

WTI and Brent Benchmarks

Edward L. Morse sees no Rx for WTI any time soon

There is little mystery about why West Texas Intermediate (WTI) crude oil started to see its price de-couple from time to time from sister crude benchmark Brent starting in 2007. There's even less mystery about the near complete disconnect in the market values of these two crude streams, which came to the fore in 2010 and will linger in the market for at least another 18–24 months, perhaps even longer: crude oil supply has become congested in the US mid-continent and it is highly unlikely that there will be a short-term fix. The separation between WTI and global markets looks likely to worsen before it improves.

WTI, the light sweet crude oil traded on the New York Mercantile Exchange (NYMEX, now owned by

the CME, the Chicago Mercantile Exchange) is physically settled at a major terminal hub at Cushing, Oklahoma. Cushing is a gathering point for distribution to refineries through the US mid-continent, in what is called PADD II, an area that includes the old US mid-west manufacturing belt. That area has been partially landlocked from the perspective of oil logistics, requiring crude oil to be imported from outside. But starting in 2007, as we shall see below, imports from Canada, which is also, ironically, partially a landlocked area, and local oil production from within the US mid-continent, have grown so rapidly and unexpectedly that the entire mid-continent area has become rapidly oversupplied.

There are only three solutions: backing out oil brought in from outside the mid-continent; building new pipelines and rail lines to the US Gulf Coast, or reversing one or more pipelines that currently bring crude oil into the region from the US

Gulf Coast; and slowing down the pace of production, with the possibility – indeed now the likelihood – that production will have to be closed in as new supplies grow at the pace they have recently set. But that's getting a bit ahead of the story. In order to understand how the mid-continent of the United States became a glutted market in a world of \$115–120 per barrel oil, and how WTI became first a limping and now a broken benchmark, we need to step back and look at the history of WTI.

The WTI paper barrel contract has been remarkably successful. It not only worked extremely well for its first quarter century of operation, but it became the most liquid of all paper contracts for commodities. For most of the time since the WTI paper barrel contract started to trade on the NYMEX almost exactly 28 years ago, this mid-continent area of the USA required crude oil 'imports' from other regions in order to balance seasonal refinery demand. The refinery system

of the region has been ‘crude short,’ with supplies brought in from Canada, from other parts of the United States (some of the West, or PADD IV area, some from Texas and Louisiana, the heart of the PADD III region), and imports brought via pipeline or barge from US Gulf of Mexico ports.

For nearly 25 years following the first quarter of a century, largely because Cushing was partially landlocked (oil could be imported to Cushing but not exported to international markets from there), WTI was priced higher than the nearly look alike crude from the North Sea, Brent. It was also priced higher than a US produced crude on the US Gulf Coast, LLS (Louisiana Light Sweet crude), which has similar specifications to WTI. The WTI premium enabled the market to pull LLS up the pipeline system as required, just as the WTI premium over Brent crude oil was able to attract cargoes of Brent across the Atlantic. It helped that North Sea crudes were in surplus to local demand and that WTI crude was in deficit relative to local demand.

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Thus for much of the time that there were spot markets for both WTI and Brent, WTI sold at a premium, averaging about \$1.75 per barrel. When the premium was high, the arbitrage to bring Brent crude across the Atlantic worked; when it was relatively low the arbitrage was unnecessary and unprofitable.

The traditional premium of WTI over Brent was first challenged in 2007, a time when some paper barrel traders thought it had to do with market manipulation by other traders, but when the underlying cause was in the physical markets. What changed were two secular changes, one on each side of the Atlantic Ocean, with what

happened in North America somewhat more important than what was happening in Northwest Europe.

On the supply side the bigger change was the relentless growth of crude oil from Canada, largely because of the steady development of production of oil from Canada’s rich deposits of oil sands and bitumen. A smaller but tangible change occurred in Europe, with the decline in North Sea output from over 6 million b/d at its peak in 2003, to 4.88 mb/d by 2006 and eventually to 3.39 mb/d last year. But just as the Brent market was tightening due to depleting capacities, US imports from Canada started to grow rapidly. In 2000, when North Sea crude was frequently in excess of 6 million b/d, Canadian production averaged slightly more than 2 mb/d. By 2006, Canadian output exceeded 2.5 mb/d, with almost the entire increment flowing into the US mid-continent, displacing crude oil brought in from PADD III on the US Gulf Coast. Canadian crude oil output is now averaging 3.1 mb/d and should reach 3.3 mb/d by this time next year.

As Canadian output continued to rise, refiners in the Chicago area, with significant upgrading capacity, opted to consume Canadian oil, which was selling at a discounted price to waterborne crude flowing up the 1.1 mb/d Capline pipeline from St. James, Louisiana. In effect what was happening was a backing-up of Canadian crude because the pipeline system didn’t allow oil to flow past Chicago – that was the situation when for a couple of brief periods Brent crude sold at a premium to WTI as the seasonal refinery demand for crude resulted in significant volatility in crude oil prices in the US mid-continent and in Canada. Relief came initially when Canadian pipeline company, Enbridge, bought the 190 kb/d Spearhead pipeline, which had been bringing oil from Cushing to Chicago, Enbridge reversed the line and crude oil started flowing from Chicago and on to Cushing where ample and expanding storage capacity created a safety valve for bottlenecked crude oil and allowed the normal premium of WTI to Brent to return.

In 2008, when Brent was briefly selling at a premium to WTI, as oil prices crashed in the last half of the year, investment in new Canadian oil sands output was postponed for a while and incremental supply from Canada slowed down. But with the return of higher prices in 2009, Canadian oil sands projects were back on track, increasing output on average 150 to 175 kb/d per year. Indeed in 2010 oil output increased at a rapid rate toward the end of the year, rising from around 2.9 mb/d from the second quarter by 200 kb/d by year end. 2011 output is expected to rise by another 150 kb/d.

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Meanwhile, the shale gas revolution in the lower-48 US states started to move toward tight sands oil structures and the focus of the new output was the US mid-continent. In many ways, the surprising acceleration in the decoupling of West Texas Intermediate crude oil prices from global markets this past winter stems from an even more surprising accelerated trend: the growth of crude oil production in the US mid-continent. In the middle of the last decade crude oil production in the mid-continent of the United States had fallen to around 415 kb/d, a level reached in early 2004. But the growth in output in PADD II has been stunning and accelerating. This past January, PADD II crude oil output reached 1.12 mb/d, almost 700 kb/d higher than it had been five years earlier, and the rate of growth was accelerating. As between Canadian production and local PADD II production, output trapped in PADD II has risen by more than 1.5 mb/d, in an area of the USA with stagnant

demand. Over the past half year, output in PADD II has been rising at a rate of over 20 kb/d per month, with strong growth in the Bakken play in North Dakota and Montana and equally strong growth in the Permian Basin, centred in Texas, but much of the oil growth there is gathered into PADD II's Cushing hub.

All in all, as between the Bakken and Permian Basins and oil flows from Canada, oil production heading for the US mid-continent looks likely to rise by 400 to 450 kb/d by April 2011. What's more, production in Bakken and the Permian Basin look likely to rise to close to 1 million b/d each by the end of this decade and they are two of five onshore basins in the lower-48 states that have tight sands characteristics that could sustain high levels of production for years, without facing significant declines.

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Thus the dynamics of the US mid-continent market have changed dramatically in the past three years, leaving infrastructure capable of moving crude oil out of the US mid-continent lagging significantly behind production, which is trapped in PADD II. What is required to re-connect WTI to global markets is ways to reduce inflows of oil from the Gulf Coast to the mid-continent and also ways to move oil from the Mid-Continent to the Gulf Coast.

The NYMEX has defended the viability of the WTI contract as a benchmark by pointing to the continued flow of oil from the Gulf of Mexico into PADD II, showing that the inland US market remains tied to global markets. And they are right in pointing to flows of crude up both the 1.1 mb/d Capline and

the 350 mb/d Seaway pipeline that brings crude oil from Texas City to Cushing. But there are reasons why neither pipeline will be reversed any time soon. The Capline brings a significant amount of term contract crude including from the Middle East to refiners as far north as Chicago. These lube rich Middle East crudes have become fundamentals to refiners' economics and in today's uncertain environment refiners don't want to relinquish long-term supplies. Seaway pipeline is owned by Conoco, which has indicated that it wants to continue to bring its own equity crude oil to refineries it owns in Oklahoma and Texas and won't reverse the line.

TransCanada Pipeline's Keystone line has a planned expansion from Cushing to the US Gulf Coast, which has been delayed by environmental groups. At present both the US State Department and the Environmental Protection Agency have new environmental impact statements for the pipeline under review. A decision is anticipated sometime between now and the middle of the third quarter, after which it will take another 18–24 months to lay the line, which would make early 2013 the earliest likely time for completion. Enbridge pipelines has a similar plan which aims at a new line by 2014.

Meanwhile, oil bottlenecked in PADD II can be brought to the Gulf Coast via truck and rail, but logistical obstacles indicated that production is increasing faster than new rail links can be developed. A temporary fix for bringing crude from Canada and PADD II to the US Gulf Coast involves the reversal of the Longhorn petroleum products pipeline from Houston to El Paso and its conversion to a crude oil pipeline, but that too would take time and would alleviate the bottlenecking of crude from the Texas Permian Basin.

The only other solution would be the building of a pipeline from Alberta, Canada to the West Coast of Canada across the Rocky Mountains, where a combination of 'First Nation' indigenous tribes who own the right-of-ways and environmental objections to creating a new export terminal near

Vancouver create major obstacles to that solution.

The likelihood is that some new rail links from North Dakota to the US Gulf Coast, along with a 25 percent expansion of storage at Cushing, can provide short-term alleviation of the problem. But until pipelines are built to bring crude oil from the US mid-continent to the Gulf Coast, WTI will remain a broken benchmark. And the chances are great that between now and 2013–2014 a significant amount of potential oil production in the US will have to be shut in, stranded there by environmental politics.

