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I Saw Miles and Miles of Texas

Texas Natural Gas Pipeline Projects, Capacity, and Flows



- 3.2 Bcf/d of new LNG export capacity out of Texas will be online in less than three years; during the same timeframe six new pipeline projects with the capacity to deliver up to 8.0 Bcf/d to Mexico are being developed.
- Texas natural gas production is down, due primarily to a 25% decline in the Eagle Ford between May 2015 and Q4-to-date-2016, with other basins including the Barnett and Texas Gulf Coast region also falling.
- Consequently, unless significant production growth resumes, Texas as a whole will flip from being a net producing region to being (with exports) a net demand region, with significant regional pricing implications.
- Much of the incremental supply to make up the Texas shortfall will come from Appalachia - the Marcellus/Utica.
- Both interstate and intrastate pipeline projects will facilitate the transportation of gas entering the state across the border with Louisiana to traverse the 450-mile Texas Gulf Coast Industrial Corridor, a region that will soon make up 25% of total U.S. demand in the summer season.
- A number of pipeline projects are being implemented to facilitate this massive reversal in gas flows, including 5 interstate projects, 5 intrastate and LNG header projects, and 6 projects to bring gas to and across the Mexico border; more pipelines will be needed.

1. Introduction

The Texas Gulf Coast Industrial Corridor is a 50-mile wide swath of coastline running 450 miles from the Rio Grande in the south to the Sabine River at the Louisiana state line. If it were a separate state, the industrial corridor would be the largest natural gas consuming state in the nation, with demand slightly greater than California, about 6 Bcf/d. That does not include another 3.3 Bcf/d of gas exports to Mexico that flows through the region—80% of U.S. pipeline flows south of the border. But hold on to your ten-gallon hat. By fourth quarter 2019, 3.2 Bcf/d of all-new LNG export capacity out of the Texas Gulf Coast Industrial Corridor will be online and six new pipeline projects with the capacity to deliver another 8.0 Bcf/d to Mexico are planned in the same timeframe. Even if, as we expect, only about 6.0 Bcf/d of that new export capacity gets used, that still brings the corridor's gas flows to an astronomical 15 Bcf/d, which is about 25% of total U.S. summer-season demand. Texas as a whole flips from being a net producing region to being (with exports) a net demand region, with significant pricing implications. All that begs at least three questions. Where is the gas going to come from? How is it going to find its way to coastal markets and export points? And as a consequence, what is going to happen to Texas

natural gas prices? Those issues are front and center in this RBN Drill Down Report, the third in our series titled Miles and Miles of Texas.

Parts 1 and 2 of this Drill Down series addressed the first question. Much of the incremental gas supply will be coming from the Marcellus/Utica region, where production remains robust and 24 new pipeline projects are being developed to add 18 Bcf/d of takeaway capacity out of the region, at least 7.0 Bcf/d of which targets the Gulf Coast. In Part 3 we focus on how the gas will move to these new markets through Texas, and what it means for flows and capacities across the state.

Certainly, some of the needed supplies will come from Texas production, but it will be less than many of the exporters expected when they first started planning their projects. That is because Texas natural gas production is falling. The Eagle Ford is responsible for much of this decline, but other basins—including the Barnett, Gulf Coast and the Texas Granite Wash—have contributed to the decline. Texas demand from the power, industrial and residential/commercial sectors has been about flat, which implies that the state’s surplus of gas is shrinking, down from about 10 Bcf/d in recent years to only 8.0 Bcf/d today. But carve exports to Mexico out of that number and the surplus falls to only about 4.8 Bcf/d. That number will continue to decline as new export facilities come online until the surplus becomes a shortfall sometime in 2019.

Consequently, gas supplies must move into Texas to make up that shortfall. Fortunately, incremental supplies are readily available—from Appalachia—the Marcellus/Utica plays. Production in that region is projected to increase by more than enough to meet the demands of new export markets, not only those in Texas but also other LNG export facilities in Louisiana and Maryland. The vast majority of that gas will move to the Gulf Coast, mostly on reversals of pipelines that have traditionally moved gas to the Northeast, with much of the supply transiting through the Perryville Hub, a well-connected, high-capacity pipeline interconnection zone in northeastern Louisiana described in detail in this report. Many of the long-line reversal projects will move gas through Perryville and on to downstream demand market centers along the Louisiana and Texas Gulf coasts.

But traversing “Miles and Miles of Texas” from the Louisiana border to LNG export facilities along the Texas Gulf Coast Corridor and to Mexico is no simple matter, and distance is not the only challenge. Due to the unique structural and regulatory aspects of the Texas natural gas market, no region of the world has a more convoluted network of pipelines than Texas. And to a great extent, capacity on these pipelines decreases the further south they go because they are “telescoped the wrong way”—that is, because the pipes were originally designed to add supplies as they moved north/northeast toward Louisiana, their diameters and capacities increased along the way (now the wrong way). These capacity constraints are an issue now that gas flows are shifting to move gas south and west across Texas to meet the needs of LNG and Mexico exports. To help make sense of the impact of shifting flows across the Texas pipeline grid, RBN has developed a flow/capacity model we call the Fretboard Model, schematically shown in Figure 1 on the following page. The model is based on the notion that each of the six major interstate pipelines traversing the region suffers similar “reverse telescope” capacity issues at roughly the same points across the state. Each of the pipes is represented by a string. Each of the zonal borders by a fret. This model provides a structure so that available capacity can be delineated at each of the “frets” that constrains transportation of gas across the corridors.

The capacity constraints are being addressed by a number of new pipeline projects within the state, detailed in this Drill Down Report, including five projects totaling 2.0 Bcf/d on the interstates: Spectra Energy/TETCO’s South Texas Expansion Project, Spectra’s Stratton Ridge project, Williams’ Gulf Connector project, Kinder Morgan’s NGPL Gulf Coast Southbound Expansion Project, and Kinder’s Lone Star Project.



Figure 1 - RBN Fretboard Model for Understanding Texas Natural Gas Markets; Source: RBN

The intrastate projects include Kinder's Tejas Crossover Pipeline Project, which is already online, and Enterprise Products Partners' South Texas Pipeline projects; together, these would add about 2.0 Bcf/d of south/southwest-bound capacity. We also examine projects to build laterals to the LNG export facilities under construction, including Boardwalk Pipeline Partners/Gulf South's Coastal Bend Header, the SK Freeport LNG lateral, Cheniere Energy's Corpus Christi Pipeline, and another two projects that would feed "second wave" LNG export terminals: Sempra Energy's Port Arthur Pipeline and NextDecade's Rio Bravo Pipeline. LNG lateral projects to serve LNG export terminals under construction total 4.2 Bcf/d.

Finally, we address various projects to bring gas to and across the Mexico border, including NextEra Energy Partners' NET Mexico expansion, expansions of Howard Energy Partners (HEP) and Grupo Clisa's Nueva Era Pipeline System, Spectra's Valley Crossing Pipeline, Energy Transfer Partners' Comanche Trail Pipeline, ONEOK's Roadrunner, and the Trans-Pecos Pipeline from Energy Transfer Partners and joint venture partners. These projects, which total about 8.0 Bcf/d, will interconnect with pipelines that will move gas from the border into the Mexico market; these Mexican pipelines are also detailed in this report.

The projects identified above address our second fundamental question, "How is all that gas going to find its way to coastal markets and export points?" That will provide the foundation for answering the final question, "What is going to happen to Texas natural gas prices?". For now, suffice to say that it is likely that natural gas prices along the Texas Gulf Coast Industrial Corridor as compared to Henry Hub pricing will be increasing relative to historical levels. How much depends on a complex interplay of production, flows, capacity and demand.

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