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I'll Take You There:

NGL Infrastructure in the Permian Basin and the Eagle Ford



- The Permian and Eagle Ford basins together produce some 1.2 MMB/d of NGLs, and their proximity to the Mont Belvieu, TX fractionation center and new export terminals increase their value relative to other U.S. shale plays.
- Even with lower crude prices, both the Permian and Eagle Ford basins are expected to remain leading production areas for oil, natural gas and NGLs.
- NGL production is projected for three forecast scenarios for both the Permian and Eagle Ford. If crude prices remain low, by 2020 Eagle Ford NGL production is expected to be 300 Mb/d below the higher crude price scenario, while Permian NGL production will only be 100 Mb/d lower.
- Three midstream companies dominate the gas-processing sector in the Permian and four companies dominate that sector in the Eagle Ford. Ownership of pipeline capacity is also quite concentrated.
- A combination of existing and planned infrastructure appears likely to meet expected needs for gas processing and pipeline capacity, though some incremental capacity may be needed, particularly if crude prices steadily recover over the next five years.

The Permian Basin and the Eagle Ford are two of the nation's most important hydrocarbon production regions. They not only have vast reserves of crude oil, natural gas and natural gas liquids (NGLs), but they are close to refining and NGL-fractionating centers along the Gulf Coast, and to major gas consumers, including power and petrochemical plants and (soon) several liquefied natural gas export facilities.

The Permian and Eagle Ford have both experienced significant production growth in recent years. Crude production in the Permian has doubled since 2010 and now approaches 2 MMb/d, or more than 20% of total U.S. oil production, and Permian natural gas now tops 6 Bcf/d, or about

1/12th of the U.S. total. Production increases in the Eagle Ford have been even more dramatic, with the basin enjoying the highest crude oil growth rate in the country, from less than 100 Mb/d in 2010 to more than 1.7 MMb/d today. Natural gas production has also ramped up from less than 2.0 Bcf/d in 2010 to 7.5 Bcf/d in early 2015.

Much of the growth in gas production from both the Permian and Eagle Ford is wet gas. Producers have targeted liquids rich gas for its yield of NGLs, and crude oil production usually comes along with liquids rich gas, yielding still more NGLs. In the Permian, NGL volumes are up to almost 500 Mb/d, up from less than 350 Mb/d in 2011. The Eagle Ford is closer to 700 Mb/d, up from only about 180Mb/d in 2011.

Significant additions in processing capacity have been required to extract all of these NGLs. Today current processing capacity in the Permian is up to 4.5 Bcf/d while the Eagle Ford is at 8.4 Bcf/d. But that is not enough capacity to handle the most likely scenarios for future gas processing needs.

Of course, there is considerable uncertainty regarding the outlook for Permian and Eagle Ford NGL production due to the crash in crude oil prices, which also drove down propane, butane and natural gasoline prices by about 40% from November 2014 to March 2015. Only ethane, already near historic lows avoided collapsing along with crude oil. Consequently, with much lower crude and NGL prices, what is likely to happen to NGL production?

This report addresses that question using a scenario approach. Given the extreme level of uncertainty surrounding the outlook for crude prices, RBN has not locked in to a single static price outlook. Instead we have developed three different price scenarios, and based on those price scenarios we have projected three production forecasts for crude oil, natural gas and NGLs.

These three price scenarios are defined as (a) the Growth Scenario where crude oil gets back to \$95/bbl by 2020, (b) the Cutback Scenario where the crude price averages \$56/bbl in 2015, increasing to the \$70/bbl range by 2020, and (c) the Contraction Scenario in which WTI prices average \$48/bbl in 2015 and reach only \$65/bbl by 2020. The lower price cases result in less drilling activity, which translates directly to lower levels of production growth. This report lays out the implications for NGL production in the Permian and Eagle Ford and then provides a detailed review of current and proposed infrastructure associated with that production, including processing capacity, fractionation capacity and pipeline take-away capacity. This infrastructure review examines the assets owned or controlled by each of the major companies operating in the basins. The analysis then itemizes 1.5 Bcf/d of planned new gas processing capacity in the Permian and reviews 400 Mb/d of planned new capacity in the Eagle Ford.

In summary, this report, the 2nd in RBN's 2015 Drill-Down report series, examines the current market situation of the Permian and Eagle Ford, provides alternative views for NGL production in the two plays, and details the regions' NGL-related assets, both existing and planned.

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