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## I Saw Miles and Miles of Texas

### *Texas Natural Gas Pipeline Flows, Capacity and Pricing*



- Increasing exports to Mexico and to overseas markets as LNG will flip Texas from being a net producing region to being (with exports) a net demand region.
  - Much of the incremental supply to meet burgeoning Texas demand will come from the Marcellus/Utica region, and will need to traverse "miles and miles of Texas" to the Agua Dulce hub near Corpus Christi.
  - There may not be enough pipeline capacity available to meet that demand, though, with important implications for South Texas prices, flows and natural gas export volumes.
  - The average annual basis at Agua Dulce could increase to as much as \$0.10/MMBtu above Henry Hub in 2020.
- If capacity constraints into the Agua Dulce hub are relieved, then the prospects for a major shift in basis diminish significantly.
  - It is a fascinating reversal of fortunes for what was for years a distant backwater of the natural gas market. South Texas is becoming one of the most attractive destination markets for natural gas in North America.

### 1. Introduction

As natural gas exports to Mexico continue to rise and as construction proceeds on Texas liquefaction/LNG export terminals, the day is approaching when Texas will flip from being a net producing region to being (with exports) a net demand region. Fortunately, supplies from elsewhere are readily available to meet that demand—sourced from the Marcellus/Utica and moving on new and reversed pipeline capacity to the Gulf Coast. A good portion of that gas must traverse “miles and miles of Texas” to meet the burgeoning export demand at the Agua Dulce hub near Corpus Christi—a location that is emerging as a key pricing point for the South Texas gas market. But a potential problem is looming. There may not be enough pipeline capacity available to meet that demand, with important implications for South Texas prices, flows and natural gas export volumes. The average annual basis at Agua Dulce could increase to as much as \$0.10/MMBtu above Henry Hub in 2020 from its historical level \$0.02/MMBtu to \$0.05/MMBtu below Henry. Those considerations are front and center in this RBN Drill Down Report, the fourth and final part of our Drill Down report series titled “Miles and Miles of Texas.”

The reasons for these shifts in prices and flows are all related to a monumental change in the Texas supply/demand balance. In recent years, Texas natural gas prices have mostly been

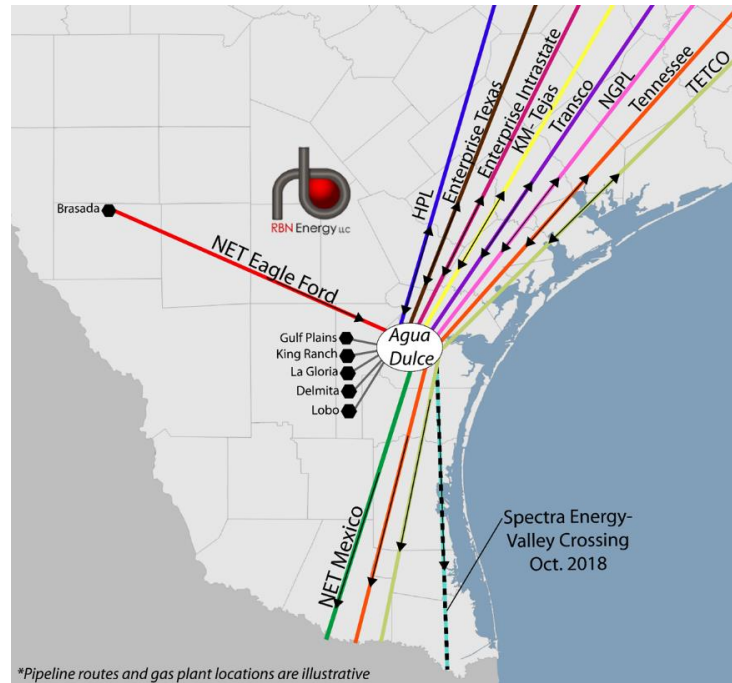
below prices at the Henry Hub, reflecting the state's position as a net producing region—more supply than demand, requiring that the state's production be priced low enough to incent buyers to move surplus gas out of the state to distant markets in the Northeast and Midwest. But now demand from those markets is being met with growing Marcellus/Utica supplies; at the same time, Texas is becoming a “net demand” region—consuming and exporting more gas than it produces. Consequently, Texas gas prices are poised to increase to a level necessary to economically incentivize the flow of gas into the state. That suggests that future Texas natural gas prices are likely to average well above Henry Hub.

The epicenter of growth in Texas demand will be the Gulf Coast Industrial Corridor, where more petrochemical plants will soon be coming on line, where the Freeport LNG export facility will be pulling gas from pipelines in the region, and especially where Mexico and Cheniere Energy's Corpus Christi LNG facility will be sourcing much of their gas: the southernmost gas hub in the state, Agua Dulce.

Agua Dulce basis (the price there compared to Henry Hub) will be higher in comparison to history, and higher most of the time relative to other points in the state. That is because demand for export gas at that hub will be increasing significantly, and local supply (including gas from the nearby Eagle Ford) will not be enough to meet this demand. There is more than enough Marcellus/Utica supply available to meet incremental needs at Agua Dulce; the problem is pipeline capacity. As of today, there is not enough pipeline capacity available to transport the gas all the way through the Gulf Coast Industrial Corridor to that hub. Of course, it is possible—even likely—that one or more midstream companies will exploit this opportunity and build more capacity in to Agua Dulce. But until such projects are announced, higher prices at Agua Dulce seem to be in the cards.

To explain how the dynamics of natural gas flow and capacity relationships will change along the Texas coast and at the Agua Dulce hub, we built out the RBN “Fretboard Model”, a pipeline-by-pipeline analysis of how much natural gas pipeline capacity has traditionally been available to move gas north and east and a “fret-by-fret” assessment of reversed and backhaul capacity to transport gas the other way—down the Gulf Coast Industrial Corridor to the Freeport and Corpus Christi LNG facilities and to Agua Dulce. Although there is nearly 3.2 Bcf/d of interstate pipeline capacity available from the Texas/Louisiana state line to the Katy hub 30 miles west of Houston, capacity availability tightens to ~2.3 Bcf/d down to Agua Dulce, and then drops to only 870 MMcf/d from there to the Mexican border: 540 MMcf/d on Tennessee Gas Pipeline (TGP) and 330 MMcf/d on the Texas Eastern Transmission Co. (TETCO) Pipeline. This southbound interstate capacity will be supplemented, of course, by existing and planned pipelines between Agua Dulce and the Rio Grande such as NET Midstream's 2.1 Bcf/d NET Mexico Pipeline and Spectra Energy's planned 2.6 Bcf/d Valley Crossing Pipeline, described in more detail below.

To understand what will happen to gas flows in South Texas, it is necessary to fully dissect the market at Agua Dulce. The map in Figure 1 shows a high-level schematic of the key infrastructure at the hub, including nearby gas processing plants (black dots) and the major intra- and interstate pipelines (colored lines) exchanging gas at the hub. Supply to the hub is sourced from (a) flows via the inter- and intrastate pipes running along the Gulf Coast Industrial Corridor, (b) Eagle Ford production from NET Midstream's Eagle Ford Midstream (EFM) system and (c) Eagle Ford and other local South Texas production via nearby gas processing plants.



**Figure 1 – Agua Dulce Hub; Source: RBN Energy**

Gas already moves out of Agua Dulce on several “takeaway” pipelines that move gas south to the Mexican border. Two of the eight legacy pipelines mentioned above—TGP and TETCO—extend farther south from Agua Dulce with the ability to deliver gas to export points at the border. In addition, in December 2014, NET Midstream’s 120-mile, 2.1-Bcf/d NET Mexico Pipeline came online. Another new takeaway pipe is on the way—Spectra’s 2.6-Bcf/d Valley Crossing Pipeline, due in-service by October 2018; it will originate at Agua Dulce and move gas south to the Gulf Coast near Brownsville, TX. From there gas is expected to flow through TransCanada’s planned Sur de Texas marine pipeline, which will extend south to Mexico’s central-eastern coast.

Having defined the physical market infrastructure at Agua Dulce, we then developed a projection for the natural gas supply/demand balance in the South Texas-Agua Dulce region. Although that balance is tighter than it was in 2016, current supply in the region remains higher than total demand by about 1.0 Bcf/d. That will change by mid- to late-2018, however, as demand pushes up against supply, with the regional balance expected to go to zero sometime in the second half of 2018. Some new southbound interstate flows also will begin around this time (fourth quarter of 2018), and begin to fill the gap. That will help for a time, but deliveries to Cheniere’s Corpus Christi LNG export terminal will be rising sharply as that facility ramps up, leaving supply short by the second half of 2020.

This supply shortfall results in a pricing shift from Agua Dulce’s historical trading pattern below Henry Hub to a projected level above both Henry and Houston Ship Channel (HSC) pricing. Based on RBN’s Growth Scenario price outlook, the basis at HSC is expected to average \$0.025/MMbtu above Henry Hub in 2020, while Agua Dulce could be as much as \$0.075/MMbtu above HSC, resulting in an outlook for Agua Dulce pricing of \$0.10/MMbtu above Henry. This assessment assumes that no additional pipeline capacity will be added into the Agua Dulce hub region. If capacity constraints into the Agua Dulce hub are relieved, then the prospects for this large spread between Agua Dulce and HSC diminish significantly. It is a fascinating reversal of fortunes for what was for years a distant backwater of the natural gas market. South Texas is poised to become one of the most attractive destination markets for natural gas in North America.

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