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More pipe, more trains: the oil production boom in North America requires it

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It merely takes an industry pipeline conference to make demonstrably clear the United States' reversal of fortune as a hydrocarbon producer.

The Platts sixth annual [Pipeline Development and Expansion Conference](#) in Houston wrapped up last week, and the two days of presentations revealed a largely uniform message: We're building pipeline infrastructure as fast and vast as we can, and often it's still not enough to handle the burgeoning streams of crude, NGLs and natural gas.

It's a stark difference from just a couple years ago when total US crude production was entering its third decade of decline, giving Peak Oil advocates traction, and creating a narrative that the fossil-fuels industry was "left for dead."

Shale has changed everything.

So great is the turnaround that combined crude production from the United States and Canada is expected to exceed the peak production of the early 1970s and to keep the Cushing storage hub oversupplied through at least 2016, says Bentek Energy's Rusty Braziel. (Bentek is a division of Platts.)

And that's just crude. NGL production, as well as natural gas, from shale is "absolutely off the scale." Thus this need for pipelines, and related infrastructure, resulted in urgent phrases from the conference such as "scrambling to keep up" and "unexpected demand on our system" and "considerable growth on the horizon."

Take the Niobrara shale. While not packing the punch of the better known Bakken and Eagle Ford, that emerging crude play which straddles the Colorado and Wyoming borders is expected to grow by 200% over the next five years, to 350,000 b/d from its current 115,000 b/d. That output combined with the already flowing Bakken and Canadian crude is large enough to overwhelm projected pipeline capacity in Padd IV by 2016, even with KinderMorgan's 210,000 b/d Pony Express line that will run between Wyoming and Cushing starting in 2014.

The Bakken play, too, still "desperately needs pipeline infrastructure," observed Enterprise's Mark Hurley. Production from that play continues to exceed expectations, with the most recent numbers showing 426,000 b/d in July in just the North Dakota portion alone. That production is expected to keep ticking up with each passing month.

With pipeline companies struggling to keep up, railroads have picked up the slack, and expect to continue doing so for the foreseeable future. Railcars ferry some 300,000 b/d of crude from the Bakken fields to refining regions of the US Midwest, the US Gulf Coast, and further-flung regions like the US West Coast and the Canadian East Coast.

James Cairn of CN Rail noted that while rail can act as an effective "bridging mechanism" until enough pipelines are in place, the rail industry sees crude-by-rail a permanent fixture of the overall infrastructure. He touts benefits of rail over pipeline that include quicker ramp-up time, shorter-term company commitments, and greater optionality with access to multiple origins and destinations. "I see it having legs for a long, long time," he said.

Part of the problem is that much of the legacy pipeline in the country was slated for a northern flow. That is, waterborne crude would arrive in the USGC complex and then spread northward, to Cushing as well as to the US Midwest complex. That has left some pipelines, such as the Seaway in Freeport, Texas "woefully underutilized."

Enterprise's proposed joint-venture 584-mile crude line between Cushing and Houston was an attempt to introduce a large-scale southward flow, but that project was scuttled--at least temporarily--when Enterprise ran into one of Cairn's listed pipeline shortcomings: an inability to secure sufficient long-term commitments from shippers to make the project economically viable. Hurley said Enterprise has "redefined" the project, and plans to re-measure shippers' interest anew.

The one play not lacking in pipeline infrastructure is the Eagle Ford. Investors flocked to those South Texas fields, and in quick time, built up surplus pipeline capacity. Crude producers can pick and choose their lines.

Yet these pipelines projects, too, face hurdles, namely the lack of existing infrastructure in a rural area. High voltage lines with spare capacity to drive the pipeline pumps don't exist in that producing region. Many of the utilities are small regional co-ops that are completely overwhelmed by the rush for crude. Harvest Pipeline, for instance, has more than one newly installed crude pipeline sitting idle, awaiting electricity.

Most natural gas plays are also well covered by pipeline, as that infrastructure expansion peaked in the mid-2000s during the first wave of shale discoveries. Still, gas pipeline expansion continues apace, as companies such as Millennium, El Paso, and Spectra are rapidly laying lines to handle the explosive growth from the Marcellus and Utica shale plays.

Forecast output from shale gas is sufficiently large enough that Virginia-based Dominion has asked the US Department of Energy for permission to export LNG from its Cove Point terminal on the Chesapeake Bay, said manager Josh Eakle.

"With all the excitement of the Marcellus and the Utica ... if the volumes are really that big, the market isn't catching up, and that gas is going to have to go somewhere," Eakle said.

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