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## Down Louisiana Way – Emerging Bottlenecks in the Bayou State

### *Louisiana's Gulf-Bound Pipeline Capacity Key to Balancing U.S. Gas Market*



- The rise of LNG export demand on the coast and the influx of Marcellus/Utica and Haynesville natural gas into northern Louisiana is reversing gas flow patterns and upending historical pricing relationships in the Bayou State.
- As liquefaction capacity is added and offshore Gulf gas supply declines, more supply will be needed in southern Louisiana.
- Northeast inflows and Haynesville supply will inundate northern Louisiana and max out southbound routes to the Gulf Coast by 2020.
- Without more southbound capacity through Louisiana, a transportation bottleneck will emerge and weaken prices north of the constraint, including at the Perryville Hub in northeast Louisiana, which could fall to more than 25 cents below Henry Hub.

### 1. Introduction

The emergence of LNG exports as a new, stable source of natural gas demand in the U.S. is reshaping the domestic and international gas markets, and nowhere is that more evident than in Louisiana, the epicenter of the transformation. Lower-48 LNG exports — which were non-existent just three years ago — have climbed to an average of about 3.0 Bcf/d in 2018 to date, and three years from now, these exports will surpass the 10 Bcf/d mark, the equivalent of 10% of total U.S. gas demand as additional liquefaction capacity comes online. Much of that new export capacity will be built along the Louisiana coastline — in the backyard of Henry Hub, the U.S.'s gas benchmark price. This, even as Gulf of Mexico's offshore gas production is in decline, which means that other gas supplies will be needed in southern Louisiana.

Fortuitously, the Gulf Coast has become a premier destination for Appalachian gas producers. Northeast gas supply has climbed nearly 4.0 Bcf/d in the past year to 27 Bcf/d and is expected to soar to nearly 40 Bcf/d by 2023. Numerous pipeline projects are under way to move that gas to markets outside the Northeast, with more than 5.0 Bcf/d of that incremental takeaway capacity targeting southbound flows, including deliveries into northern Louisiana. On top of that, drilling activity and output from the Haynesville Shale in Louisiana has ramped up by 3 Bcf/d over the

past 18 months to about 7 Bcf/d, and that is expected to climb by another 2 Bcf/d between 2018 and 2023.

These developments will drive the overall U.S. gas supply-demand balance over the next several years, which makes the Louisiana gas market a critical piece of the puzzle. In order to balance the influx of supply with the growing export demand, the market will increasingly rely on Louisiana's gas pipeline network, inexorably changing long-held gas flow patterns and pricing relationships in the Bayou State. In other words, as much as LNG exports are vital to the domestic and international gas market, Louisiana's pipeline capacity and utilization will be equally paramount.

How will these market events affect the Louisiana's gas flow patterns and pricing over the next several years? When will new pipeline capacity be needed to prevent a bottleneck? The answers to these questions are now pivotal to understanding how the gas market will balance, not only in Louisiana but in the U.S. as a whole. The challenge, however, is that Louisiana has a complex "spaghetti bowl" of interstate and intrastate pipelines that criss-cross the state.

In order to track the effects of the Marcellus/Utica reversal projects and the changing supply-demand balance in Louisiana, we first devised a framework that organizes the numerous pipelines into flow corridors that depict the movement of gas supplies into and out of the state. The framework divides the state into three sections representing the key supply areas: Perryville Hub in the northwest, Haynesville in the northeast, and Offshore Gulf in southern Louisiana. Then, it aggregates the pipelines running through each of these sections into seven distinct corridors that reflect comparable supply sources and market destinations.

When you put it all together and do a rigorous analysis of Louisiana natural gas pipeline flows and capacity constraints, it reveals a picture of dramatic change, one that effectively turns Louisiana upside-down in terms of gas supply and demand, which will have repercussions on prices, transportation values and basis.

Northern Louisiana, which used to send gas north and east, is now seeing a surge in gas supplies, both from Marcellus/Utica inflows (into Perryville Hub) and the Haynesville recovery. In turn, eastbound flows from the Perryville Hub have just about filled up the capacity moving across the state's northeast border to Southeast and Mid-Atlantic market areas. At the same time, gas supply from northern Louisiana also is rapidly filling southbound capacity through Central Louisiana — a key corridor for connecting growing gas supplies in the north to the burgeoning LNG export demand on the coast.

As Marcellus/Utica takeaway projects are completed and Haynesville production supply grows, these flows will continue evolving and testing Louisiana's pipeline capacity, even as LNG export capacity additions bring more demand to the coast. With the potential for a bottleneck to develop between north and south Louisiana, comes the likelihood that prices just north of the constraints will weaken, signaling the need for more pipeline capacity. How and when this happens will come down to the timing of upstream production growth, pipeline expansion projects and downstream liquefaction projects.

In this Drill Down Report, we take a detailed look at the infrastructure and changing flow and pricing dynamics in Louisiana that will play a critical role in serving global LNG demand and balancing the U.S. gas market. We start by defining the flow model and an analysis of historical and recent flow patterns along the seven pipeline corridors. We then consider the various factors that will continue to drive change in the region over the next five years and wrap up with our outlook for Louisiana flows and pricing.

Additionally, given the importance of the Louisiana market and the rate at which it is evolving, we have taken our Louisiana flow model and built a comprehensive report — the *RBN LNG Voyager Weekly Report* — to stay on top of the various factors affecting flows and pricing in the region. On the demand side, the report tracks existing and planned liquefaction capacity, cargo loadings and liftings and feedgas receipts, while on the supply side, it tracks upstream production volumes, supply hub cash and forwards pricing and netbacks, and pipeline expansions targeting LNG exports. The *LNG Voyager Monthly Supplement* also provides details for each of the LNG terminals, including liquefaction, supply and pipeline capacity contracts. For additional information about this new report, please email TJ Braziel at [tjbraziel@rbnenergy.com](mailto:tjbraziel@rbnenergy.com).

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