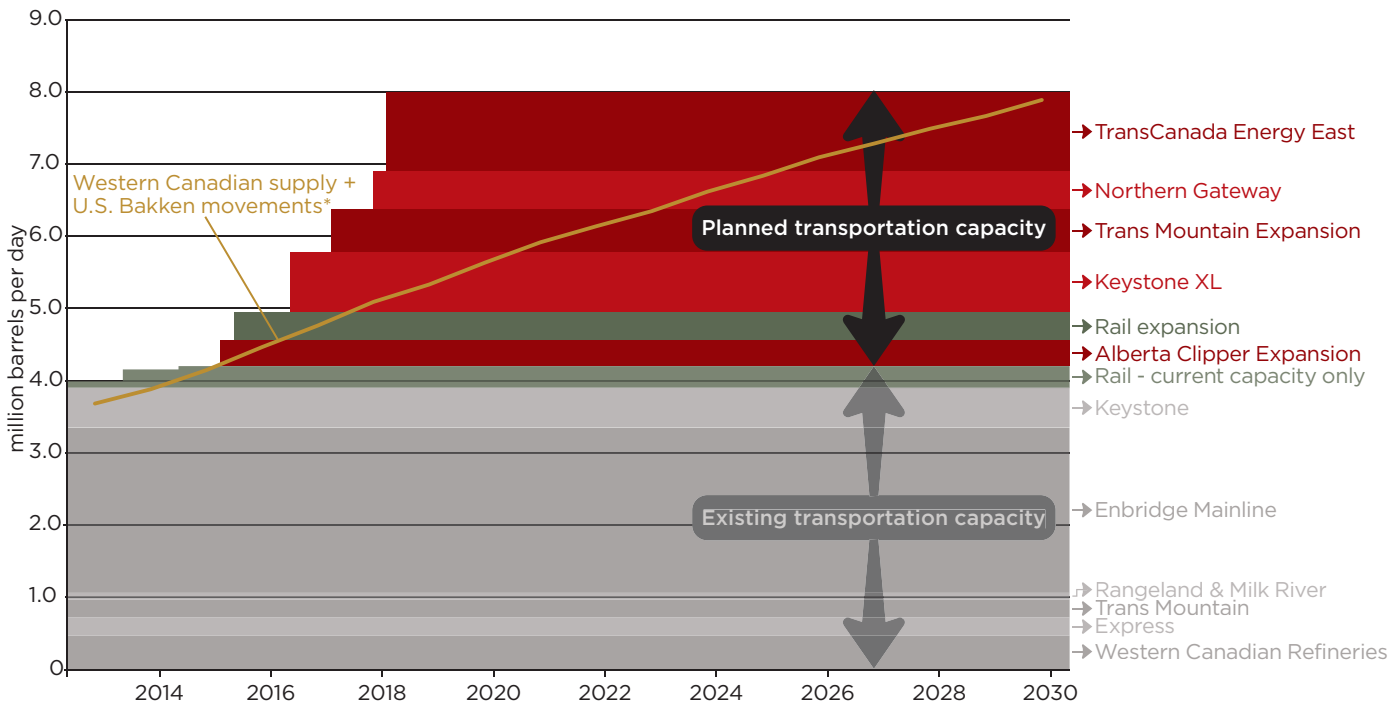
Continued pipeline delays will further erode the projected price to be received by producers (netback) on tar sands investments as price discounts and/or increased costs to access undiscounted markets continue to pressure the bottom line. As shown earlier, price discounts of the last few years have reduced netback to producers costing them billions of dollars in lost profits.

Our forecast model seeks to answer the following questions: What happens to tar sands production if transportation bottlenecks continue, prices for tar sands crude remain discounted, and netbacks to producers remain suppressed? How much tar sands bitumen – and consequently how much carbon – could potentially be left in the ground? And for investors, how vulnerable are these projects to continued transportation constraints and associated netback reductions?

REDUCED NETBACK AND AVOIDED PRODUCTION/EMISSIONS

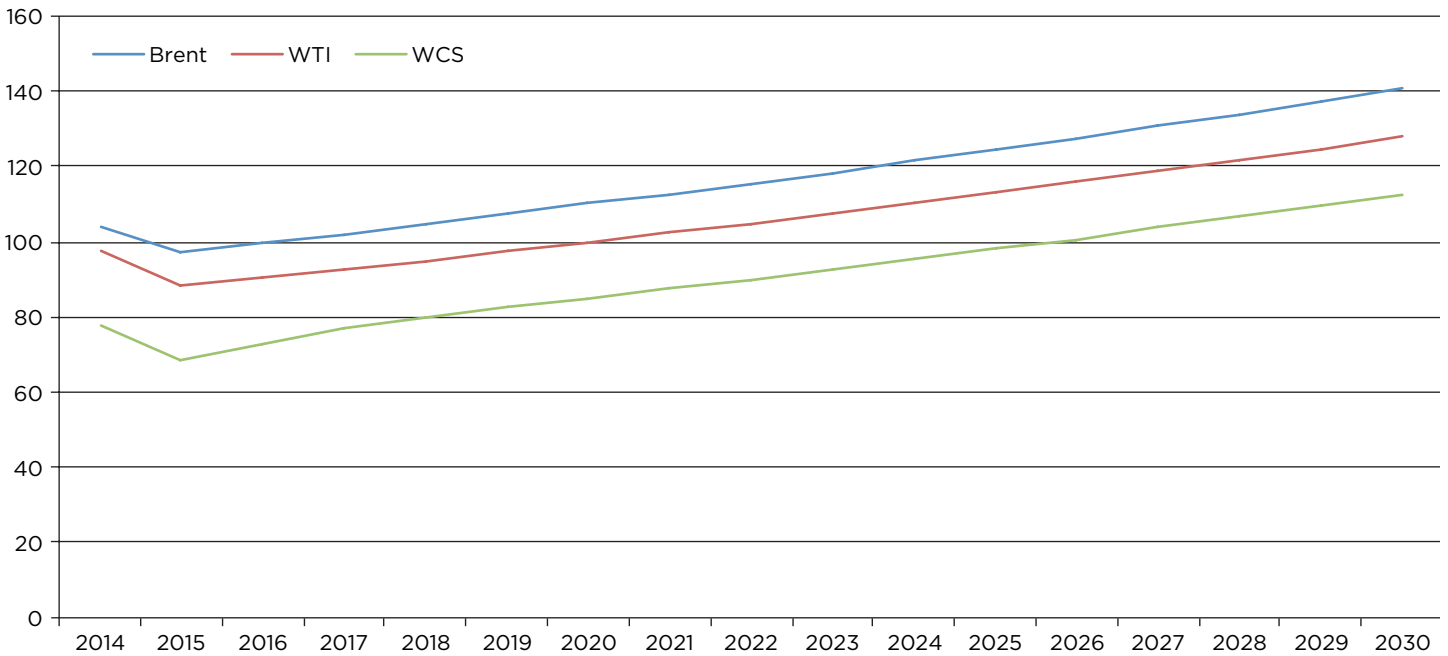
Our forecast model relies upon industry models and supplemental independent data and analysis to arrive at its conclusions. If the projected price to be received by producers (netback) falls below the projected costs for a given project, it is assumed that the project will either cease, reduce production or not be developed. In this way we estimate how much tar sands bitumen would potentially be left in the ground if netbacks are reduced beyond current trends.

Figure 9: Canadian Oil Supply Forecast vs. Transportation Capacity⁷³



*Refers to the portion of U.S. Bakken production that is also transported on the Canadian pipeline network.

Figure 10: Forward Crude Benchmark Prices



Source: Rystad Energy UCube (Sept. 2014)

The model estimates producer netback based on project Capex, Opex, taxes and royalties, and on the price of Western Canadian Select (WCS) at Edmonton adjusted according to the quality of bitumen produced at different projects.⁷⁴

Projects that upgrade bitumen to synthetic crude receive a higher price based on WTI but also have higher costs associated with the upgrading process.

The current Rystad model pegs WCS

at a \$20/bbl discount to WTI for 2015. The spread then narrows to \$15/bbl by 2018. Figure 10 shows the Brent and WTI forward prices, which are based on Intercontinental Exchange futures prices, and Rystad's assumptions for WCS.⁷⁵

⁷⁴ Rystad Energy UCube (Sept. 2014)

⁷³ Based on Canadian Association of Petroleum Producers (CAPP), "Crude Oil: Forecasts, Markets & Transportation." June 2014. <http://www.capp.ca/getdoc.aspx?DocId=247759&DT=NTV>

⁷⁵ Rystad Energy. UCube (Sept.2014).

CAPEX FORECAST SUGGESTS END TO BOOM TIMES

Industry forecasts and our own analysis conclude that the robust capex expansion planned by tar sand producers is on the wane. Rystad's forecast for capex in the tar sands expects a peak in 2014 at just less than USD\$34 billion. Capex falls considerably in 2015 to under USD\$29 billion and continues to fall through 2018 to less than USD\$26 billion. By 2030, Capex is yet to recover to 2014 levels reaching only USD\$29.8 billion (see Figure 11).⁷⁶

Rystad's model is based on an assumption of a \$15 differential between the Canadian heavy oil benchmark WCS and the U.S. light oil benchmark WTI from 2018 onwards. However, it is clear that if pipelines continue to be delayed a much steeper decline in Capex is likely.

The recent statements by CAPP offered less precise details of its basis for estimating a slower rate of growth of production, but the trajectory is consistent.

Our conclusion is that cancellation of proposed pipelines and mine projects

creates its own investment momentum toward still greater diligence on projects in development, increasing the likelihood of further delays and cancellations. Without new pipelines, Capex levels across the board will fall. We conclude that short-term, Capex spending is likely to be less than forecasted as company's recognize that weakened project fundamentals during this period of declining oil prices requires a reevaluation of investment priorities. In short, the industry is moving from a market and resource maximization period to one of diminished confidence in project profitability.

ESTIMATING THE BARRELS AT RISK FROM PIPELINE INFRASTRUCTURE CAMPAIGNS AND THE CARBON IMPACT

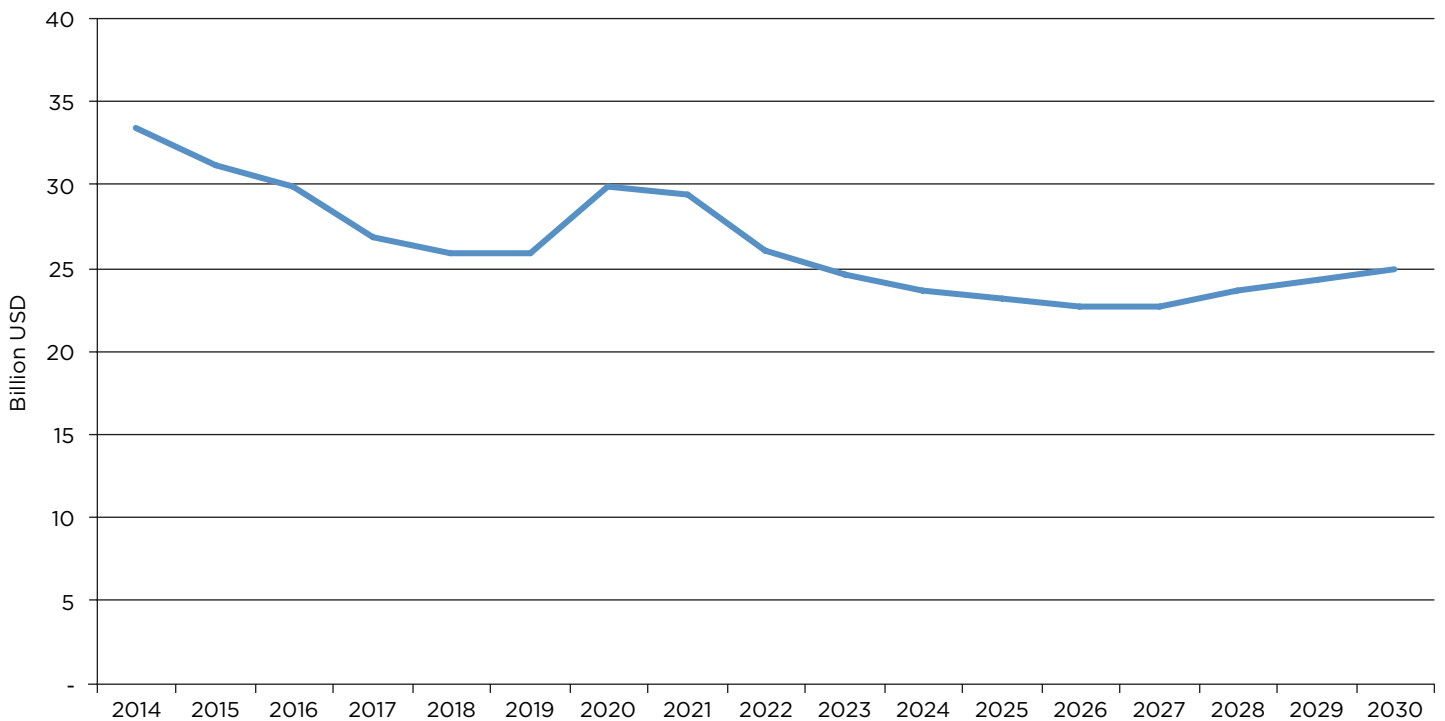
The outcome of the Keystone pipeline issue is likely to have an impact on market perceptions of current and future tar sands development. If the Keystone pipeline, or other pipelines in development, are definitively cancelled or subjected to prolonged delays it is reasonable to assume price differentials for Canadian tar sands products will widen. The forecast

model explores scenarios that point to a price differential beyond the current Rystad forecast of \$20 to \$15 per barrel discount to WTI.

To expand the model, we added an incremental \$5/bbl discount to the model down to a maximum additional discount of \$30/bbl. This results in a maximum of \$45/bbl below WTI, adjusted for the bitumen quality of individual projects. While the discount has in the past few years averaged more than \$20/bbl, the monthly average has on some occasions risen above \$30/bbl, reaching a maximum of \$37.50 in October 2013.

It is feasible for WCS to trade for a time at very steep discounts to WTI. This occurs when supply exceeds either demand and/or transportation capacity. Whether the discount would actually widen as far as \$45/bbl for a prolonged period if pipeline projects are stopped depends on whether producers continue to grow production in the face of constrained transportation capacity. Doing so would clearly flood the accessible market for tar sands crude and crash prices. Because rail cannot cope with the level of tar sands production growth

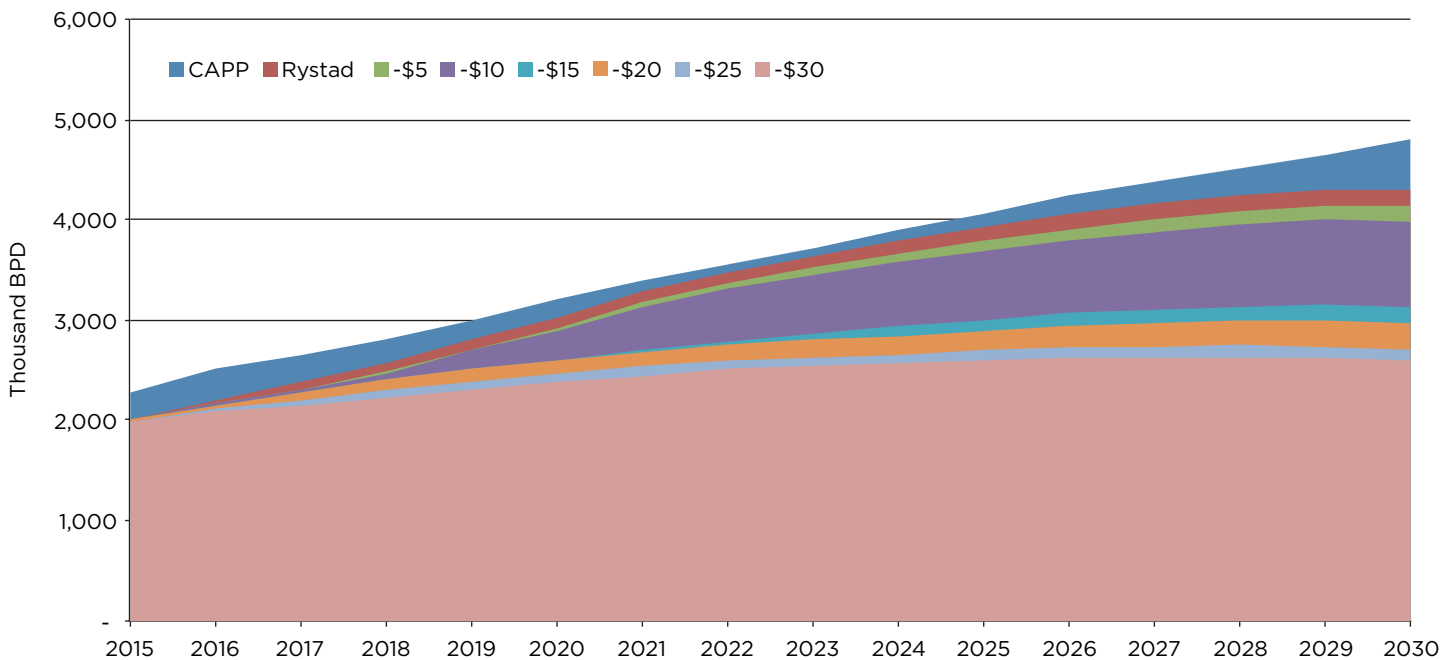
Figure 11: Rystad Tar Sands Capex Baseline Forecast: 2014 – 2030



Source: Rystad Energy UCube (Sept. 2014)

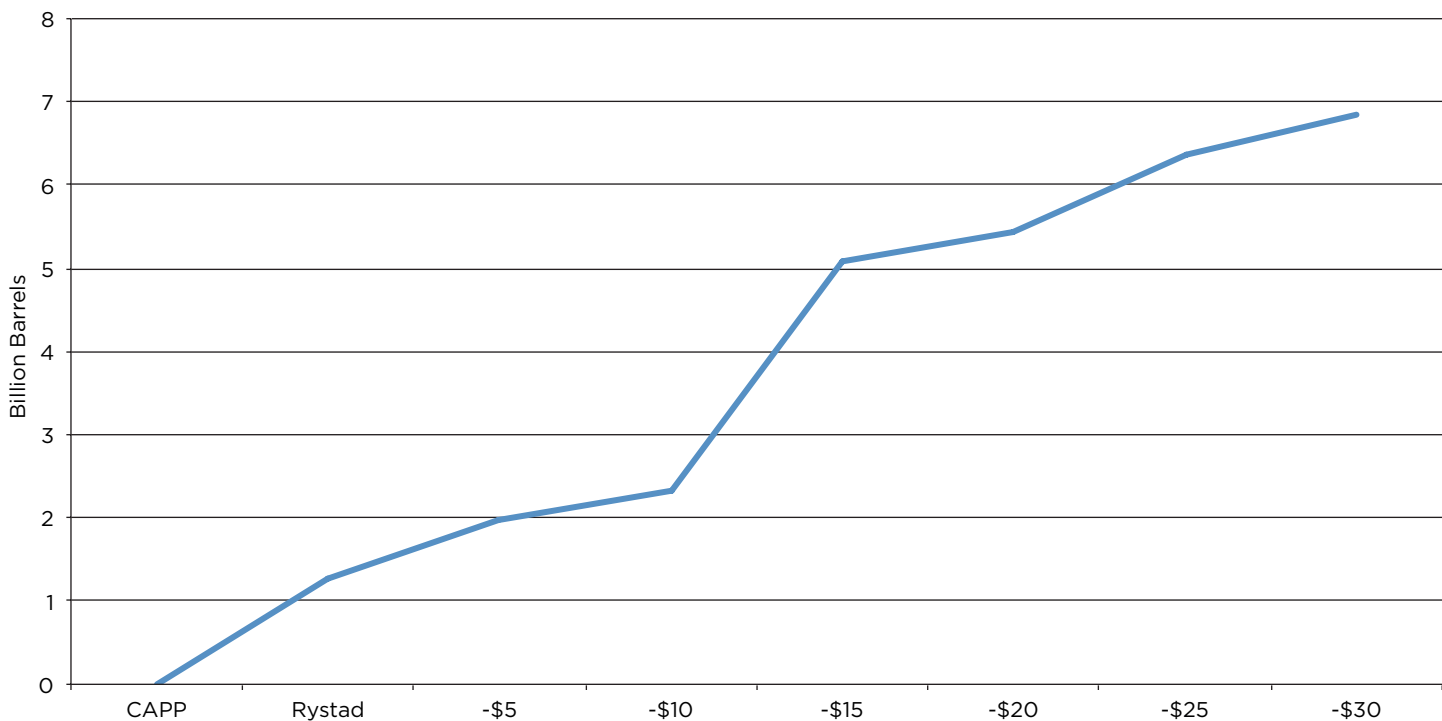
⁷⁶ Note that the Rystad numbers are substantially higher than those provided by the AER.

Figure 12: Tar Sands Production Forecast under a Reduced Netback Scenario⁷⁸



Source: OCI/IEEFA

Figure 13: Barrels of Bitumen Not Produced Under Reduced Netback Scenario



Source: OCI/IEEFA

that tar sands producers are planning, and what small additional production it can handle incurs significant additional costs, this model also demonstrates the impact of a greater switch to rail. The model therefore provides a valid estimate of the impact of continued successful opposition

to tar sands pipelines with each increment approximating the failure of one or more proposed pipeline projects.

The impact on tar sands production of each \$5/bbl discount to the forecast model is illustrated in Figure 12. In this

analysis, the CAPP forecast serves as business as usual (BAU) or a maximum possible level of tar sands production that assumes that transportation bottlenecks are resolved. We use the Rystad forecast as an alternative BAU scenario in which

77 This may not be Rystad's intention but is our interpretation of Rystad's WCS pricing assumption.
 78 Rystad Energy UCube, OCI, IEEFA

most but not all transportation constraints are resolved.⁷⁷ We then project the impact on production of a further \$5/bbl discount down to a maximum of \$30, with the pink area of the chart representing an estimate of the possible level of tar sands production should little or no new transportation infrastructure be forthcoming.

Under the full additional \$30/bbl discount, tar sands production in 2030 could be around 2.6 million bpd. This would mean production would be only around 300,000 bpd more than CAPP's projections for 2015 and remain relatively static through 2030. The amount of bitumen that would not be produced in the entire 16-year period

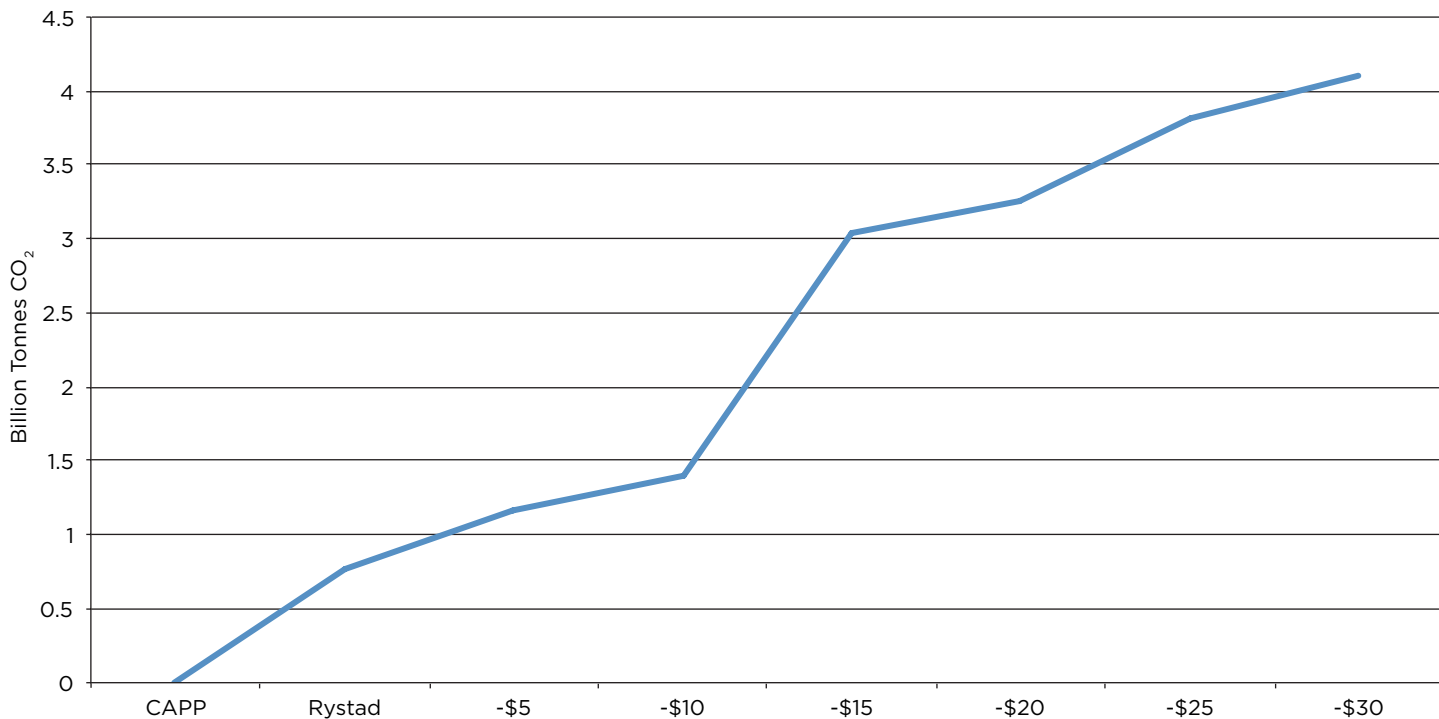
(2015-2030) under a 'no new major pipelines' or 'carbon blockade' scenario compared to the CAPP forecast is around 6.9 billion barrels (see Figure 13). Producing, processing and consuming this bitumen would emit over 4 billion tonnes of CO₂ (see Figure 14).⁷⁹ Spread over the 16 years of this forecast, these emissions are the equivalent of the emissions from 67 average U.S. coal plants or nearly 54 million average passenger vehicles.⁸⁰

As many of the tar sands projects that would be cancelled under this scenario would have potentially continued production for several decades beyond 2030, actual bitumen left in the ground and emissions avoided would be much

higher. In addition it is quite likely that a successful "carbon blockade" scenario would in fact cause additional non linear capital flight from the tar sands that would ultimately strand even greater amounts of carbon.

It is worth noting that the most dramatic decrease in tar sands production comes around the \$15/bbl discount to the forecast (i.e. \$30/bbl below WTI). This is well within the parameters of the price discounts seen in recent years (see Figure 6), and should be seen as a highly likely result of continued pipeline infrastructure delays and/or cancelations.

Figure 14: Carbon Dioxide Not Produced Under Reduced Netback Scenario



Source: OCI/IEEFA

77 This may not be Rystad's intention but is our interpretation of Rystad's WCS pricing assumption.

79 Emissions for a barrel of bitumen calculated using Oil Change International Life Cycle Emissions figures from: http://priceofoil.org/content/uploads/2013/04/Cooking_the_Books_FINAL-SCREEN.pdf The per barrel emissions figure used is 598Kg CO₂e per barrel.

80 Emissions calculations based on the EPA Greenhouse Gas Emissions Equivalencies Calculator at: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

This report captures the tar sands industry during a period of stumble. Whether or not the risks we outline will result in a fall is an open question. Public accountability campaigns against tar sands production and tar sands pipelines have swayed public opinion at a time when economic forces are pressuring the viability of tar sands investment.

A tar sands mine in Alberta.

Significant price discounts for tar sands crude have evolved as production has overwhelmed demand in the markets that can be reached with existing infrastructure. Shares in many major tar sands producers are underperforming the market.

Compounded by a decreasing wider crude oil pricing environment as a result

of abundant light oil production in the United States and slowing demand, major tar sands projects have been cancelled and further cancellations seem likely.

Investors need to be aware that this constellation of risk is self-reinforcing and likely to continue to foster an environment of cancelled projects.



APPENDIX: TAR SANDS PRODUCTION BY COMPANY (THOUSAND BARRELS PER DAY)

| | 2013 | 2014e | 2015e |
|-----------------------------------|------|-------|-------|
| Suncor Energy | 398 | 422 | 453 |
| Canadian Natural Resources (CNRL) | 196 | 236 | 234 |
| ExxonMobil | 172 | 220 | 255 |
| Shell | 145 | 158 | 159 |
| ConocoPhillips | 115 | 122 | 136 |
| Cenovus Energy | 103 | 110 | 122 |
| Canadian Oil Sands | 98 | 99 | 102 |
| Imperial Oil (Public traded part) | 71 | 84 | 95 |
| Devon Energy | 57 | 52 | 63 |
| CNOOC | 49 | 56 | 64 |
| Chevron | 45 | 45 | 46 |
| Marathon Oil | 45 | 45 | 46 |
| MEG Energy | 35 | 65 | 60 |
| Sinopec Group (parent) | 24 | 24 | 25 |
| Statoil | 15 | 10 | 10 |
| Murphy Oil | 13 | 13 | 14 |
| JX Nippon Oil and Gas | 13 | 13 | 14 |

| | 2013 | 2014e | 2015e |
|---------------------------------|------|-------|-------|
| Total | 13 | 13 | 15 |
| Connacher Oil and Gas | 12 | 18 | 20 |
| Other partner(s) CA | 11 | 12 | 12 |
| Southern Pacific Resource | 7 | 9 | 12 |
| Japex | 7 | 7 | 7 |
| Husky Energy | 6 | 6 | 11 |
| Pengrowth Energy Corporation | 2 | 1 | 3 |
| Penn West Exploration | 1 | 1 | 1 |
| Baytex Energy | 1 | 2 | 2 |
| Laricina Energy | 1 | 2 | 4 |
| OSUM | 0 | 1 | 1 |
| Black Pearl Resources | 0 | 0 | 0 |
| KNOC (S.Korea) | 0 | 1 | 3 |
| Sunshine Oilsands | 0 | 0 | 2 |
| BP | 0 | 0 | 5 |
| Athabasca Oil Sands Corporation | 0 | 0 | 3 |
| Touchstone Exploration Inc. | 0 | 0 | 2 |

Source: Rystad Energy UCube (Sept. 2014)



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