June 2, 2013

Oil Infrastructure Research Roundtable

Getting oil out of Canada: Heavy oil diffs expected to stay wide and volatile

Goldman Sachs

Equity Research

Growing concerns about 2013-15 WCS

In conjunction with the deep dive supply/demand update we present in this report, we have lowered our base-case 2014 and 2015 outlook for WCS prices, with risk skewed to the downside. While we see significant demand for Canadian heavy crude oil in the United States, the main question at this time is whether sufficient pipeline takeaway capacity will exist that crosses the Canada/US border, with Keystone XL (TRP) and Alberta Clipper (ENB) the key projects to watch.

XL and Clipper key to getting oil to US

Ongoing approval delays at Keystone XL are well known by investors. A lower-profile but similarly important expansion of Enbridge's Alberta Clipper line, which is the key to ensuring takeaway capacity on its Flanagan South/Seaway system can be fully utilized to transport Canadian heavy crude oil to US Midwest and Gulf Coast markets. The Alberta Clipper expansion will require US State Department approval of an amendment to an Environmental Impact Statement. While we do not anticipate Keystone XL-like delays for Alberta Clipper, the timing of securing the permit is uncertain at this time.

Longer-term WCS outlook is better

Longer-term – and assuming key projects like Keystone XL and Alberta Clipper/Flanagan South/Seaway expansion are brought on-line – there is room for more optimism as Canadian heavy oil/oil sands producers would finally have a direct connection to the US Gulf Coast. Once connected, we would expect WCS to price relative to Maya, adjusted for quality differences and transportation costs, or about Maya-$13/bbl. Such an environment is possible in 2016-2017.

CNQ to Sell on 2014E WCS concerns

Given our concerns over 2013E-2015E WCS pricing, we prefer integrated Canadian companies that own Canadian refining/upgrading capacity that can help offset discounted WCS pricing over non-integrated heavy oil producers.

- **We downgrade shares of CNQ to Sell**, as it has the highest exposure among our coverage to potentially weaker WCS prices.
- **SU remains** our only **Buy** rated Canadian oil, as it is effectively Brent oil-leveraged.

We update 2013-2017 EPS estimates and 12-month target prices for our Canadian heavy oil/oil sands producers.

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PM Summary–Getting oil out of Canada: Heavy oil diffs expected to stay wide and volatile

In conjunction with the deep dive supply/demand update we present in this report, we have lowered our base-case 2014 and 2015 outlook for Western Canadian Select heavy oil prices, with risk skewed to the downside. We now forecast 2013E/2014E/2015E WCS prices of $71/$64/$67 per barrel (WTI-$22/-$27/-$19 per barrel) versus our prior estimates of $71/$68/$69 per barrel (WTI-$22/-$23/-$17 per barrel), respectively (Exhibit 3). Our base-case WCS price path assumes Keystone XL starts-up in 2H2015E and the Alberta Clipper expansions also proceed on Enbridge's proposed time schedule. In the event of more meaningful infrastructure bottlenecks or further pipeline approval delays, we estimate a downside scenario of $50/barrel for WCS (WTI-$41 per barrel) in 2014E. For 2015E, our downside scenario is $58/barrel (WTI-$28 per barrel), as we would expect lower heavy oil supply and new rail to begin loosening the bottleneck. Our WCS forecasts are relative to our unchanged WTI outlook of $93/$91/$86 per barrel for 2013E/2014E/2015E, respectively.

Key stock calls:

- **We downgrade shares of Canadian Natural Resources to Sell**, as it lacks refining exposure and has the highest exposure among our coverage to potentially weaker WCS prices. CNQ has 8% total return downside risk to our $28, 12-month target price versus 11% average upside for US/Canadian integrated/domestic oil peers. We note that we have a favorable long-term outlook for CNQ, but believe higher "normalized" earnings and asset value estimates will be masked by our WCS pricing concerns over 2014 and 2015. The key risk to our downgrade and what would make us more positive on CNQ would be an improved outlook for WCS, most likely driven by a combination of lower heavy oil supply and faster start-up of new pipelines than we expect.
- Given our concerns over 2014-2015 WCS pricing in particular, **we prefer integrated Canadian oil companies that own Canadian refining and upgrading capacity that can help offset discounted WCS pricing**. As such, **Suncor Energy remains our only Buy-rated Canadian oil and is effectively Brent oil-leveraged due to downstream integration**. Both Cenovus Energy and Husky Energy are largely hedged on WCS exposure owing to downstream integration. We remain **Neutral on Cenovus**. Our **Sell rating on Husky** is driven by project execution concerns and relative valuation.
- Among US-based E&Ps with notable WCS exposure, **we are Buy-rated on Devon Energy as we see attractive sum-of-the-parts (SOTP)-based upside when isolating Canada E&P, US E&P, and midstream assets** and see the Permian Basin driving rising US light oil production.
- Among pipeline companies, **we are Buy rated on Enbridge for its well positioned pipeline assets**, which should drive strong organic growth to serve the rapid increase we expect in North America oil supply. We **are Buy-rated on Kinder Morgan Inc** (KMI) and Neutral-rated on Kinder Morgan Energy Partners (KMP). We expect KMI will drive above-average dividend growth via its largely fee-based asset position and strong "general partner leverage" to growth at its underlying MLP, KMP. We are **Neutral on TransCanada**, as despite its solid asset positioning, we see better EPS and dividend growth potential among other diversified pipeline peers and believe its core North American natural gas pipeline system remains challenged.

While we see significant demand for Canadian heavy crude oil in the United States, in particular in the Gulf Coast region, **the main question at this time is whether sufficient pipeline takeaway capacity will exist that crosses the Canada/ US border, with Keystone XL (TransCanada) and Alberta Clipper (Enbridge) the key projects to watch, in our view** (Exhibits 1-4). **In the event that either the Keystone XL newbuild or Alberta Clipper expansion (or both) encounter further delays, we believe risk would grow that Canadian heavy oil/oil sands supply would remain trapped in the province of Alberta**, putting downward pressure on WCS pricing on both an absolute basis and versus WTI. Ongoing delays at TransCanada's Keystone

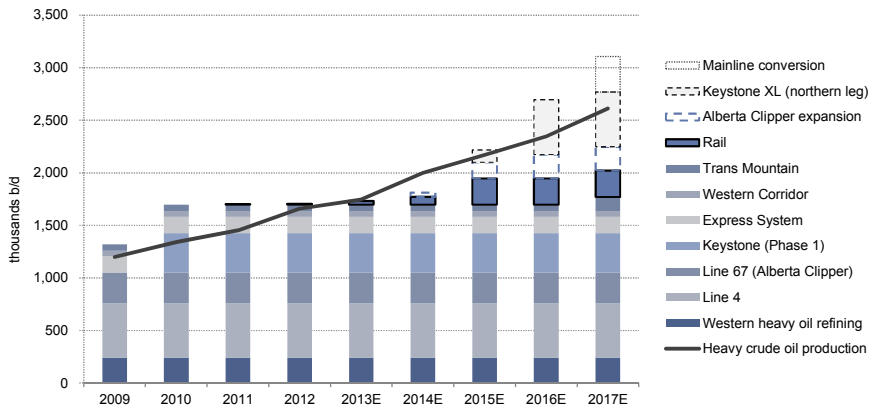
XL pipeline are well known by investors. A lower profile but similarly important expansion of Enbridge's mainline system, the Alberta Clipper (Line 67) project, is the key to ensuring takeaway capacity on its Flanagan South/Seaway system can be fully utilized to transport Canadian heavy crude oil to US Midwest and Gulf Coast markets. The Alberta Clipper expansion will require US State Department approval of an amendment to an Environmental Impact Statement (EIS). While we do not anticipate Keystone XL-like delays at Alberta Clipper, the timing of securing the permit is uncertain at this time.

Ironically, the concern over WCS pricing in part stems from the recent success of oil sand producers in executing projects ahead of schedule after years of delays. The resulting uptick in heavy and upgraded light oil supply is overwhelming existing local refining demand and pipeline takeaway capacity. Moreover, large-scale, take-away solutions such as the Keystone XL pipeline are facing significant timing uncertainty owing to regulatory, environmental, and local community hurdles whose severity was not anticipated. **We expect rail to a play an increasingly important role in accessing US markets**; **however,** given the long distances and higher cost of rail, **we believe pipeline capacity growth is critical in Canada** and the key to sustainably removing congestion in the system.

Longer-term – and assuming key projects like Keystone XL and Alberta Clipper/Flanagan South/Seaway expansion are brought on-line – **there is room for more optimism as Western Canadian heavy oil/oil sands producers would finally have a direct connection to the US Gulf Coast**. Once connected, we would expect WCS to price relative to Maya adjusted for quality differences and transportation costs, which we estimate to be Maya-$13 per barrel (or WTI-$14 per barrel). Such an environment is possible in the 2016-2017 time frame.

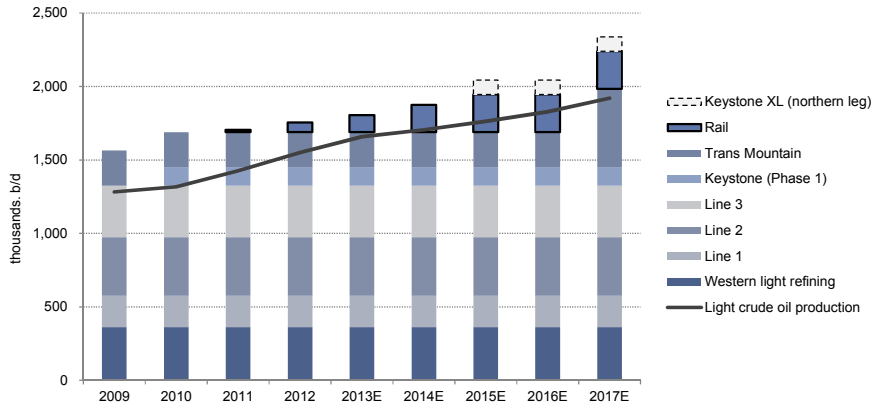
In contrast to the heavy crude oil outlook, **we see less risk of discounted light crude oil prices in Western Canada**, as sufficient takeaway capacity appears to exist on current light crude oil pipelines and given actual and expected increases in rail capacity (Exhibit 2). The key downside risk to Canadian light crude oil prices versus WTI oil would be much faster-than-expected unconventional light crude oil production in Western Canada – a risk we are monitoring.

Exhibit 1: Western Canada heavy crude oil supply/demand balance



Source: Goldman Sachs Research estimates.

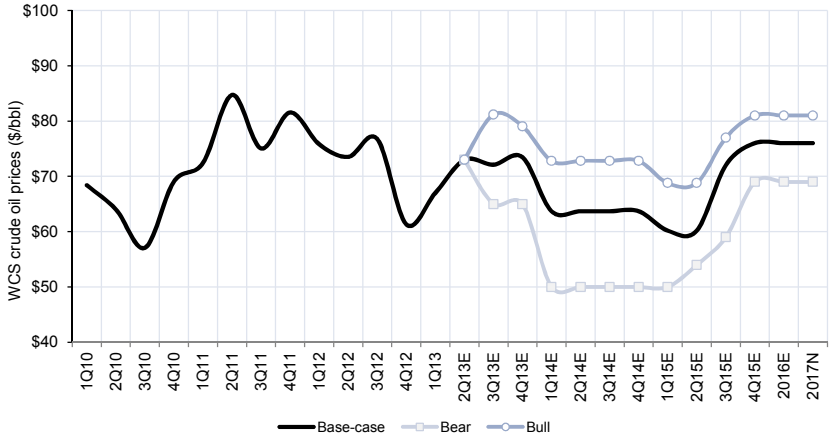
Exhibit 2: Western Canada light crude oil supply/demand balance

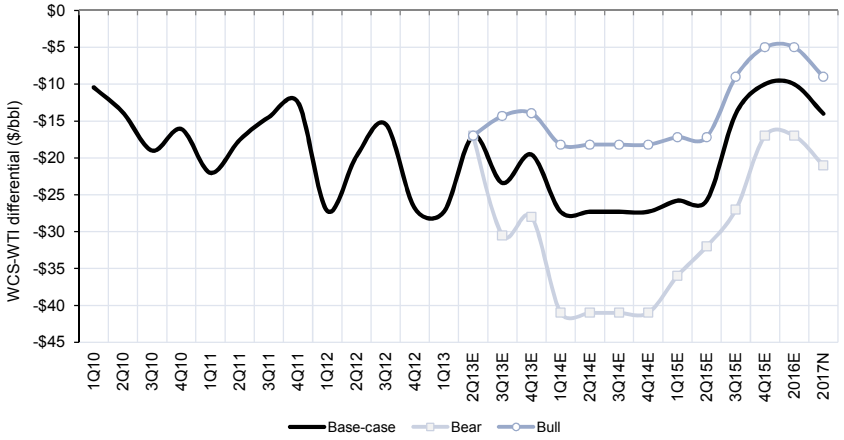


Source: Goldman Sachs Research estimates.

Exhibit 3: Goldman Sachs Equity Research updated outlook for WCS and WCS-WTI differential: Base/bull/bear scenarios

	2013E					2014E					2015E					2016E	2017N
	Q1	Q2E	Q3E	Q4E	Year	Q1E	Q2E	Q3E	Q4E	Year	Q1E	Q2E	Q3E	Q4E	Year	Year	Year
Oil price deck (US$/bbl)																	
Brent	$112.83	$100.00	$103.50	$105.00	$105.33	$105.00	$105.00	$105.00	$105.00	$105.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
WTI	94.30	90.00	95.50	93.00	93.20	91.00	91.00	91.00	91.00	91.00	86.00	86.00	86.00	86.00	86.00	86.00	90.00
Maya	102.82	93.00	92.11	93.45	95.35	93.45	93.45	93.45	93.45	93.45	89.00	89.00	89.00	89.00	89.00	89.00	89.00
WCS - new:																	
Bull	**$66.99**	**$73.00**	**$81.18**	**$79.05**	**$75.05**	**$72.80**	**$72.80**	**$72.80**	**$72.80**	**$72.80**	**$68.80**	**$68.80**	**$77.00**	**$81.00**	**$73.90**	**$81.00**	**$81.00**
vs. WTI	(27.30)	(17.00)	(14.33)	(13.95)	(18.14)	(18.20)	(18.20)	(18.20)	(18.20)	(18.20)	(17.20)	(17.20)	(9.00)	(5.00)	(12.10)	(5.00)	(9.00)
vs. WTI (%)	-29%	-19%	-15%	-15%	-19%	-20%	-20%	-20%	-20%	-20%	-20%	-20%	-10%	-6%	-14%	-6%	-10%
vs. Maya	(35.83)	(20.00)	(10.94)	(14.40)	(20.29)	(20.65)	(20.65)	(20.65)	(20.65)	(20.65)	(20.20)	(20.20)	(12.00)	(8.00)	(15.10)	(8.00)	(8.00)
vs. Maya (%)	-35%	-22%	-12%	-15%	-21%	-22%	-22%	-22%	-22%	-22%	-23%	-23%	-13%	-9%	-17%	-9%	-9%
Base case - new	**$66.99**	**$73.00**	**$72.11**	**$73.45**	**$71.39**	**$63.70**	**$63.70**	**$63.70**	**$63.70**	**$63.70**	**$60.20**	**$60.20**	**$72.00**	**$76.00**	**$67.10**	**$76.00**	**$76.00**
vs. WTI	(27.30)	(17.00)	(23.39)	(19.55)	(21.81)	(27.30)	(27.30)	(27.30)	(27.30)	(27.30)	(25.80)	(25.80)	(14.00)	(10.00)	(18.90)	(10.00)	(14.00)
vs. WTI (%)	-29%	-19%	-24%	-21%	-23%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-16%	-12%	-22%	-12%	-16%
vs. Maya	(35.83)	(20.00)	(20.00)	(20.00)	(23.96)	(29.75)	(29.75)	(29.75)	(29.75)	(29.75)	(28.80)	(28.80)	(17.00)	(13.00)	(21.90)	(13.00)	(13.00)
vs. Maya (%)	-35%	-22%	-22%	-21%	-25%	-32%	-32%	-32%	-32%	-32%	-32%	-32%	-19%	-15%	-25%	-15%	-15%
Bear	**$66.99**	**$73.00**	**$65.00**	**$65.00**	**$67.50**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$54.00**	**$59.00**	**$69.00**	**$58.00**	**$69.00**	**$69.00**
vs. WTI	(27.30)	(17.00)	(30.50)	(28.00)	(25.70)	(41.00)	(41.00)	(41.00)	(41.00)	(41.00)	(36.00)	(32.00)	(27.00)	(17.00)	(28.00)	(17.00)	(21.00)
vs. WTI (%)	-29%	-19%	-32%	-30%	-28%	-45%	-45%	-45%	-45%	-45%	-42%	-37%	-31%	-20%	-33%	-20%	-23%
vs. Maya	(35.83)	(20.00)	(27.11)	(28.45)	(27.85)	(43.45)	(43.45)	(43.45)	(43.45)	(43.45)	(39.00)	(35.00)	(30.00)	(20.00)	(31.00)	(20.00)	(20.00)
vs. Maya (%)	-35%	-22%	-29%	-30%	-29%	-46%	-46%	-46%	-46%	-46%	-44%	-39%	-34%	-22%	-35%	-22%	-22%
WCS - old	66.99	73.00	72.11	73.45	71.39	68.45	68.45	68.45	68.45	68.45	69.00	69.00	69.00	69.00	69.00	72.00	76.00
vs. WTI	(27.30)	(17.00)	(23.39)	(19.55)	(21.81)	(22.55)	(22.55)	(22.55)	(22.55)	(22.55)	(17.00)	(17.00)	(17.00)	(17.00)	(17.00)	(14.00)	(14.00)
vs. WTI (%)	-29%	-19%	-24%	-21%	-23%	-25%	-25%	-25%	-25%	-25%	-20%	-20%	-20%	-20%	-20%	-16%	-16%
vs. Maya	(35.83)	(20.00)	(20.00)	(20.00)	(23.96)	(25.00)	(25.00)	(25.00)	(25.00)	(25.00)	(20.00)	(20.00)	(20.00)	(20.00)	(20.00)	(17.00)	(13.00)
vs. Maya (%)	-35%	-22%	-22%	-21%	-25%	-27%	-27%	-27%	-27%	-27%	-22%	-22%	-22%	-22%	-22%	-19%	-15%





Source: Bloomberg, Goldman Sachs Research estimates.

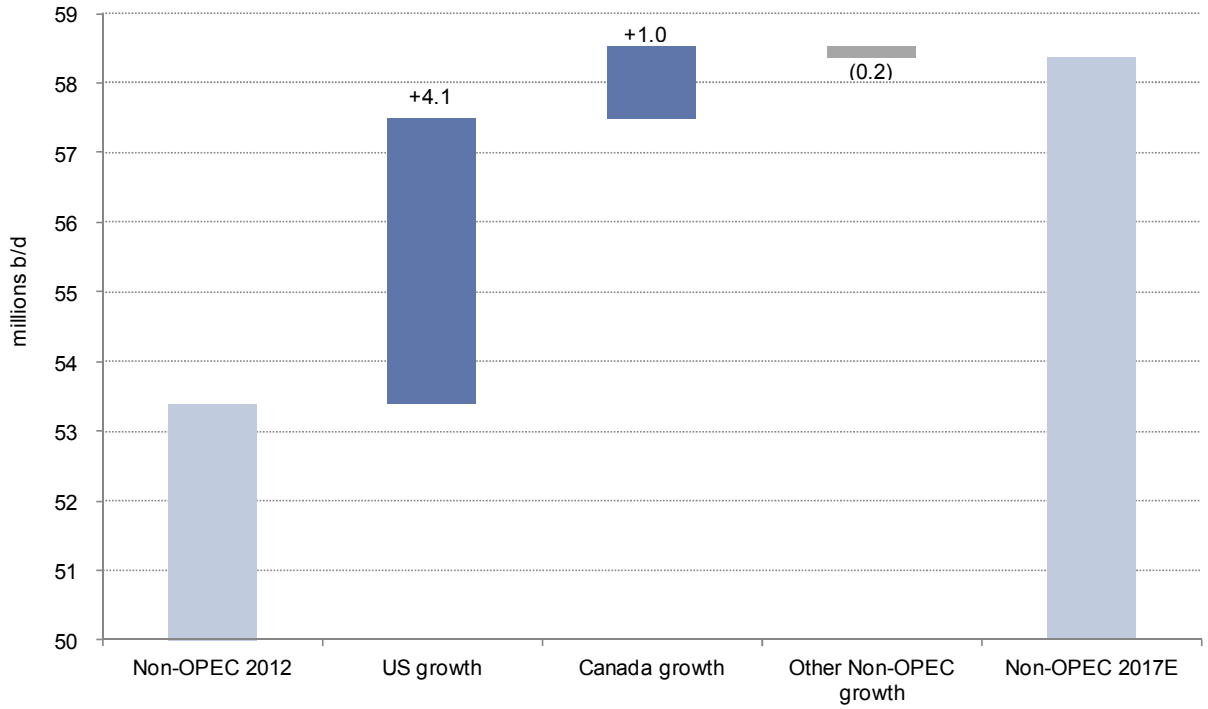
Exhibit 4: Map of major oil pipelines that impact Canada's oil sands/heavy oil region

Source: CAPP (June 2012).

Canadian oil production growing at a healthy clip

As we detailed in our April 12, 2013 global energy report, *380 projects to change the world: From resource constraint to infrastructure constraint*, **Canada is one of the few bright spots in the global oil supply outlook** along with the United States and Iraq. In fact, the United States and Canada account for essentially all of the cumulative growth we expect in non-OPEC supply over the next five years (Exhibit 5). **But,** like the United States and Iraq, **realization of potential supply growth is contingent on adequate infrastructure being developed in order to ensure Canadian oil supplies make it to key refining demand centers**. We see significant demand for Canadian heavy oil in the United States – the key is getting there.

Exhibit 5: Canada and the United States account for essentially all of the expected growth in non-OPEC oil supply through 2017



Source: IEA, Goldman Sachs Research estimates.

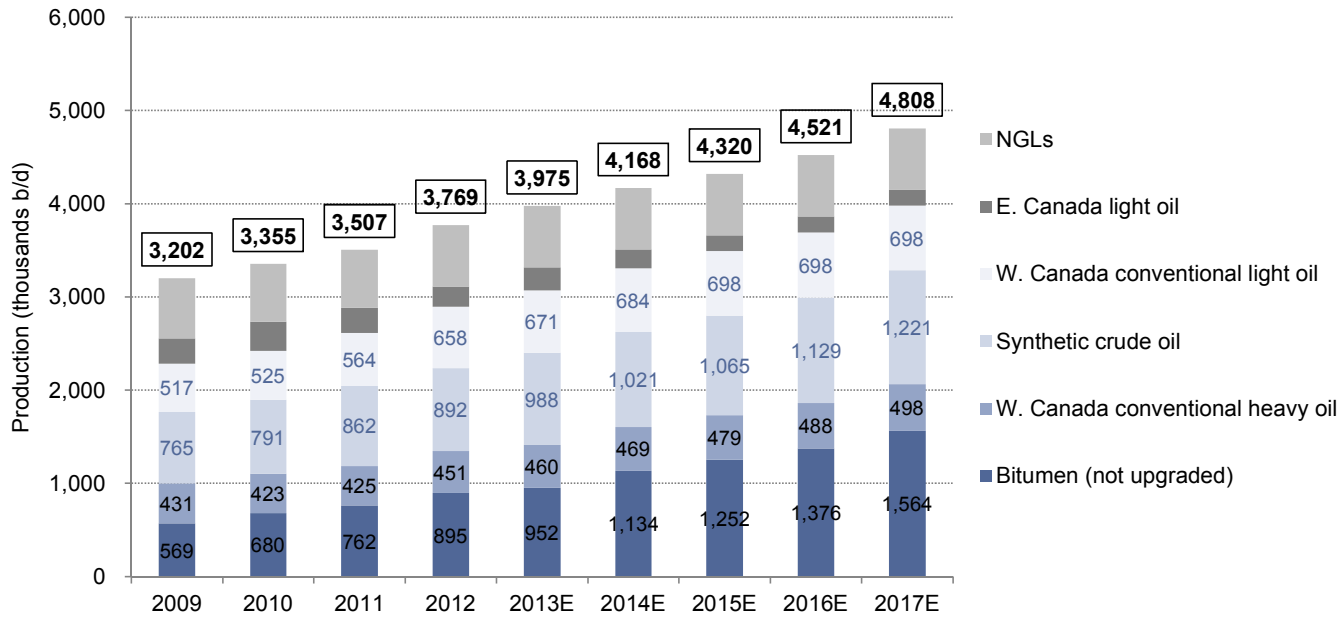
Bitumen/heavy oil drive the growth, though light crude oil also expected to increase

We estimate that total Canadian production will grow from about 3.8 million b/d in 2012 to around 4.8 million b/d in 2017 and 5.9 million b/d by 2020 (Exhibits 6-8). Oil sands/heavy oil production in western Canada accounts for essentially all of the net growth over the period, the bulk of which will **not** be upgraded into synthetic light crude oil and will remain as bitumen or heavy oil. Key projects to watch include Foster Creek/Christina Lake (Cenovus Energy/ConocoPhillips joint venture), Kearl (ExxonMobil), and Firebag (Suncor Energy). We note that a portion of Firebag production will be processed at Suncor's existing upgraders.

Key upside and downside risks to our forecasts:

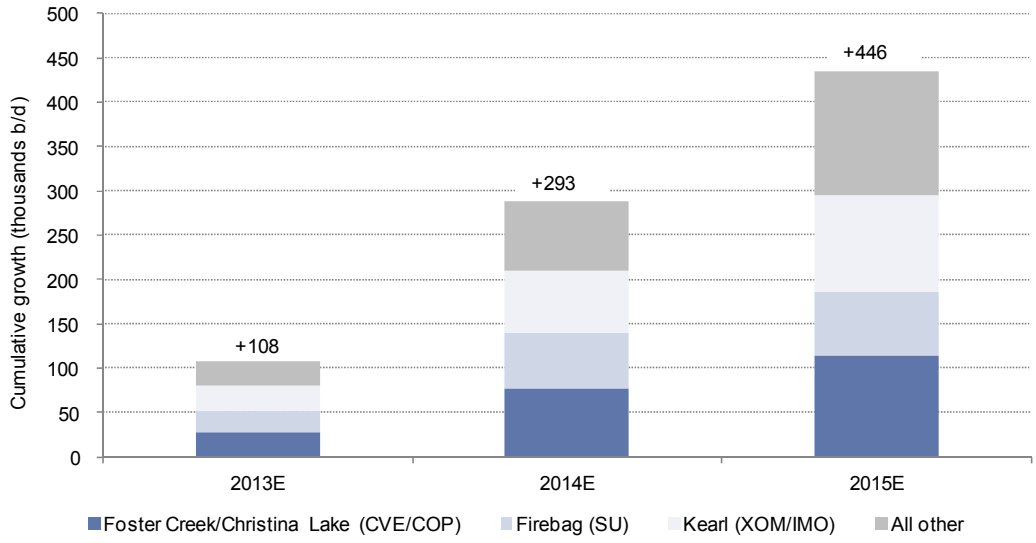
- Over the past year, oil sands projects (primarily SAGD) have started-up around 3 months ahead of schedule. Examples include recent phases at Christina Lake and Firebag.
- Canadian unconventional light oil plays are at an earlier stage of understanding than US plays, which, we think, likely presents upside risk to our Western Canada conventional light oil forecast.
- In the event WCS prices come under pressure, in particular in our bear case scenario, we would expect project delays/deferrals in the out years. While it can be difficult to delay/cancel mining oil sands projects mid-development given the large-scale, long lead time nature of oil sands mining, SAGD projects could more easily get pushed out as individual projects are typically smaller scale than mining, with CAPEX more easily adjusted.

Exhibit 6: Bitumen/heavy oil drives Canadian production growth in coming years, though light crude oil also gains



Source: CAPP, Company reports, NEB, Goldman Sachs Research estimates.

Exhibit 7: Non-upgraded oil sands production expected to grow sharply over 2013E-2015E



Source: Company reports, Goldman Sachs Research estimates.

Exhibit 8: Canada "Top 380 projects" oil production profile: 2009-2020E
in thousands b/d, unless otherwise indicated

	2009	2010	2011	2012	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Canada oil supply:												
Canada ex-Top 380, ex-NGLs	2,032	2,123	2,137	2,253	2,280	2,234	2,189	2,146	2,103	2,061	2,019	1,979
% change (y-o-y)	*-3.7%*	*4.4%*	*0.7%*	*5.4%*	*1.2%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*	*-2.0%*
Canada NGLs	646	622	623	658	658	658	658	658	658	658	658	658
% change (y-o-y)	*-4.7%*	*-3.7%*	*0.2%*	*5.6%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Canada Top 380:												
Oil sands:												
Synthetic crude oil:												
Athabasca	133	120	192	208	220	230	230	240	250	260	270	280
Horizon	65	99	40	88	104	115	120	130	155	200	230	250
Long Lake	7	14	24	24	30	34	38	41	52	59	66	66
Syncrude 3	89	90	90	93	95	95	95	95	95	95	95	95
Sub-total	**294**	**323**	**346**	**413**	**449**	**474**	**483**	**506**	**552**	**614**	**661**	**691**
Bitumen/heavy oil:												
Aspen	0	0	0	0	0	0	0	0	5	15	35	45
Carmon Creek	0	0	0	0	0	0	0	0	18	28	35	58
Christina Lake	14	16	24	35	60	98	113	143	158	188	223	253
Dover	0	0	0	0	0	0	0	0	0	5	10	23
Firebag	0	0	25	55	78	118	126	126	126	131	163	194
Fort Hills/Joslyn	0	0	0	0	0	0	0	0	0	0	0	0
Foster Creek	74	102	110	116	120	131	154	175	205	235	245	245
Great Divide	8	10	12	12	15	18	18	18	18	23	28	33
Grouse	0	0	0	0	0	0	0	0	0	15	30	40
Hangingstone	0	0	0	0	0	0	0	5	15	20	25	30
Jackfish	26	29	40	50	65	77	90	100	105	105	110	115
Kearl	0	0	0	0	30	70	110	130	190	230	270	305
Kirby	0	0	0	0	0	10	20	35	50	60	75	80
Leismer	0	0	10	16	20	26	30	35	45	50	60	80
MacKay River expansion	0	0	0	0	0	0	0	8	21	30	40	40
MEG Energy Christina Lake	10	25	25	25	25	30	35	60	80	120	140	160
Narrows Lake	0	0	0	0	0	0	0	0	10	25	35	55
Northern Lights	0	0	0	0	0	0	0	0	0	0	0	0
Pike	0	0	0	0	0	0	0	0	0	10	40	65
Primrose East	10	18	25	30	35	40	40	40	40	40	40	40
Sunrise	0	0	0	0	0	10	30	50	50	65	80	130
Surmont	9	15	25	27	27	27	37	57	90	110	110	110
Thickwood	0	0	0	0	0	5	10	18	26	40	53	66
Sub-total	**151**	**215**	**296**	**367**	**475**	**660**	**812**	**1,000**	**1,252**	**1,545**	**1,847**	**2,167**
Western Canada conventional heavy oil:												
Nabiye	0	0	0	0	0	5	25	40	40	40	40	40
Pelican Lake polymer flood	15	18	33	41	48	55	60	65	65	65	65	65
Western Canada "unconventional/shale":												
Duvernay Shale	0	0	0	0	6	17	32	47	62	73	83	89
Offshore East Coast:												
Hebron	0	0	0	0	0	0	0	0	10	50	120	140
White Rose	64	54	71	38	60	65	62	60	67	70	64	51
Canada Top 380 sub-total	**524**	**610**	**746**	**858**	**1,037**	**1,276**	**1,473**	**1,718**	**2,047**	**2,457**	**2,879**	**3,243**
Canada Total	**3,202**	**3,355**	**3,507**	**3,769**	**3,975**	**4,168**	**4,320**	**4,521**	**4,808**	**5,175**	**5,556**	**5,880**
% change (y-o-y)	***-0.8%***	***4.8%***	***4.5%***	***7.5%***	***5.5%***	***4.8%***	***3.7%***	***4.7%***	***6.3%***	***7.6%***	***7.4%***	***5.8%***

Source: Company reports, Goldman Sachs Research estimates.

Canadian oil production background

For the purposes of this report we simplify Canadian crude oil supply into two main categories, each with several sub-categories: (1) "Heavy oil", which includes (a) bitumen from oil sands project, (b) the Western Canadian Select blend, and (c) conventional heavy oil production; and (2) "Light oil" including (a) synthetic crude oil, which is upgraded Canadian oil sands bitumen, and (b) conventional light crude oil.

Canadian heavy crude oil:

- Bitumen: Bitumen is very heavy crude oil that is tar-like in consistency and has an API gravity of about 8 degrees. It is extracted from both types of oil sands projects, mining and steam-assisted gravity draining (SAGD).
- Western Canadian Select (WCS): Bitumen is often mixed with either condensate or synthetic crude oil in order to make WCS, which has an API gravity of between 18-22 degrees. We approximate that WCS is a blend of about 65% bitumen and 35% condensate/synthetic oil. The blending process is primarily done to allow the heavy oil supply to flow through pipelines, which bitumen cannot do on its own. Bitumen that is blended with condensate is referred to as dilbit while bitumen that is blended with synthetic oil is called synbit.
- Conventional heavy oil: Traditional or conventional heavy crude oil supply also exists in meaningful quantities in Western Canada.

Canadian light crude oil:

- Synthetic light crude oil (SCO): Bitumen can also be upgraded into synthetic light oil through an upgrader (essentially a coker), where the bitumen is subjected to such processes as distillation and hydrotreating in order to remove sulfur and reduce viscosity. Canadian synthetic crude oil pricing is similar to WTI, adjusted for quality differences (SCO yields more distillate when refined, which adds a premium versus WTI) and the associated cost of transport (which would reduce the price versus WTI, all else equal).
- Conventional Canadian light oil: For this report, we focus on Western Canadian conventional light oil, which is similar to synthetic crude oil and trades near WTI, adjusted for quality differences and the cost of transport. Canada also has meaningful light-sweet production offshore its East Coast. The offshore East Coast production does not impact our supply/demand balance outlook for Western Canada.

Introduction to getting oil out of Canada: Local refining, pipeline, rail

The key issue facing the Canadian oil industry, in our view, is ensuring adequate export infrastructure to reach major refining demand centers in the United States or globally. After years of projects missing deadlines and running over budget, Canadian oil sands companies in the last year or so have started to deliver projects ahead of schedule and under budget. However, this is occurring at a time where growth in take-away capacity out of Canada is struggling to keep pace, resulting in wider-than-history WCS spreads versus global benchmarks like WTI (light oil), Brent (light oil) and Maya (heavy oil).

The issue looks increasingly acute in western Canada, where local refining capacity can only process a small portion of expected production. With Canada's primary heavy oil export pipelines now running at or near capacity, new projects/expansions are urgently needed. However, a combination of regulatory, environmental, and local community issues are causing significant delays. **While the challenges faced by TransCanada's Keystone XL pipeline are well known, lower-profile Enbridge projects like Alberta Clipper (expansion) and Northern Gateway (new build) also appear likely to take longer than investors may currently expect**. The potential for Canadian heavy crude oil supply to remain trapped in the province of Alberta is a growing risk for the 2014-2017 period depending on the timing of new pipeline start-ups.

Essentially, **there are three main directions Western Canadian crude oil can flow** once the limited amount of western Canadian refining demand is satisfied:

- **South**: to major refining centers in the US Mid-West and Gulf Coast
- **West**: to Canada's West Coast for export to refining centers on the US West Coast and potentially Asia
- **East**: to Canada's East Coast refining center for processing or further export to the US East Coast, US Gulf Coast, India, or Europe

We see significant challenges with all three proposed directions. Regulatory, environmental, and local community opposition has increased in recent years, which is currently delaying planned pipeline projects to the south and west and we suspect will ultimately impact flows to the East (planned projects to the East are at an earlier stage and have yet to meet with resistance, but we think this will change). Rail will help fill some of the gap, but is more expensive on a per unit basis.

Refining markets for Canadian heavy crude oil

Insufficient refining capacity exists in Western Canada to handle the significant volumes of production in the region, necessitating movement to refining centers primarily in the United States (Exhibit 9). We discuss Canadian and United States refining demand by area in more detail below.

Canada: Limited heavy oil processing capacity in Western Canada

Refining capacity in Western Canada is relatively modest at just 650,000 b/d, of which there is only around 260,000 b/d of estimated heavy oil processing ability – well below estimated current Western Canadian heavy oil supply of around 1.7 million b/d. All remaining crude oil (heavy and light) must find a home elsewhere – overwhelmingly in the United States.

There is significant refining capacity in Eastern Canada of around 1.29 million b/d, but it is almost entirely geared toward processing light crude oil. Furthermore, there is currently no real avenue for western crude oil production to make its way East, although TransCanada's Energy East project is aiming to change that by the 2017 time frame (which we discuss below in more detail). In order for Eastern Canada refiners to run heavy crude oil/bitumen from western Canada, investment would be needed to "heavy up" the facilities. To that end, Suncor has contemplated adding a coker to its Montreal refinery. Meaningful additional investment would be needed by others as well if the East Coast refineries in Canada are to prove to be a viable outlet for heavy oil production from western Canada.

United States: Significant heavy oil demand in Mid-West and Gulf Coast

The Gulf Coast accounts for about half of overall US refining capacity, with the region known for its sophisticated plants that can process significant amounts of heavy oil supply. At this time, the bulk of Canadian heavy oil supply that makes its way to the United States is processed in the US Mid-West. The combination of Keystone XL and Alberta Clipper/Flanagan South/Seaway are expected to provide the pathway for a meaningful increase in Canadian heavy oil supply to the Gulf Coast, dependent of course on the timing of when those pipelines being operation.

The East Coast of the United States is similar to that of Canada in that plants are primarily known for running light crude oil. The US West Coast does have heavy oil processing capacity similar to the US Mid-West, assuming new pipeline/rail/barge traffic can reach it.

Exhibit 9: Refining capacity in Canada and the United States

thousands b/d

Refining capacity	Light/Med.	Med./Heavy	Total
Canada:			
Western Canada	389	260	649
Eastern Canada	1,241	50	1,291
Total Canada	**1,630**	**310**	**1,940**
United States:			
PADD I (East Coast)	1,045	355	1,400
PADD II (Mid-West)	1,750	2,008	3,758
PADD III (Gulf Coast)	2,706	6,114	8,820
PADD IV (Rockies)	185	419	604
PADD V (West Coast)	1,805	1,390	3,195
Total United States	**7,491**	**10,285**	**17,776**

thousands b/d

Western Canada	Capacity
Edmonton:	
Imperial	189
Suncor	140
Shell	100
Lloydminster:	
Husky	25
Regina:	
CO-OP	130
Prince George:	
Husky	10
Vancouver:	
Chevron	55
Total W. Canada	**649**

thousands b/d

Eastern Canada	Capacity
Sarnia:	
Imperial	119
Shell	71
Suncor	85
Nova	80
Nanticoke:	
Imperial Oil	114
Montreal area:	
Suncor	137
Valero	235
Saint John/Halifax area:	
Irving	250
Imperial Oil	85
NAR	115
Total E. Canada	**1,291**

Source: CAPP, DOE, Oil & Gas Journal, Goldman Sachs Research estimates.

Connecting oil supply to refineries: Existing export pipelines for western Canadian crude oil

Given the insufficient amount of local refining capacity in western Canada, oil production from the region is exported to refineries in the United States primarily via pipeline, with rail a small but growing mode of transport.

Five main pipeline systems out of Canada

There are 5 main pipeline systems that currently transport excess crude out of Alberta (Exhibit 10):

- **Mainline (Enbridge)**: Enbridge's Mainline is the most meaningful pipeline system out of Canada, with around 2.3 million b/d of nameplate capacity, starting in Edmonton and making its way toward Superior, Wisconsin where it splits flow, with about 540,000 thousand b/d headed towards Sarnia, Ontario and the remaining 1.4 million b/d toward the Chicago area (Exhibit 11). The system begins as 5 primary pipelines, three of which are designated as light/medium crude oil lines (lines 1, 2a and 3) and two of which carry heavy oil (lines 4 and 67). Currently, we believe the heavy crude oil lines can transport about 810,000 b/d of WCS crude, while lines 1-3 can carry about 965,000 b/d of light and medium crude oil assuming 65% and 90% effective capacity, respectively.

  As we discuss below in more detail below, Enbridge is well-positioned within the United States to flow oil south via its Flanagan South and Seaway pipeline systems to reach key US mid-west and Gulf Coast refining centers. However, expansion of Line 67 (Alberta Clipper) is critical to ensure adequate pipeline flow further south.

- **Keystone (phase 1) (TransCanada)**: TransCanada's existing Keystone pipeline (phase 1) transports crude oil from Hardisty, Alberta to Steele City, Nebraska. The pipeline has nameplate capacity of 591,000 b/d and currently transports both light and heavy crude oil. We estimate that phase 1 runs approximately 125,000 b/d of light and 375,000 b/d of heavy crude bringing its effective capacity closer to 500,000 b/d, or 85% of nameplate. Keystone XL, discussed below in more detail, is ultimately expected to flow in a more direct route to Steele City, Nebraska and is essentially a discrete pipeline vis-à-vis the original Keystone line.

- **Trans Mountain (Kinder Morgan)**: Kinder Morgan's Trans Mountain pipeline heads west to the British Columbia coast from Alberta, with some flow being diverted to the state of Washington. The pipeline has a nameplate capacity of 400,000 b/d, although its effective capacity appears to be closer to 300,000 b/d. We believe Trans Mountain's flows are about 20% WCS and 80% light-sweet crude oil.

- **Express (Spectra)**: Spectra recently purchased the Express/Platte pipeline system, which starts in Alberta and flows crude oil south to Casper, Wyoming where it either makes its way into the PADD 2 refining system or heads down to the Gulf Coast. Express has a nameplate capacity of 280,000 b/d. However, as a smaller diameter, pure-heavy pipeline and given it is constrained downstream by the Platte system, we estimate it will only run about 155,000 b/d of heavy (55% of nameplate).

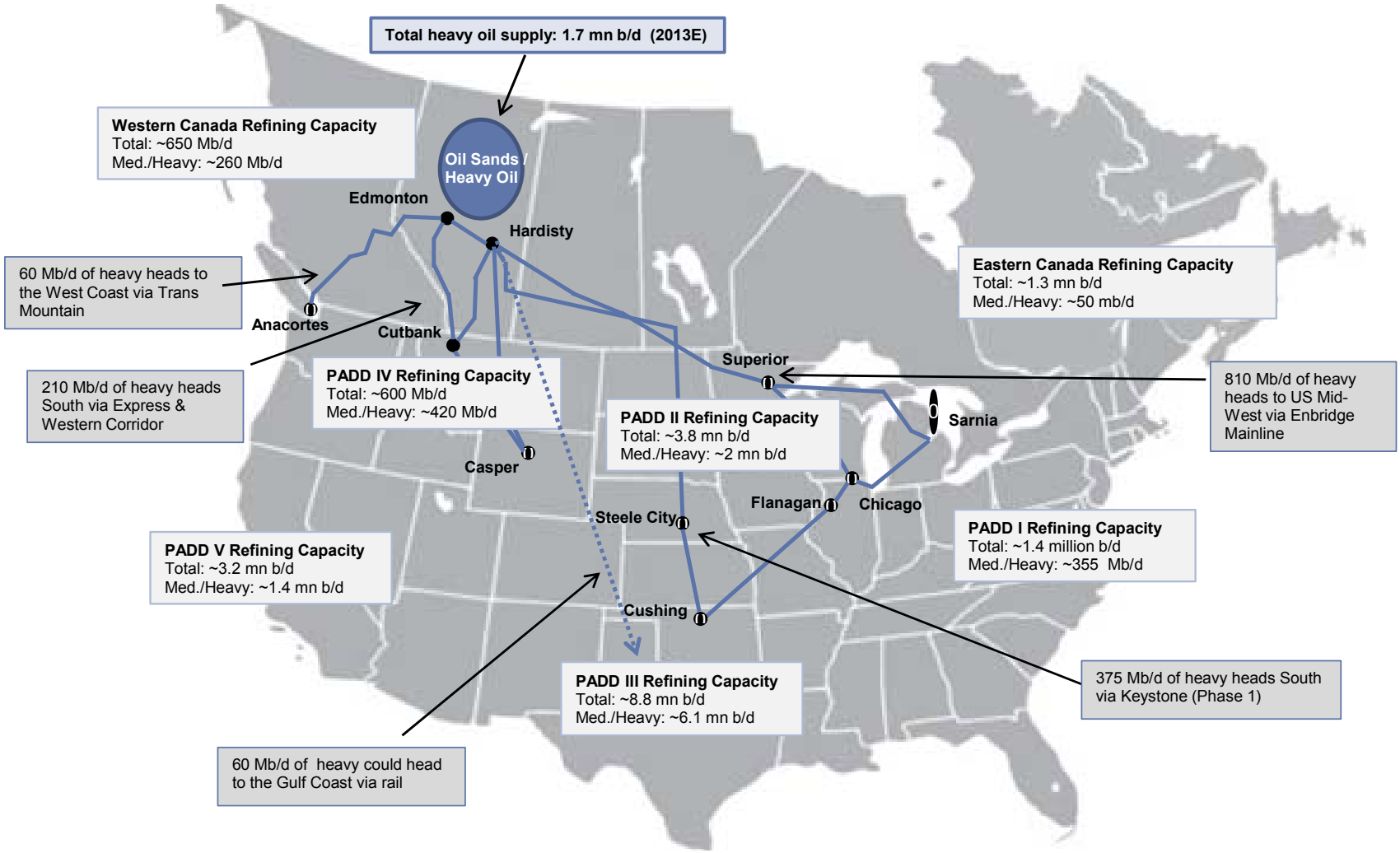
- **Western Corridor (Plains All-American)**: Plain All-American's Western Corridor is a US pipeline system (3 pipelines) that intercepts two Canadian pipelines (Rangeland and Bow River). Since Western Corridor is smaller than the combined two Canadian pipelines, Western Corridor becomes the limiting factor on flow. In term of capacity, we estimate that Western Corridor can flow no more than 55,000 b/d of WCS crude oil.

Effective capacity often well below nameplate capacity

One of the common pitfalls in looking at oil supply versus takeaways capacity is accounting for the difference between nameplate and effective capacity. In effect, issues such as pipeline maintenance and heavy oil viscosity reduce effective capacity relative to

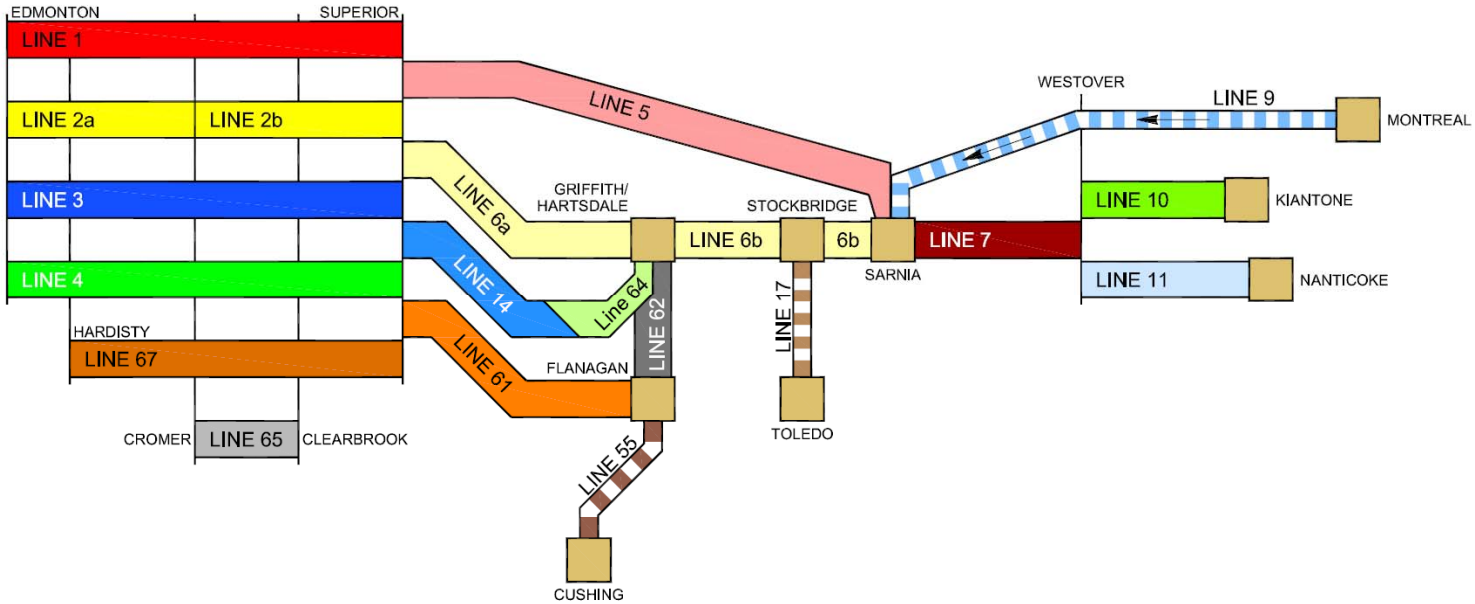
nameplate. To account for normal maintenance we assume the effective capacity of a light oil-only pipeline is 90% of nameplate capacity. To account for maintenance and viscosity, we assume heavy oil-only pipelines run at 65% of nameplate capacity (the diameter of the pipeline can drive some variance to this estimate). Mixed transport of both heavy and light oils would fall somewhere between the 65% and 90% effective utilization range. In addition to pipelines, we estimate current rail takeaway capacity from Western Canada is around 150,000 b/d (almost all light). We estimate the effective total take-away capacity for western Canadian oil is currently about 2.9 million b/d, with about 1.5 million b/d dedicated for heavy oil.

Exhibit 10: 2013E Western Canadian heavy crude oil routes and markets



Source: Company reports, Goldman Sachs Research estimates.

Exhibit 11: Enbridge's Mainline system



Source: Enbridge.

Rail: Similar to the United States, a growing reality in Canada

Based on discussions with oil and pipeline companies we cover as well as other oil industry sources, **we estimate that rail capacity is currently about 150,000 b/d of crude oil from Western Canada to the United States, and is expected to grow to at least 200,000 b/d in 2014 and potentially as high as 500,000 b/d over the next 3-4 years**. A majority of current rail flow is for light crude oil, since transporting bitumen/WCS carries additional logistical hurdles vis-à-vis light.

- The first hurdle is that bitumen/heavy crude oil rail cars have to be specially made, so that their viscous cargo can be heated by steam in order to flow the crude out of car.
- Secondly, heating a rail car so that the heavy crude oil can be unloaded takes more time than simply tapping a rail car filled with light oil, which means fewer heavy barrels per day can be transported than light.
- Third, bitumen and WCS are denser than light crude, and since rail cars have maximum weight restrictions, fewer barrels of heavy crude can be carried in each car compared to light. Therefore, of the 150,000 b/d of crude transported by rail in 2013, we estimate that no more than 40% is likely to be heavy (and this number could prove closer to 20%).

Getting oil out of Canada: Crossing the border the key bottleneck

We see risk of delays to all the major pipeline projects being planned to move Canadian heavy oil out of Alberta:

- **South:** The major projects targeting US Mid-West and Gulf Coast refining centers are (1) TransCanada's Keystone XL and (2) Enbridge's Alberta Clipper/Flanagan South/Seaway projects (technically, three separate Enbridge projects, but all are linked together to provide the ultimate route out of Alberta to the US Gulf Coast). Delays in securing US presidential approval for Keystone XL are well known by investors. What is less clear at this time is the degree to which the Alberta Clipper expansion might face delays in securing an amendment to its original presidential permit.
- **West:** The major projects targeting Canada's West Coast and ultimately either the US West Coast or Asia are (1) Kinder Morgan's Trans Mountain expansion and (2) Enbridge's Northern Gateway project. Like Keystone XL, Northern Gateway has faced its own share of regulatory, environmental, and local community hurdles and delays, even though this particular project is fully within Canada. Most investors see a clearer path for the Trans Mountain expansion, though we note it actually has not yet filed its regulatory application.
- **East:** The major project targeting Canada's East Coast and potentially the US East Coast, US Gulf Coast, India, and Europe is TransCanada's conversion of its natural gas mainline to a crude oil pipeline, known as "Energy East". Even though this project is a conversion of an existing pipeline, it does potentially contain a new build portion east of Montreal to Quebec City and Saint John, raising the risk of many of the same hurdles noted for the above projects.

We discuss each of the projects in more detail below (Exhibit 12). Given that a combination of regulatory, environmental, and local community challenges could delay the projects, we believe rail will provide an increasingly important role in allowing western Canada crude oil to move from Alberta to major refining centers primarily in the United States. A wildcard that could provide some relief would be various debottlenecking and crude oil stream harmonization projects being pursued by Enbridge that would effectively expand heavy oil throughput capacity on existing lines without requiring new regulatory approvals. This is an area we will be watching closely, but at this time do not build in to our base-case supply/demand balance.

Exhibit 12: Major pipeline project tracker

Pipeline	Operator	Origin	Destination	Expected start	Capacity (Mb/d)	Light/Heavy est. %	Regulatory status
Alberta Clipper Expansion I	Enbridge	Hardisty, CAN	Superior, Wisconsin	Mid 2014	120	0/100	Submitted application to National Energy Board in Oct 2012.
Alberta Clipper Expansion II	Enbridge	Hardisty, CAN	Superior, Wisconsin	2015	230	0/100	Submitted application to US State Dept. for amendment to EIS in Nov 2012.
Keystone XL Northern Leg	TransCanada	Hardisty, CAN	Steele City, NE	2H2015	830	15/85	Submitted application for US Presidential Permit in May 2012.
Northern Gateway	Enbridge	Edmonton, CAN	Kitimat, CAN	2017	525	50/50	Submitted application to National Energy Board in May 2010.
Energy East Pipeline Project	TransCanada	Alberta, CAN	Montreal, Quebec, St. John	2017/2018	500-850	NA	Plans to submit application to National Energy Board in 4Q2013.
Trans Mountain Expansion	Kinder Morgan	Edmonton, CAN	Burnaby, CAN	2017	590	20/80	Plans to submit application to National Energy Board in late 2013.

Source: Company reports, Goldman Sachs Research.

Keystone XL–TransCanada (South)

TransCanada's proposed Keystone XL pipeline from Hardisty, Alberta to Port Arthur and Houston, Texas is the most meaningful of the future planned projects and one that is especially important in both ensuring adequate takeaway capacity from Canada but also direct access to significant heavy crude oil demand in the US Gulf Coast. The pipeline would add 830,000 b/d of nameplate transport capacity, though we would apply a 65% haircut in the event it ran 100% heavy crude oil. At the present time, it is our understanding that TransCanada plans to run about 100,000 b/d of light-sweet oil, allowing for about 625,000 b/d of heavy crude oil flow.

The big question on XL is the timing of obtaining US presidential approval, since the pipeline crosses the US/Canada border. TransCanada started the regulatory process in September 2008, meaning we are now in year five of its attempt to gain approval to move forward. A combination of environmental and local community opposition to the proposed pipeline has contributed to the significant delays it has faced.

With that said, regulatory progress has occurred, with TransCanada anticipating receiving sign off on the final Environmental Impact Statement (EIS) from the US State Department in the next few weeks. Upon receiving a final EIS, the (presumed) final step would be to go through the National Interest Determination (NID) phase upon which President Obama would either give approval or not for the pipeline. The phase is designed to last 90 days. As such, the ultimate fate of the pipeline should be known by late summer or early fall. Allowing for a few months to mobilize the construction work force, a fall 2013 "approval" would allow the pipeline to start operations in 2H2015, which is what we have assumed in our base-case assumptions. Given the history of regulatory delays with XL, we recognize there is risk that explicit approval or rejection could occur later than the late summer/early fall expected time frame.

Given regulatory permitting delays, TransCanada decided in 2012 to move forward with the southern leg of the XL pipeline from Cushing, Oklahoma to Port Arthur and Houston, Texas. The southern leg is expected to start-up by year-end 2013. Upon regulatory approval, the northern leg would then connect to the southern leg.

Exhibit 13: Keystone XL (northern leg) planned route

Source: Company Reports.

Expansion of Line 67 (Alberta Clipper)–Enbridge (South)

The other key project to the south (i.e., the United States) is Enbridge's proposed expansion of Line 67, also known as Alberta Clipper, which flows from Hardisty, Alberta to Superior, Wisconsin. Enbridge is planning a two stage expansion – first to 570,000 b/d from the current 450,000 b/d in 2014 and then a further increase to 800,000 b/d in 2015. Given the line runs 100% heavy oil, we estimate the nameplate increase of 350,000 b/d would net effective incremental flows of around 230,000 b/d.

From a regulatory standpoint, it is our understanding that the initial 120,000 b/d expansion does not require any changes to its previous approvals from the US government. However, the increase above 570,000 b/d requires the US State Department to agree to an amendment to the previously approved Environmental Impact Statement. Enbridge has filed for the full increase to 800,000 b/d and expects a decision in the coming months. While we are not anticipating Keystone XL-like delays or opposition from environmental or local community groups – since the pipeline already exists and Enbridge is really just adding pump stations along the existing route to increase flow – we recognize that the current regulatory environment is uncertain and delays are possible.

We believe Canadian oil equity investors may be under-appreciating the importance of this project and the corresponding risk of delay. Ultimately Alberta Clipper will feed into its Flanagan South/Seaway system to provide US Gulf Coast access. But given that existing heavy oil takeaway capacity is nearing existing capacity on the line, the expansion is critically needed to ensure incremental flows on Flanagan South/Seaway are available.

Trans Mountain Expansion–Kinder Morgan (West)

Kinder Morgan's Trans Mountain Expansion (TMX) project provides a potential relief valve to Canada's West Coast, with end markets primarily on the US West Coast but potentially also Asia. The project would expand Trans Mountain's existing pipeline that runs from Alberta to Vancouver, British Colombia by 490,000 b/d and is scheduled to come on line in 2017. In terms of the regulatory process, TMX has not filed its full regulatory application, preferring instead to gain greater certainty on the tariffs it will be allowed to charge. It is not clear at this time whether TMX will face environmental or local community opposition once it makes its regulatory filing, expected by the end of the year. Transmountain would involve "twinning" i.e. new construction that would follow a parallel path to the existing line. As such we believe it would face fewer issues than a new build pipeline, but could still run into resistance. Opponents may also cite the risks of increased tanker traffic leaving the narrow straits out of Vancouver.

Northern Gateway–Enbridge (West)

Like Trans Mountain, Enbridge's proposed Northern Gateway pipeline provides access to Canada's West Coast. The project has been in the planning and approval phase for over a decade, and would transport crude oil from Alberta to Kitimat, British Columbia via a new pipeline with nameplate capacity of 525,000 b/d. The advantage of this project over the Trans Mountain expansion is that the port of Vancouver is not deep enough to handle VLCC and ULCC ships, whereas Kitimat is a deep-water port that can handle the larger tankers. However, the project has faced significant local community and environmental opposition, casting significant doubt on the planned 2017 start-up date.

Exhibit 14: Northern Gateway pipeline

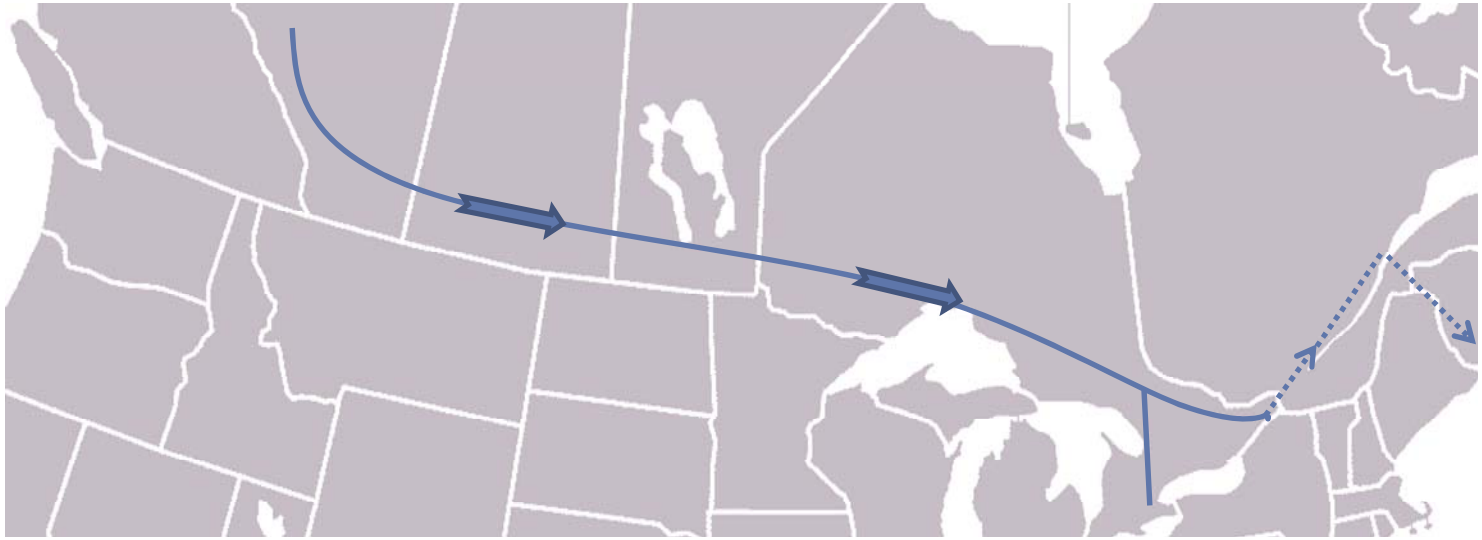
Source: Enbridge.

"Energy East" conversion of natural gas mainline to a crude oil line – TransCanada (East)

TransCanada has proposed a natural gas pipeline conversion project of its own: the Mainline that runs just north of the Canada/US border from Alberta to Montreal. Crude oil nameplate capacity upon conversion is estimated to be as much as 850,000 b/d, with a tentative 2017 start-up date planned subject to regulatory approvals. From a regulatory standpoint, in addition to potential local permitting challenges that could arise, Energy East also faces issues of reducing the natural gas supply into eastern Canada, which could face resistance from local gas utilities.

In addition to regulatory issues, the Eastern Canada refining market overwhelmingly processes light crude oil. Moreover, while the bulk of the pipeline is in place, there is likely to be a new build component to extend the pipeline to Quebec City as well as to St. John on the East Coast. It is possible that the new build portion could face a combination of environmental and local community opposition as we have seen with other new build projects. Given the light crude oil nature of Eastern Canada refining, reaching the coast is important to allow export of heavy crude oil flows to the US Gulf Coast, Europe, or India.

Exhibit 15: "Energy East" conversion of TransCanada's Mainline



Source: Company reports.

Other solutions: Debottlenecking, harmonizing crude oil stream (South)

Enbridge along with major Canadian oil producers are evaluating ways to increase the flow of crude oil on existing lines via a combination of debottlenecking and crude oil stream harmonization, the latter of which could improve utilization and therefore effectively increase the productive capacity of existing terminals, storage tanks, and related logistics assets. As an example, if producers can agree to additional blended crude oil streams, like what has occurred with the Western Canadian Select blend, the potential exists to effectively increase flows on existing lines by as much as 200,000-300,000 b/d. The timing of these debottlenecking and crude harmonization efforts are uncertain and are not expected to increase throughput over at least the next two years. We suspect that deeper crude oil discounts might be a needed motivating factor to incentivize Canadian oil producers to come to agreement on future blended streams.

We believe there is flexibility to run more heavy oil on existing light crude oil pipelines. However, given the lower effective utilization rate that exists when running heavy oil, we believe there is a practical limit to how much transition can occur before the light crude oil balance becomes more challenging. Nevertheless, the potential for greater flexibility on existing light crude oil lines to run more heavy is one of the reasons our base-case WCS price path is not lower than it is.

Solutions that do not increase flows out of Canada: Line 9 reversal, Flanagan South, Whiting coker, Trunkline conversion (too far South)

There are a number of pipeline and refinery projects outside of Western Canada that are often cited by companies/investors as potential solutions to weaker WCS prices; however, we believe the problem is getting WCS out of Western Canada, and projects which do not accomplish this, will likely have a limited impact on WCS prices in Alberta.

- **Enbridge's Line 9 pipeline reversal**. Line 9 consists of two sections, Line 9a which extends from Sarnia to Westover, Ontario and Line 9b which extends from Westover up to Montreal. Enbridge currently only has approval for the reversal of Line 9a, which would carry about 200,000 b/d of crude oil. Line 9b has not been formally approved yet, but approval should not be difficult to secure as the pipeline does not cross any US borders. We believe the reversal of Line 9 will have little impact on WCS prices since it does not add incremental demand to Enbridge's mainline out of Canada, but merely attaches to it in Sarnia. Moreover, the refiners served by line 9 in Westover and Montreal are predominately light oil refiners.
- **Enbridge's Flanagan South pipeline**. The Flanagan South pipeline is scheduled to come on line in mid-2014 with estimated nameplate capacity of 600,000 b/d. While this adds significant take-away capacity in Flanagan, Illinois, where Line 61 currently ends, Flanagan does not add takeaway capacity out of western Canada.
- **Heavy-up project at BP's Whiting refinery**. The addition of a coker at BP's Whiting refinery is set to come online in 2H2013 and will add approximately 260,000 b/d of incremental heavy oil demand, but it too does not solve the logistics problem of getting WCS into the US. The fact that Whiting is in Indiana, not Alberta, diminishes its relevance to the issue of actually getting heavy oil out of Canada.
- **Trunkline conversion**. Trunkline consists of two underutilized natural gas pipelines (30" and 36") that run from Texas to Michigan and are currently wholly owned by Energy Transfer. The proposed project would convert the smaller of the two pipelines to crude oil and reverse the flow to north-to-south. Two new-build laterals would also be required, one connecting the southern portion of the pipeline to St. James, Louisiana and a smaller one connecting the northern portion to the Patoka, Illinois pipeline hub. However, given that the pipeline would connect to the Enbridge mainline system at Flanagan, we see the project as more about end market diversification than providing incremental flow of heavy oil out of Canada.

  Enbridge has signed onto the project with a 50% interest, with its participation subject to a minimum level of committed volumes during the open season and the completion of its due diligence. The converted crude oil pipeline would have 420,000-620,000 b/d of nameplate capacity, depending on the crude slate. ETP filed for approval to abandon the pipeline with the FERC in July 2012. Subject to regulatory approvals, the start-up date to flow crude oil north-to-south is planned for 2015.

Supply/demand looks tight for heavy oil until Keystone XL starts-up

Insufficient takeaway capacity for Western Canada heavy oil supply until XL starts-up

Our analysis of heavy crude oil supply in Western Canada versus local demand and pipeline/rail takeaway capacity shows 2013 as the last year there will be sufficient takeaway capacity until essentially the start-up of Keystone XL (Exhibit 16). Currently, TransCanada estimates start-up of XL in 2H2015, but that is predicated on receiving presidential approval by this fall. As detailed above, our takeaway capacity estimates include a meaningful increase in heavy crude oil rail capacity as well as the successful expansion of Alberta Clipper within Enbridge's announced schedule. In our view, risk is skewed toward Alberta Clipper being delayed. However, rail capacity could increase faster and by greater amounts than our base-case, in particular if WCS differentials to WTI and Maya are wide.

2014 looks to be particularly challenging for Western Canadian heavy oil…

The widest gap between estimated Western Canada heavy oil supply and takeaway capacity exists in 2014 and early 2015, prior to XL starting up. We estimate there will be an extra 230,000 b/d of heavy oil supply in 2014 relative to local demand and takeaway capacity. The key points of sensitivity include the following:

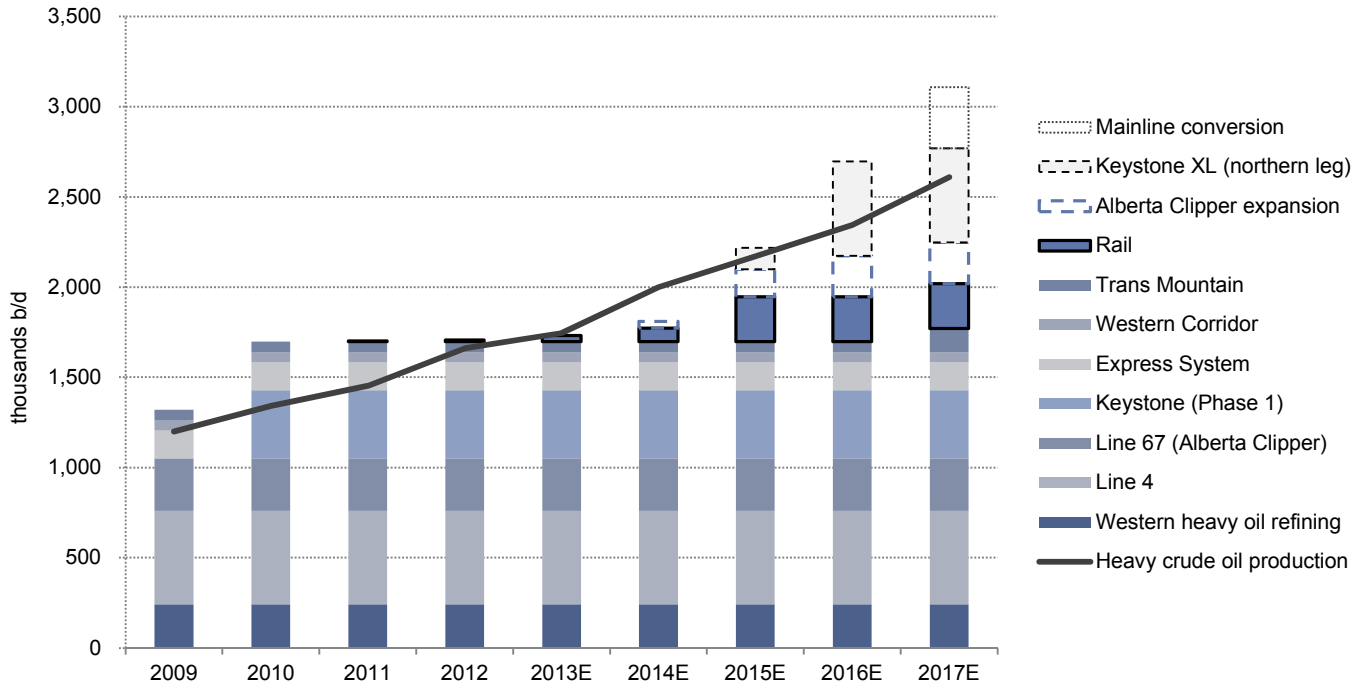
- How much flexibility exists to run more heavy oil on current light crude oil pipelines, without meaningfully negatively impacting the balance for light crude oil?
- Will heavy oil supply disappoint versus our forecasts, in particular if WCS prices pullback?
- How quickly can rail capacity for heavy oil increase?
- Can pipeline debottlenecking and other low-cost solutions be added quickly enough to help alleviate the expected 2014 bottleneck?
- Unplanned downtime at major oil sands projects or refineries can have a material impact on near-term balances, both bullish and bearish.

Assuming the Alberta Clipper expansion and additional rail, we believe the outlook for 2015 is less severe than 2014 but that is still heavily dependent on having confidence that Keystone XL will start-up in 2H2015.

…but direct connection to Gulf Coast, once completed, is positive for the long-term outlook

Notwithstanding our concerns about 2014 and 2015 pre-XL, ultimately, we view the connection of Canada's oil sands/heavy oil region directly to the US Gulf Coast via Keystone XL, Alberta Clipper/Flanagan South/Seaway, and rail as very positive for the Canadian oil industry. We believe direct connectivity to the US Gulf Coast will (finally) allow for WCS to price relative to Maya crude oil adjusted for the cost of transportation and quality differences. In recent years, WCS has traded at an incremental discount to Maya, as very little WCS is currently able to make its way to the Gulf Coast.

Exhibit 16: Western Canada heavy crude oil supply/demand balance



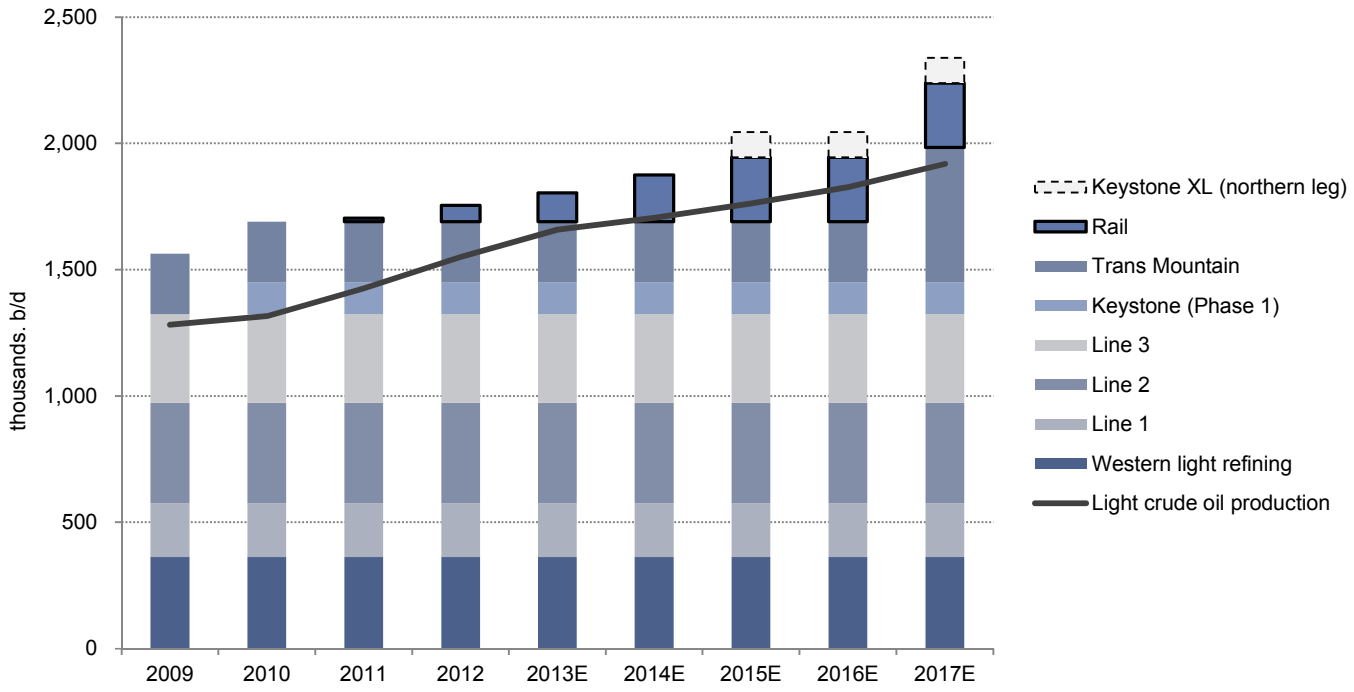
Source: Goldman Sachs Research estimates.

We are less concerned about Western Canada light crude oil supply takeaway capacity

We estimate that takeaway capacity for light crude oil will be sufficient to handle expected Western Canadian production, though our forecasts include a growing contribution from rail capacity. By 2017, light crude oil does benefit from a portion of capacity on XL as well as the Trans Mountain Expansion, suggesting some risk to long-term pricing exists if those projects are further delayed.

On the supply side, the main uncertainty with our forecast is our outlook for unconventional/"shale" light crude oil production in Western Canada. At this time, we are at an earlier stage of understanding its ultimate growth potential, in particular versus our better understanding of unconventional light crude oil growth in the United States (e.g., Bakken, Eagle Ford, Permian, Niobrara). However, we suspect risk to our base-case forecast for Western Canadian light crude oil is to the upside.

Exhibit 17: Western Canada light crude oil supply/demand balance



Source: Goldman Sachs Research estimates.

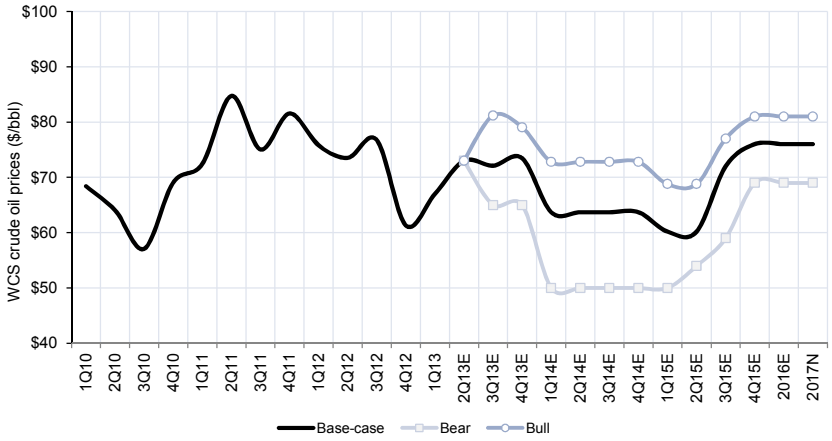
WCS prices expected to weaken in 2014 with potential recovery starting in 2015

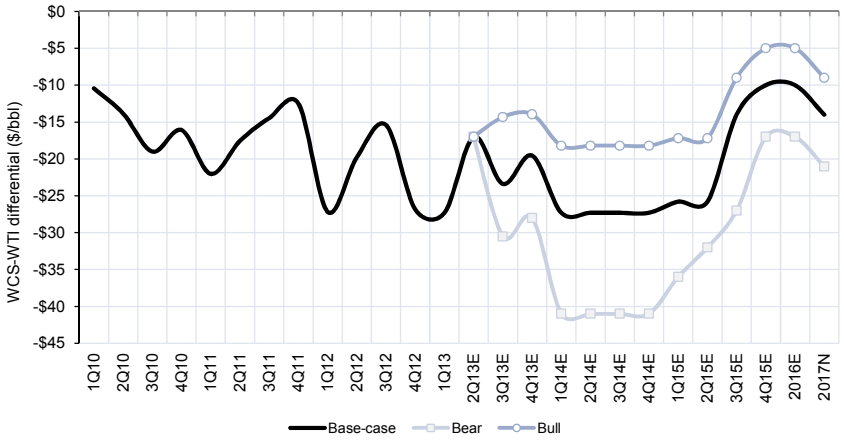
We have updated our 2013-2017 WCS pride deck to reflect our revised Canadian heavy oil supply/demand analysis, with key points as follows (Exhibit 18):

- Our base-case outlook now calls for a decline in WCS prices to $64/bbl in 2014 from $71/bbl (unchanged) in 2013. Our expectation for lower WCS prices is driven by increases in non-upgraded oil sands/heavy oil supply juxtaposed against generally "full" pipeline takeaway capacity out of Canada.
- Assuming start-up of Keystone XL in 2H2015, Alberta Clipper expansion in 2014-15, and heavy oil rail capacity increases over 2014-2015, we see the potential for WCS prices to recover over the course of 2015 and average $67/bbl (WTI-$19/bbl).
- Assuming full capacity from the aforementioned projects, we expect heavy crude oil to fully clear Canada in 2016, resulting in a $76/bbl average WCS price assumption. Given connectivity to the US Gulf Coast, we assume WCS prices trade more explicitly relative to Maya, with our base-case outlook calling for a $13/bbl Maya-WCS differential to account for pipeline tariffs, quality adjustments, and other logistic considerations. A $13/bbl Maya-WCS spread is our "normalized" assumption.
- Our bear-case outlook reflects the risk of deeper discounts in 2014 to the extent the market is particularly over-supplied with Canadian heavy crude oil and takeaway capacity is more limited and less flexible than we think might be the case. Our bear-case scenario estimates a $50/bbl "trough" WCS price (WTI-$41/bbl) in 2014 to incentivize production/project deferrals and aggressive expansion of rail capacity. Under our bear-case scenario, we assume a more meaningful ramp-up in rail capacity over 2015 and 2016 resulting in a recovery to $58/bbl (WTI-$28/bbl) and $69/bbl (WTI-$20/bbl), respectively. The $20/bbl spread to WTI is our early estimate of all-in rail costs; given the early stage nature of heavy oil rail infrastructure out of Canada, we suspect our initial estimate could change by at least $5/bbl up or down as more information becomes available.
- Our bull-case scenario is $73/$74/$81 per barrel (WTI-$18/$12/$5 per bbl) for 2014-2016, respectively. Our bull-case scenario reflects the potential for a slower-than-expected increase in heavy oil supply coupled with greater flexibility in current takeaway capacity out of Canada and a quicker increase in rail. Our bull-case long-term Maya-WCS spread is $8/bbl, which would reflect lower pipeline tariffs and minimal additional infrastructure costs to move WCS from Alberta to the US Gulf Coast.
- We are less concerned about the light crude oil takeaway capacity from Canada due to a combination of slower expected supply growth, higher current light crude oil pipeline takeaway capacity, and greater evidence of rail capacity that can handle light oil production.

Exhibit 18: Revised WCS price deck

	2013E					2014E					2015E					2016E	2017N
	Q1	Q2E	Q3E	Q4E	Year	Q1E	Q2E	Q3E	Q4E	Year	Q1E	Q2E	Q3E	Q4E	Year	Year	Year
Oil price deck (US$/bbl)																	
Brent	$112.83	$100.00	$103.50	$105.00	$105.33	$105.00	$105.00	$105.00	$105.00	$105.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
WTI	94.30	90.00	95.50	93.00	93.20	91.00	91.00	91.00	91.00	91.00	86.00	86.00	86.00	86.00	86.00	86.00	90.00
Maya	102.82	93.00	92.11	93.45	95.35	93.45	93.45	93.45	93.45	93.45	89.00	89.00	89.00	89.00	89.00	89.00	89.00
WCS - new:																	
Bull	**$66.99**	**$73.00**	**$81.18**	**$79.05**	**$75.05**	**$72.80**	**$72.80**	**$72.80**	**$72.80**	**$72.80**	**$68.80**	**$68.80**	**$77.00**	**$81.00**	**$73.90**	**$81.00**	**$81.00**
vs. WTI	(27.30)	(17.00)	(14.33)	(13.95)	(18.14)	(18.20)	(18.20)	(18.20)	(18.20)	(18.20)	(17.20)	(17.20)	(9.00)	(5.00)	(12.10)	(5.00)	(9.00)
vs. WTI (%)	-29%	-19%	-15%	-15%	-19%	-20%	-20%	-20%	-20%	-20%	-20%	-20%	-10%	-6%	-14%	-6%	-10%
vs. Maya	(35.83)	(20.00)	(10.94)	(14.40)	(20.29)	(20.65)	(20.65)	(20.65)	(20.65)	(20.65)	(20.20)	(20.20)	(12.00)	(8.00)	(15.10)	(8.00)	(8.00)
vs. Maya (%)	-35%	-22%	-12%	-15%	-21%	-22%	-22%	-22%	-22%	-22%	-23%	-23%	-13%	-9%	-17%	-9%	-9%
Base case - new	**$66.99**	**$73.00**	**$72.11**	**$73.45**	**$71.39**	**$63.70**	**$63.70**	**$63.70**	**$63.70**	**$63.70**	**$60.20**	**$60.20**	**$72.00**	**$76.00**	**$67.10**	**$76.00**	**$76.00**
vs. WTI	(27.30)	(17.00)	(23.39)	(19.55)	(21.81)	(27.30)	(27.30)	(27.30)	(27.30)	(27.30)	(25.80)	(25.80)	(14.00)	(10.00)	(18.90)	(10.00)	(14.00)
vs. WTI (%)	-29%	-19%	-24%	-21%	-23%	-30%	-30%	-30%	-30%	-30%	-30%	-30%	-16%	-12%	-22%	-12%	-16%
vs. Maya	(35.83)	(20.00)	(20.00)	(20.00)	(23.96)	(29.75)	(29.75)	(29.75)	(29.75)	(29.75)	(28.80)	(28.80)	(17.00)	(13.00)	(21.90)	(13.00)	(13.00)
vs. Maya (%)	-35%	-22%	-22%	-21%	-25%	-32%	-32%	-32%	-32%	-32%	-32%	-32%	-19%	-15%	-25%	-15%	-15%
Bear	**$66.99**	**$73.00**	**$65.00**	**$65.00**	**$67.50**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$50.00**	**$54.00**	**$59.00**	**$69.00**	**$58.00**	**$69.00**	**$69.00**
vs. WTI	(27.30)	(17.00)	(30.50)	(28.00)	(25.70)	(41.00)	(41.00)	(41.00)	(41.00)	(41.00)	(36.00)	(32.00)	(27.00)	(17.00)	(28.00)	(17.00)	(21.00)
vs. WTI (%)	-29%	-19%	-32%	-30%	-28%	-45%	-45%	-45%	-45%	-45%	-42%	-37%	-31%	-20%	-33%	-20%	-23%
vs. Maya	(35.83)	(20.00)	(27.11)	(28.45)	(27.85)	(43.45)	(43.45)	(43.45)	(43.45)	(43.45)	(39.00)	(35.00)	(30.00)	(20.00)	(31.00)	(20.00)	(20.00)
vs. Maya (%)	-35%	-22%	-29%	-30%	-29%	-46%	-46%	-46%	-46%	-46%	-44%	-39%	-34%	-22%	-35%	-22%	-22%
WCS - old	66.99	73.00	72.11	73.45	71.39	68.45	68.45	68.45	68.45	68.45	69.00	69.00	69.00	69.00	69.00	72.00	76.00
vs. WTI	(27.30)	(17.00)	(23.39)	(19.55)	(21.81)	(22.55)	(22.55)	(22.55)	(22.55)	(22.55)	(17.00)	(17.00)	(17.00)	(17.00)	(17.00)	(14.00)	(14.00)
vs. WTI (%)	-29%	-19%	-24%	-21%	-23%	-25%	-25%	-25%	-25%	-25%	-20%	-20%	-20%	-20%	-20%	-16%	-16%
vs. Maya	(35.83)	(20.00)	(20.00)	(20.00)	(23.96)	(25.00)	(25.00)	(25.00)	(25.00)	(25.00)	(20.00)	(20.00)	(20.00)	(20.00)	(20.00)	(17.00)	(13.00)
vs. Maya (%)	-35%	-22%	-22%	-21%	-25%	-27%	-27%	-27%	-27%	-27%	-22%	-22%	-22%	-22%	-22%	-19%	-15%



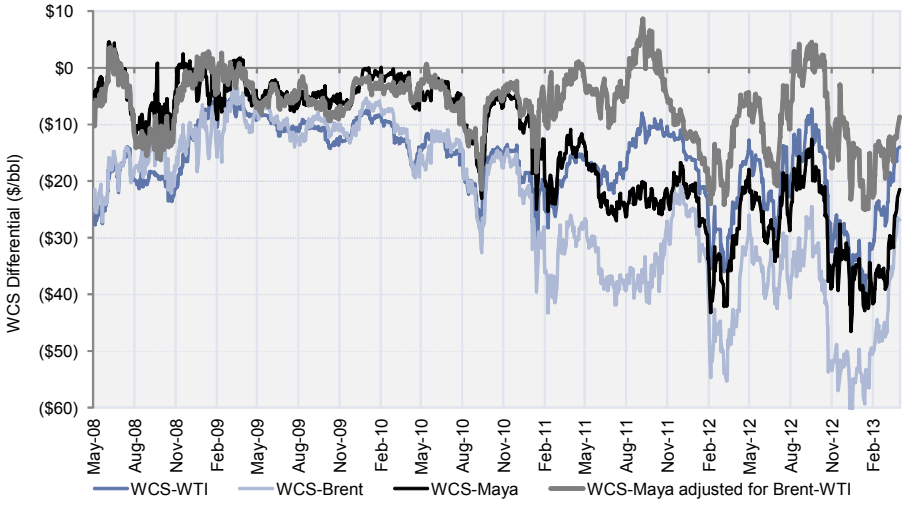


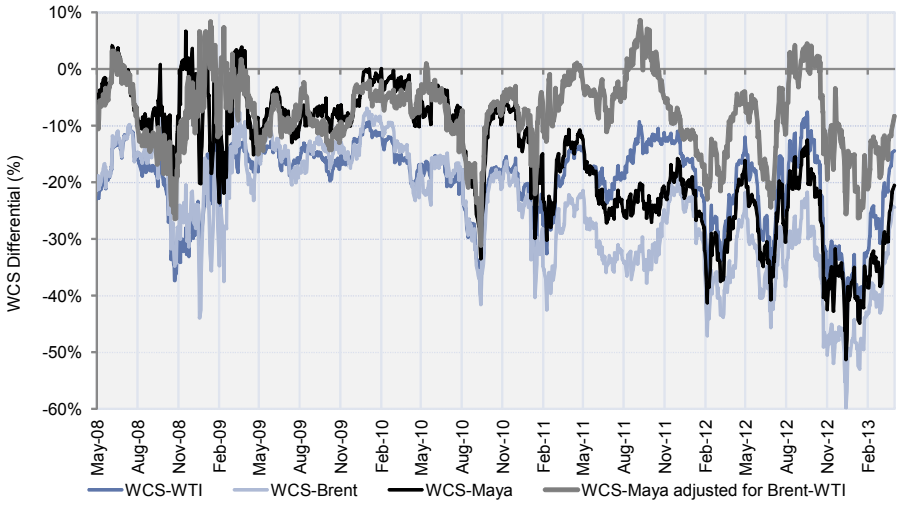
Source: Bloomberg, Goldman Sachs Research estimates.

Exhibit 19: Historic WCS discounts versus global benchmarks

	WCS less				WCS as a % of			
	WTI	Brent	Maya	Maya adj.*	WTI	Brent	Maya	Maya adj.*
2009	($9.58)	($9.71)	($4.30)	($4.16)	-16%	-16%	-8%	-7%
2010	(14.90)	(15.16)	(5.72)	(5.46)	-19%	-19%	-8%	-8%
2011	(16.60)	(32.71)	(20.26)	(4.15)	-18%	-30%	-21%	-4%
2012	(22.30)	(40.16)	(27.80)	(9.94)	-24%	-36%	-28%	-10%
2013 YTD	(22.84)	(37.88)	(30.62)	(15.58)	-24%	-34%	-30%	-15%
Average 2008-present	**($16.82)**	**($24.47)**	**($14.41)**	**($6.75)**	**-20%**	**-25%**	**-16%**	**-8%**

*Adjusted for Brent-WTI spread





Source: Bloomberg, Goldman Sachs Research.

Company impacts

We provide updates on key companies exposed to WCS prices within our coverage below. Exhibit 20 provides an estimated EBITDA sensitivity for companies we cover with noteworthy potential exposure to WCS prices.

Exhibit 20: EBITDA sensitivity analysis for our coverage to WCS price changes

EBITDA sensitivities to $1/bbl WCS-Brent spread widening (US$ mn):

	COP	CNQ	CVE	DVN	HSE	SU	XOM
2013E EBITDA	**$18,035**	**$7,649**	**$4,407**	**$5,733**	**$5,737**	**$11,116**	**$85,076**
Upstream sensitivity	($38)	($89)	($50)	($25)	($13)	($20)	($77)
Refining sensitivity	$0	$0	$46	$0	$6	$31	$73
Total	($38)	($89)	($4)	($25)	($8)	$11	($5)
% of 2013E EBITDA	*-0.2%*	*-1.2%*	*-0.1%*	*-0.4%*	*-0.1%*	*0.1%*	*0.0%*
2014E EBITDA	**$20,000**	**$8,351**	**$4,822**	**$6,699**	**$6,997**	**$13,013**	**$85,797**
Upstream sensitivity	($44)	($108)	($62)	($26)	($16)	($40)	($101)
Refining sensitivity	$0	$0	$46	$0	$5	$31	$73
Total	($44)	($108)	($16)	($26)	($10)	($9)	($28)
% of 2014E EBITDA	*-0.2%*	*-1.3%*	*-0.3%*	*-0.4%*	*-0.1%*	*-0.1%*	*0.0%*
2015E EBITDA	**$19,493**	**$8,759**	**$4,707**	**$6,904**	**$6,832**	**$13,203**	**$85,717**
Upstream sensitivity	($49)	($114)	($65)	($27)	($19)	($41)	($121)
Refining sensitivity	$0	$0	$46	$0	$5	$31	$73
Total	($49)	($114)	($19)	($27)	($14)	($9)	($48)
% of 2015E EBITDA	*-0.3%*	*-1.3%*	*-0.4%*	*-0.4%*	*-0.2%*	*-0.1%*	*-0.1%*

Source: Goldman Sachs Research estimates.

Canadian oil sands/heavy oil producers and integrated oils

Arjun Murti covers Canadian Natural, Cenovus, Husky, and Suncor.

Canadian Natural Resource (downgrade to Sell from Neutral)

- **Investment view**: We are now Sell-rated on Canadian Natural Resources, as it has the highest exposure to WCS pricing among our coverage (discussed below). We prefer Canadian peers with refining/upgrading capacity that not only can help offset the risk of discounted WCS pricing but also effectively results in leverage to Brent oil prices.
- **Company exposure to WCS:** We estimate that for every- $1/bbl move in WCS, CNQ's EBITDA is impacted by -1.2%, giving it the highest leverage to WCS among our coverage group.
- **Company strategy to mitigate differentials:** CNQ management has a bullish outlook for WCS prices, as it assumes timely pipeline solutions will alleviate potential WCS supply gluts; as such, the company is not aggressively pursuing other options such as rail or refining capacity.

Cenovus Energy (Neutral)

- **Investment view**: We are Neutral-rated on Cenovus Energy though we acknowledge that the stock is starting to show meaningful upside potential to our target price on an absolute basis and versus peers following underperformance earlier this year.
- **Company exposure to WCS:** We estimate that for every -$1/bbl move in WCS, CVE's EBITDA is impacted by -0.3%, giving it relatively moderate exposure to WCS prices. The company's refining integration effectively offsets its meaningful upstream exposure to WCS.
- **Company strategy to mitigate differentials:** While the company believes pipeline solutions will materialize over the medium-to-long-term, management is nevertheless aggressively pursuing all options, including rail, to ensure it has adequate market access for its crude oil.

Husky Energy (Sell)

- **Investment view**: We are Sell-rated on Husky Energy as we see better risk/reward and catalysts in other integrated/domestic oils peers. We continue to believe Husky's 5.9X/5.3X 2013E/2014E EV/DACF looks expensive in comparison to its peer Suncor's 5.7X/4.7X.
- **Company exposure to WCS:** We estimate that for every -$1/bbl move in WCS, HSE's EBITDA is impacted by -0.1%, giving it negligible exposure to WCS prices.
- **Company strategy to mitigate differentials:** Husky is essentially hedged against larger WCS differentials given its refining and upgrading capacity.

Suncor Energy (Buy)

- **Investment view**: We remain Buy-rated on Suncor Energy as we believe Suncor's current discounted valuation to its Canadian peers is unwarranted given the company's solid combination of growth, asset life, free cash flow, and shareholder-friendly capital allocation. Suncor also is effectively a Brent-leveraged company through its integration of downstream operations, which we view favorably.
- **Company exposure to WCS:** We estimate that for every- $1/bbl move in WCS, CVE's EBITDA is impacted by -0.1%, giving it small exposure to WCS prices.
- **Company strategy to mitigate differentials:** Given its refining and logistics integration, potential WCS discounts are not an issue for Suncor which remains an effectively Brent oil-leveraged company. The Montreal refinery represents a meaningful opportunity for Suncor to stay "integrated" between bitumen and refining processing capacity, as its bitumen production grows. Essentially, Suncor sees a path to turn Montreal into a "Mid- Continent" (or "in-land" as it describes it) refinery following various pipeline projects/reversals and a possible coker project.

US E&Ps/Domestic oils

Brian Singer covers Devon Energy.

Devon Energy (Buy)

- **Investment view:** We are Buy-rated on Devon as we see attractive sum-of-the-parts (SOTP)-based upside when isolating Canada E&P, US E&P, and midstream assets, and see the Permian Basin driving rising US light oil production. Management has commented that it expects to decide whether to pursue a midstream MLP by mid-year and review other potential actions by

year-end. We also see a low bar for Devon as despite assuming the low end of its 2013 US oil production guidance we are above consensus on 2013 estimates.

- **Company exposure to WCS:** We estimate that for every- $1/bbl move in WCS, DVN's EBITDA is impacted by -0.4%, giving it moderate exposure to WCS prices.
- **Company strategy to mitigate differentials:** Devon has a constructive outlook on Canadian heavy oil pricing relative to the tough 1Q2013 (beyond the wider WCS differentials, Devon's 1Q differential to WCS widened as well). Devon has added basis hedges to manage volatility in Canadian oil price realizations. For the rest of 2013, Devon purchased swaps on 35,000 b/d (~40% of overall Canada oil production) with a basis discount to WTI of $22/bbl. As Devon is unlikely to become an integrated oil, a bigger question is whether Devon should isolate or keep diversified its heavy oil exposure. On the one hand, wide Canadian heavy oil differentials have led to a de-rating of oil sands exposed equities, particularly those without refining assets. On the other, Devon's Jackfish in-situ oil sands assets have generally performed well and we see a multi-project growth opportunity between Jackfish 3 and Pike expansions in future years. We expect greater clarity from management on diversification versus isolation by year-end 2013.

Arjun Murti covers ConocoPhillips.

ConocoPhillips (Neutral)

- **Investment view:** We are Neutral-rated on ConocoPhillips, as we continue see a better combination of risk/reward and catalysts in other domestic oils and E&Ps.
- **Company exposure to WCS:** We estimate that for every -$1/bbl move in WCS, CVE's 2014 EBITDA is impacted by -0.2%, giving it relatively modest exposure to WCS prices.
- **Company strategy to mitigate differentials:** Given more than 80% of Conoco's WCS exposure is from their JV with Cenovus, it is likely that COP is exploring similar take-away solutions as Cenovus (i.e. rail) to ensure transport of their WCS production (although they have not explicitly stated as much).

Pipelines

Ted Durbin covers Enbridge, TransCanada, and Kinder Morgan.

Enbridge (Buy)

- **Investment view:** We are Buy-rated on Enbridge, which we view as the best pure organic growth story among Diversified Pipelines under coverage. We expect Enbridge will generate above-average 10%-15% annual EPS and dividend growth for the next five years with low commodity price risk. We expect additional accretive bolt-on capital projects from its well-positioned assets in western Canada, Bakken, and now US Mid-Continent and Gulf Coast will drive growth in the near and long-term.
- **Company exposure to WCS:** Enbridge takes on very little direct commodity exposure, but is indirectly levered to WCS prices relative to other benchmarks. Ultimately Enbridge benefits from a "happy medium" for WCS basis differentials: while extremely wide differentials increase producer demand for takeaway capacity, it could curtail long-term volume growth on its infrastructure. Similarly extremely narrow differentials decrease demand for takeaway capacity.
- **Key projects:** Enbridge is currently pursuing $35bn of organic growth projects through 2017, the bulk of which focus on crude oil infrastructure. We include many of these projects in our estimates, including its "Light Oil Market Access" program,

Flanagan South, Seaway expansion, Sandpiper (Bakken), and multiple regional oil sands pipelines. Notable projects not included in our estimates are the Northern Gateway project and the Trunkline conversion (both discussed above) due to regulatory and commercial uncertainties.

TransCanada (Neutral)

- **Investment view:** We are Neutral-rated on TransCanada, as despite its solid asset positioning, we see better EPS and dividend growth potential among other Diversified Pipelines and believe its core North American natural gas pipelines will remain challenged.
- **Company exposure to WCS:** Exposure is limited, similar to Enbridge, but TransCanada benefits from the need for new infrastructure projects to add WCS takeaway capacity.
- **Key projects:** While not exposed to the same level of oil infrastructure growth as Enbridge, TransCanada does have several projects underway, most notably the Keystone XL project to cross the US border. The company has spent $1.8bn on the project, and expects its original $5.3bn cost estimate will increase due to ongoing permit delays. Other projects underway and in our estimates include the southern leg of Keystone (Gulf Coast), regional oil sands projects, and some tankage/terminaling. We do not include the Energy East natural gas mainline conversion project in our estimates due to regulatory and commercial uncertainty.

Kinder Morgan (Buy)

- **Investment view:** We are Buy-rated on Kinder Morgan Inc (KMI) and Neutral-rated on Kinder Morgan Energy Partners (KMP). We expect KMI will drive above-average dividend growth via its largely fee-based asset position and strong "general partner leverage" to growth at its underlying MLP, KMP.
- **Company exposure to WCS:** Limited direct commodity price exposure, similar to Enbridge and TransCanada, but benefits from the need for new infrastructure projects to add WCS takeaway capacity.
- **Key projects:** Kinder's key project in western Canada is the Transmountain expansion, discussed above, which we do not include in our estimates due to regulatory uncertainty.

Canadian Natural Resources (CNQ): Downgrade to Sell from Neutral on WCS concerns

Source of opportunity

We downgrade Canadian Natural Resources shares (CNQ) to Sell from Neutral, with 8% total return downside to our $28, 12-month target price versus 11% average upside for US/Canada integrated/domestic oil peers. Our downgrade is driven by CNQ's high exposure to WCS prices, which we expect to weaken in 2014. We note that we continue to have a favorable view of CNQ's management team and have historically had a positive outlook for its substantial heavy oil and oil sands resource base. The long-term outlook for CNQ in fact remains healthy, but our concerns about 2014 and potentially 2015 WCS pricing makes us concerned about relative under-performance over the next 12 months.

Catalyst

Amongst our integrated/domestic oils and E&P coverage, CNQ is the most leveraged to WCS prices; unlike CVE, HSE, and SU, the company lacks refining integration which can help mitigate WCS pricing exposure. The key catalyst to our call would be deeper WCS discounts versus WTI and Brent oil. We believe the outlook for CNQ would likely improve once sufficient pipeline capacity out of Alberta is brought online to alleviate the WCS supply glut, but we do not see this occurring until at least mid-2015. Moreover, the trend of pipeline project approval delays raises the risk for protracted WCS price weakness beyond mid-2015. Our updated 2014 EPS estimate for CNQ is 20% below the Bloomberg consensus, which is likely driven by our weaker WCS view.

What would make us more positive

We would become more positive on Canadian Natural Resources based on the following: (1) stronger WCS prices than we are currently forecasting, which could occur if heavy oil supply is lower and pipeline debottlenecking projects occur faster than we expect; and (2) greater confidence in CNQ's ability to navigate the possibility of wider WCS differentials. We have long recognized Canadian Natural Resources' otherwise robust heavy oil/oil sands asset base, and continue to have a favorable long-term view of the company. However, we believe medium-term WCS pricing concerns will outweigh CNQ's higher earnings and asset value estimates under "normalized" WCS pricing assumptions.

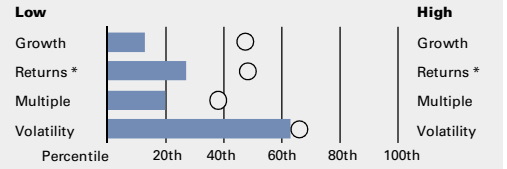
Valuation

Our 12-month asset value- and cash flow-based target price is $28. CNQ trades at a premium to US domestic oils and Canadian peers on 2014E. CNQ trades at 6.2X/5.8X 2013E/2014E EV/DACF versus 5.5X/5.2X for US domestic oils (COP, HES, MRO, MUR, OXY) and 6.3X/5.3X for Canadian oils (CVE, HSE, SU).

Key risks

Key risks to our Sell rating include (1) stronger-than-expected WCS prices and (2) positive E&P project surprises. On a short-term trading basis, CNQ shares could react favorably to US presidential approval of Keystone XL, which in our base-case we assume occurs in fall 2013. However, (1) approval been delayed numerous times before and (2) approval would not change the significant WCS oversupply we see in 2014 and 1H2015.

Investment Profile



* Returns = Return on Capital

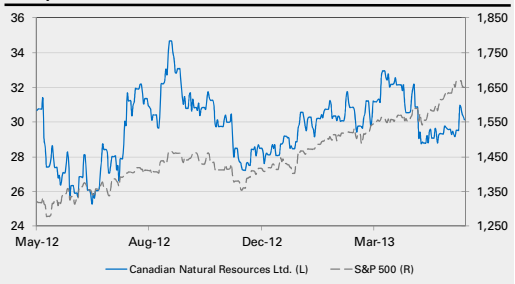
For a complete description of the investment profile measures please refer to the disclosure section of this document.

Key data	Current
Price ($)	30.13
12 month price target ($)	33.00
Market cap ($ mn)	33,126.8

	12/12	12/13E	12/14E	12/15E
Revenue ($ mn) New	**11,659.7**	**12,503.8**	**13,869.0**	**13,992.3**
Revenue ($ mn) Old	11,659.7	12,503.8	13,869.0	13,992.3
EPS ($) New	**1.48**	**1.85**	**2.35**	**2.55**
EPS ($) Old	1.48	1.85	2.35	2.55
P/E (X)	21.4	16.3	12.8	11.8
EV/EBITDA (X)	6.1	5.6	4.8	4.6
ROE (%)	6.9	8.1	9.8	9.8

	3/13	6/13E	9/13E	12/13E
EPS ($)	0.36	0.38	0.54	0.56

Price performance chart



Share price performance (%)	3 month	6 month	12 month
Absolute	1.2	6.0	(1.7)
Rel. to S&P 500	(7.0)	(9.4)	(21.3)

Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 5/24/2013 close.

CNQ: Medium-term risk versus long-term upside

As we noted above, we have long held a favorable view of CNQ's management team and asset base. We also believe that ultimately Canada's heavy oil/oil sands region will have a direct connection to a major demand center vis-à-vis US Gulf Coast refiners. As such, while we are concerned about WCS prices over the next several years, on a long run/"normalized" basis we see the potential for WCS to trade at a transportation/quality-adjusted discount to Maya oil, which we estimate at Maya less $13/bbl. Using our long-term $100/bbl Brent oil price and an 11% long-term Maya discount to Brent, this results in a "normalized" WCS forecast of $76/share. As such, we estimate "normalized" EPS for CNQ of US$3.45, well above our US$2.10 estimate for 2014E that reflects a $64/bbl WCS forecast.

Under long-term/"normalized" earnings power, we would estimate a corresponding adjusted net asset value of US$39/share for CNQ, well above our 12-month target price of US$28. We appreciate that deep value investors that have a 3-5 year outlook might consider the US$39 "normalized" NAV to be a reasonable estimate of what CNQ would be worth assuming the pipeline bottlenecks/delays are favorably resolved. Assuming even narrower differentials or a higher long-term Brent oil price could yield incremental upside. Exhibit 21 shows a sensitivity analysis of our adjusted NAV under a range of oil price scenarios.

While "normalized" valuations have long been an important part of our investment framework, in particular for companies that otherwise have an interesting base, strategy, and management team – as we think is the case with CNQ – we do not believe CNQ's current US $31 share price adequately compensates for the multi-year risk of weak WCS pricing relative to the long-term upside we estimate; hence, we now rate the shares Sell relative to the rest of our coverage universe, most of which has minimal direct exposure to potential WCS price weakness. Furthermore, since we see risk as skewed toward pipeline delays extending beyond our mid-2015 base-case, we believe investors are likely to place a meaningful discount on its "normalized" valuation.

But if Keystone XL is approved, won't long-term investors be willing to look through 2014 concerns? We believe the major risk to our Sell rating on CNQ is that in the event Keystone XL is approved this fall, which would raise confidence in pipeline start-up by 2H2015 or early 2016, investors might be more willing to look through 2014 downside risk for WCS prices. However, we remain skeptical that that investors will be willing to immediately give CNQ full credit for a higher "normalized" valuation, assuming the 2014 path for WCS is ultimately as weak as we expect.

Exhibit 21: CNQ adjusted net asset value sensitivity analysis

CNQ adjusted net asset value (10% discount rate, US$/share)

WCS-WTI diff. ($/bbl)	WTI oil price ($/bbl)				
	$80	$90	$100	$110	$120
($10)	$27	$35	$42	$48	$54
($15)	$26	$33	$40	$46	$53
($20)	$24	$32	$39	$45	$51
($25)	$22	$30	$37	$43	$49
($30)	$21	$28	$35	$42	$48
($35)	$19	$27	$34	$40	$46
($40)	$17	$25	$32	$39	$45

bear case

bull case

Source: Goldman Sachs Research estimates.

Estimate and target price changes for CNQ, CVE, HSE.TO, SU

Updated EPS estimates

We have updated 2013-2017 EPS estimates for our Canadian oils exposed to heavy oil/oil sands production, including Canadian Natural Resources, Cenovus Energy, Husky Energy, and Suncor Energy, to reflect our updated WCS forecasts and minor other modeling changes (Exhibits 22-24). We have also updated E&P Devon Energy for the WCS changes. Key changes are as follows:

- We have updated our 2014-2017 WCS forecasts as detailed in Exhibit 18. We have made no other changes to any other commodity price deck assumptions.
- For Cenovus Energy and Husky Energy, our estimates are little changed as we estimate upstream and downstream exposure to WCS pricing largely offset.
- For Suncor, the integration impact we estimate is similar to Cenovus and Husky. The increase in our 2014-2017 estimates is instead driven by a combination of higher-than-expected production growth at lower than expected CAPEX following a closer examination of us by plans the company discussed on its 1Q2013 earnings call.
- The changes to our estimates for CNQ are overwhelmingly driven by the changes to our WCS price deck, given its lack of refining integration.

Updated Canadian oil target prices

- Our Canadian oil 12-month target prices and expected low/mid/high trading ranges continue to be based on a combination of EV/DACF and adjusted net asset value (NAV) analyses (Exhibit 25).
- **Key risks** to our targets include oil price volatility, E&P project surprises, unplanned downtime at key facilities, and M&A activity.
- Our low/mid/high trading range values continue to be based on $80/$100/$120 per barrel Brent oil prices, respectively. We set our target prices at our mid-case with the exception of Canadian Natural Resources, where our target is now set between our mid- (50% weighting) and low-case (50% weighting) to account for what we see as greater risk of our bear case for WCS materializing rather than our bull scenario.

Exhibit 22: Updated 2013 quarterly and FY EPS estimates

US$, except Husky which is C$

	2Q 2013E			First	GS vs.	3Q 2013E			First	GS vs.	4Q 2013E			First	GS vs.	2013E			First	GS vs.
	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	Call	FC
Americas integrated/domestic oils																				
Canadian Oils*																				
Canadian Natural Resources	$0.38	$0.38	0.0%	$0.38	0.0%	$0.54	$0.54	0.1%	$0.56	-3.7%	$0.57	$0.56	0.3%	$0.63	-10.4%	$1.85	$1.85	0.1%	$2.02	-8.6%
Cenovus Energy	$0.52	$0.54	-3.1%	$0.48	9.2%	$0.54	$0.56	-3.1%	$0.54	1.1%	$0.57	$0.54	5.1%	$0.53	7.4%	$2.14	$2.15	-0.3%	$2.08	3.0%
Husky Energy	C$0.51	C$0.51	0.0%	C$0.51	0.1%	C$0.53	C$0.53	0.0%	C$0.54	-2.5%	C$0.41	C$0.41	0.0%	C$0.52	-20.0%	C$2.00	C$2.00	0.0%	C$2.10	-5.0%
Suncor Energy	$0.78	$0.78	-0.4%	$0.67	16.6%	$0.81	$0.82	-1.2%	$0.82	-0.7%	$0.94	$0.93	1.7%	$0.84	12.7%	$3.35	$3.34	0.1%	$3.09	8.4%
Large-Cap E&P																				
Devon Energy	$0.87	$0.87	0.0%	$0.88	-0.9%	$1.07	$1.07	0.0%	$1.02	4.8%	$1.12	$1.12	0.0%	$1.12	-0.3%	$3.72	$3.72	0.0%	$3.67	1.3%

**Consensus data sourced from Bloomberg for Canadian Oils.*

Source: First Call, Goldman Sachs Research estimates.

Exhibit 23: Updated 2014 quarterly and FY EPS estimates

US$, except Husky which is C$

	1Q 2014E			First	GS vs.	2Q 2014E			First	GS vs.	3Q 2014E			First	GS vs.	4Q 2014E			First	GS vs.	2014E			First	GS vs.
	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	Call	FC
Americas integrated/domestic oils																									
Canadian Oils*																									
Canadian Natural Resources	$0.50	$0.56	-11.0%	$0.71	-29.3%	$0.51	$0.57	-10.9%	$0.73	-30.4%	$0.56	$0.63	-10.1%	$0.88	-35.8%	$0.53	$0.59	-10.2%	$0.94	-43.4%	$2.10	$2.35	-10.5%	$2.64	-20.3%
Cenovus Energy	$0.57	$0.54	5.2%	$0.58	-2.6%	$0.64	$0.66	-3.8%	$0.60	5.5%	$0.64	$0.67	-3.9%	$0.67	-3.8%	$0.60	$0.58	4.8%	$0.70	-13.8%	$2.45	$2.45	0.2%	$2.27	7.8%
Husky Energy	C$0.61	C$0.60	1.4%	C$0.59	3.3%	C$0.71	C$0.72	-1.0%	C$0.64	10.6%	C$0.74	C$0.74	-0.3%	C$0.76	-2.3%	C$0.65	C$0.65	0.0%	C$0.74	-13.0%	C$2.70	C$2.70	0.0%	$2.32	16.4%
Suncor Energy	$0.96	$0.94	1.9%	$0.77	24.7%	$1.09	$1.11	-1.9%	$0.83	31.3%	$1.06	$1.06	0.5%	$0.91	17.3%	$0.99	$0.95	4.6%	$0.88	12.8%	$4.10	$4.05	1.1%	$3.17	29.3%
Large-Cap E&P																									
Devon Energy	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	$4.58	$5.02	-8.7%	$5.08	-9.9%

**Consensus data sourced from Bloomberg for Canadian Oils.*

Source: First Call, Goldman Sachs Research estimates.

Exhibit 24: Updated full-year 2013-2017 EPS estimates

US$, except Husky which is C$

	2013E			First	GS vs.	2014E			First	GS vs.	2015E			2016E			2017N		
	new	old	change	Call	FC	new	old	change	Call	FC	new	old	change	new	old	change	new	old	change
Americas integrated/domestic oils																			
Canadian Oils*																			
Canadian Natural Resources	$1.85	$1.85	0.1%	$2.02	-8.6%	$2.10	$2.35	-10.5%	$2.64	-20.3%	$2.55	$2.55	0.3%	$3.15	$2.90	8.5%	$3.45	$3.35	3.1%
Cenovus Energy	$2.14	$2.15	-0.3%	$2.08	3.0%	$2.45	$2.45	0.2%	$2.27	7.8%	$2.35	$2.40	-2.2%	$2.85	$2.70	5.4%	$3.45	$3.45	0.0%
Husky Energy	C$2.00	C$2.00	0.0%	C$2.10	-5.0%	C$2.70	C$2.70	0.0%	$2.32	16.4%	C$2.75	C$2.75	0.0%	C$2.90	C$2.90	0.0%	C$2.85	C$2.85	0.0%
Suncor Energy	$3.35	$3.34	0.1%	$3.09	8.4%	$4.10	$4.05	1.1%	$3.17	29.3%	$4.20	$4.00	5.0%	$4.60	$4.30	7.1%	$4.50	$3.95	13.8%
Large-Cap E&P																			
Devon Energy	$3.72	$3.72	0.0%	$3.67	1.3%	$4.58	$5.02	-8.7%	$5.08	-9.9%	$4.87	$5.14	-5.1%	$6.01	$5.87	2.4%	$7.26	$7.28	-0.4%

**Consensus data sourced from Bloomberg for Canadian Oils.*

Source: First Call, Goldman Sachs Research estimates.

Exhibit 25: Updated target prices, trading ranges, and valuation for Canadian heavy oil/oil sands producers
US$, except Husky which is C$

	Ticker	Current price 5/30/2013	Rating		12-month price target			Return to new target	Expected 12-month trading range						P/E		EV/DACF		ROCE	
									Trading range values			Total return to								
			New	Old	New	Old	% chg.		Low	Mid	High	Low	Mid	High	2013E	2014E	2013E	2014E	2013E	2014E
Americas Integrated/Domestic Oils (Attractive)																				
Canada Oils																				
Canadian Natural Resource	CNQ	$31.00	**Sell**	**Neutral**	$28	$33	(15%)	(8%)	$21	$35	$50	(31%)	14%	63%	16.8	14.7	6.2	5.8	6.5%	6.9%
Cenovus Energy	CVE	$30.35	Neutral	Neutral	$36	$37	(3%)	22%	$24	$36	$49	(18%)	22%	65%	14.1	12.4	7.2	6.3	13.2%	13.5%
Husky Energy	HSE.TO	C$29.72	Sell	Sell	C$27	C$26	4%	(5%)	C$18	C$27	C$38	(36%)	(6%)	31%	15.0	11.1	5.9	5.0	9.2%	11.7%
Suncor Energy	SU	$31.34	Buy	Buy	$41	$37	11%	33%	$26	$41	$59	(15%)	33%	90%	9.4	7.7	5.7	4.7	10.3%	11.4%

Source: FactSet, Goldman Sachs Research estimates.

Exhibit 26: 12-month target prices and ratings for covered companies discussed in this report

	Stock Price 5/30/2013	Ticker	Lead Analyst	Target Price	Total Return	Target Methodology	Key Risks
Canadian Natural Resources	31.00	CNQ	Arjun N. Murti	$28	-8%	EV/DACF, NAV	Oil price volatility and E&P project disappointments.
Cenovus Energy	30.35	CVE	Arjun N. Murti	$36	22%	EV/DACF, NAV	Oil price volatility and E&P project disappointments.
Suncor Energy	31.34	SU	Arjun N. Murti	$41	33%	EV/DACF, NAV	Oil price volatility and E&P project disappointments.
Husky Energy	29.72	HSE.TO	Arjun N. Murti	C$27	-5%	EV/DACF, NAV	Oil price volatility and E&P project disappointments.
ConocoPhillips	62.28	COP	Arjun N. Murti	$64	6%	EV/DACF, NAV	Oil price volatility and E&P project disappointments.
Devon Energy	58.39	DVN	Brian Singer, CFA	$73	26%	Multiples and DCF-based	Commodity volatility, well results, costs, government pronouncements.
Enbridge Inc.	45.21	ENB.TO	Theodore Durbin	C$51	14%	EV/EBITDA	Lower pipeline volumes, cost overruns or delays, higher integrity capex.
Kinder Morgan	39.00	KMI	Theodore Durbin	$41	8%	SOTP based	Lower commodity prices and volumes, cost overruns or delays.
TransCanada Corp.	47.65	TRP.TO	Theodore Durbin	C$48	3%	EV/EBITDA	Lower pipeline volumes, and cost overruns or delays.

Source: FactSet, Goldman Sachs Research estimates.

Disclosure Appendix

Reg AC

We, Arjun N. Murti, Theodore Durbin, Brian Singer, CFA and Steve Sherowski, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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The precise calculation of each metric may vary depending on the fiscal year, industry and region but the standard approach is as follows:

Growth is a composite of next year's estimate over current year's estimate, e.g. EPS, EBITDA, Revenue. **Return** is a year one prospective aggregate of various return on capital measures, e.g. CROCI, ROACE, and ROE. **Multiple** is a composite of one-year forward valuation ratios, e.g. P/E, dividend yield, EV/FCF, EV/EBITDA, EV/DACF, Price/Book. **Volatility** is measured as trailing twelve-month volatility adjusted for dividends.

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Disclosures

Coverage group(s) of stocks by primary analyst(s)

Arjun N. Murti: America-Integrated Oils, America-Refining & Marketing. Theodore Durbin: America-Diversified Pipelines, America-Energy MLPs, America-Gas Utilities. Brian Singer, CFA: America-Coal, America-Exploration & Production. Steve Sherowski: America-Energy MLPs.

America-Coal: Alpha Natural Resources, Inc., Arch Coal Inc., Cloud Peak Energy Inc., Consol Energy Inc., Peabody Energy Corp., SunCoke Energy, Inc., Walter Energy, Inc..

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America-Energy MLPs: Access Midstream Partners LP, Buckeye Partners, L.P., Chesapeake Granite Wash Trust, Delek Logistics Partners, LP., El Paso Pipeline Partners, L.P., Enbridge Energy Management, Enbridge Energy Partners, L.P., Enduro Royalty Trust, Energy Transfer Partners, L.P., Enterprise Products Partners LP, Holly Energy Partners, Kinder Morgan Energy Partners, Kinder Morgan Management, Linn Energy, LLC, LinnCo, LLC, Magellan Midstream Partners, MarkWest Energy Partners, L.P., Niska Gas Storage Partners LLC, NuStar Energy L.P., NuStar GP Holdings, LLC, ONEOK Partners, L.P., Plains All American Pipeline, L.P., QR Energy, LP, Spectra Energy Partners, L.P., Suburban Propane Partners, L.P., Summit Midstream Partners, LP, Sunoco Logistics Partners L.P., TC PipeLines, LP, USA Compression Partners, LP, Williams Partners L.P..

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Goldman Sachs Investment Research global coverage universe

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	Buy	Hold	Sell	Buy	Hold	Sell
Global	31%	54%	15%	49%	42%	36%

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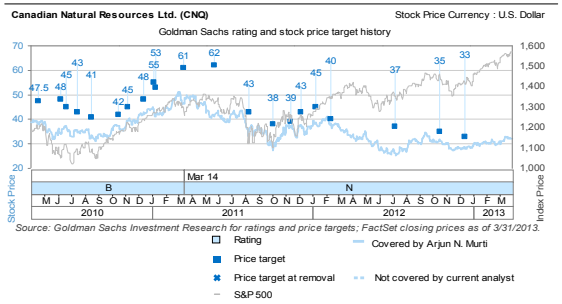
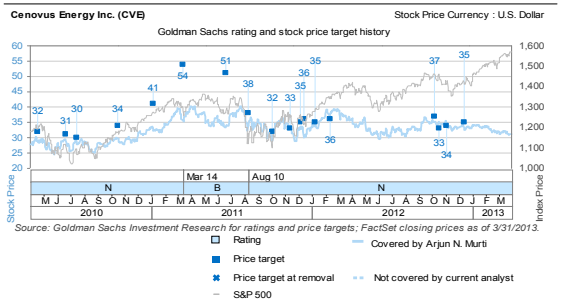
Price target and rating history chart(s)



The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.



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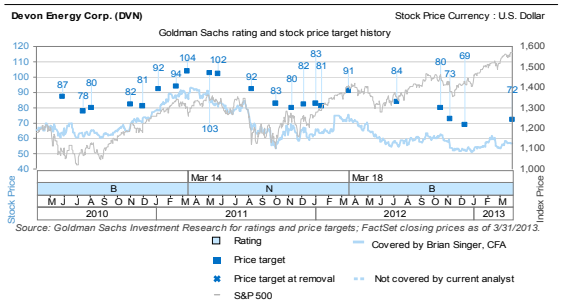

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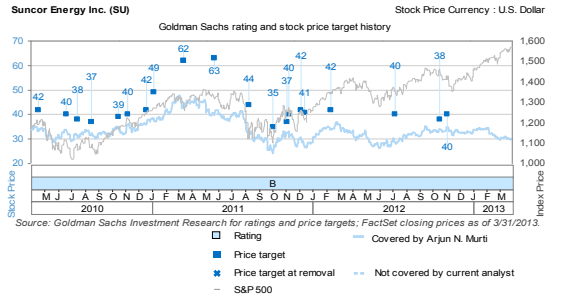

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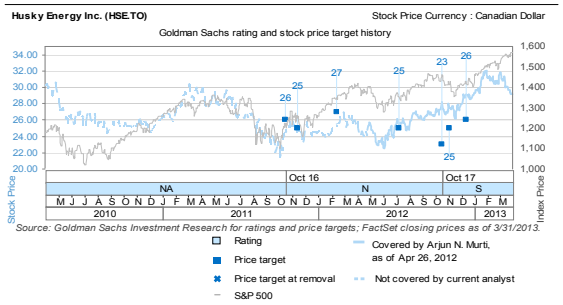

The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.

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