# Hell in Texas – Permian Gas Takeaway Headed for Capacity Wall

***New Pipelines Coming, But Waha Basis at Risk Until They Do***

- **The meteoric rise of associated gas production in the Permian — driven by prolific and economically favorable crude-focused drilling — is wreaking havoc on West Texas gas infrastructure and capacity constraints are closing in.**
- **About 12 Bcf/d of new, large-scale pipeline takeaway capacity is planned to provide relief for Permian producers, mostly in the 2019-22 timeframe and all targeting the Gulf Coast market.**
- **However, production growth is expected to outpace takeaway capacity additions over the next year and a half or so, and the Permian gas market is expected to face severe constraints and deep price discounts in 2019.**
- **Waha basis may weaken to a more than $2.00/MMBtu discount to Henry Hub in early to mid-2019, unless producers and midstreamers find ways to mitigate constraints in the interim.**

## 1. Introduction

Just a year and a half ago, Permian natural gas production was sitting just above 5.5 Bcf/d, up little more than 0.5 Bcf/d from the prior year. Crude oil prices — the primary driver of the crude-focused drilling and associated gas production volumes in the Permian — were barely above $50/bbl. The rig count in the basin was still in recovery from the oil price collapse of 2014, totaling about 260, after having dropped to a low point of 134 in mid-2016. Outflows of Permian supply were still well below the takeaway capacity out of the basin and near-term prospects for demand growth from exports to Mexico were still a realistic possibility. Spot gas prices at the Waha Hub (the benchmark location for Permian supply) were trading not far from historical ranges — about 15-20 cents/MMBtu behind the Henry Hub national benchmark in Louisiana.

Since then, however, the landscape for Permian gas producers has taken a treacherous turn. Crude oil prices have rebounded to near the $70/bbl level. The production economics in parts of the Permian are so favorable that significant crude production growth is likely under even pessimistic oil-price scenarios. The rig count in the basin — still all crude-focused — has climbed by more than 50% to about 470. The crude oil production boom in the Permian has led to a

precipitous rise in associated natural gas liquids (NGLs) and dry gas production from the West Texas/southeastern New Mexico basin. As shown in Figure 1, gas production from the basin has catapulted to upwards of 8.0 Bcf/d in 2018 (navy blue line), a more than 50% increase from early 2017.

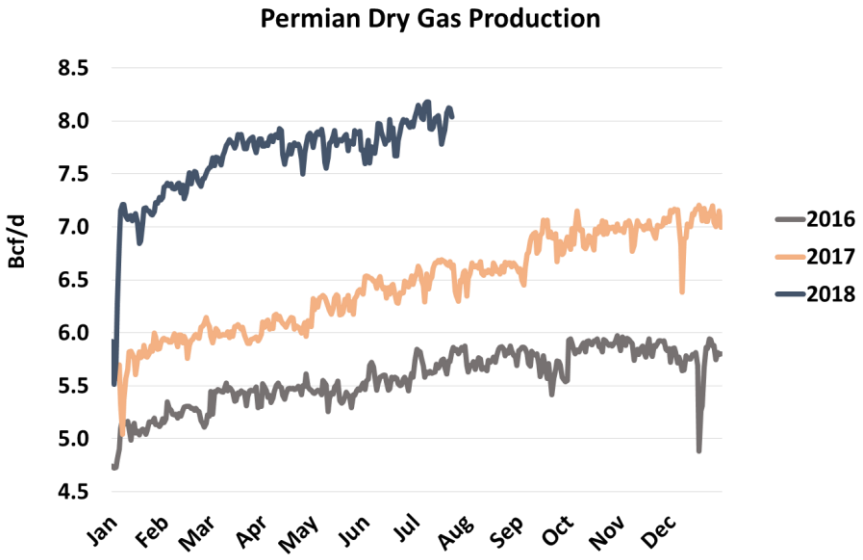


**Figure 1 - Permian Dry Gas Production; Source: RBN NATGAS Permian Report**

Fortunately for producers, the Permian's long history as a major producing area means the region already had a robust gas infrastructure system in place that, with a few additions and expansions, has been able to accommodate the deluge of gas flowing from the basin — at least *so far*. But production has been catching up to available capacity much faster than expected, and these record volumes are severely challenging the existing infrastructure in the region, including gas processing and pipeline takeaway capacity, leaving producers and the midstream sector scrambling to address the worsening infrastructure constraints.

It's not that no one saw this coming. In the past couple of years, there have been a number of processing capacity and pipeline expansions, the latter primarily targeting growing demand for U.S. gas in Mexico. But extended delays with the pipeline and demand projects on the Mexico side of the border have limited Waha's exports to far below that design capacity. That's put the burden on other existing takeaway options from the Permian to U.S. markets. These routes are increasingly maxed out, either limited by physical capacity or downstream market constraints, where the Permian gas has to compete with other growing U.S. supply basins for market share of demand that isn't necessarily growing as fast as supply.

As Figure 2 illustrates, historical associated gas production from the Permian (black line) has surged in the past year and a half, from about 5.3 Bcf/d in early 2017 to more than 8.0 Bcf/d in July 2018. Compare that to demand takeaway capacity from the Permian (stacked layers in the graph), which has been flat, save for an almost imperceptible uptick in intrastate pipeline capacity and Waha's exports to Mexico in recent weeks. As of July 2018, local demand volumes (gray layer at the bottom of the stack) plus existing takeaway capacity — not including export pipelines — totals 8.4 Bcf/d. Including export flows to Mexico, that puts total effective takeaway capacity currently at about 8.7 Bcf/d. In other words, available (unused) takeaway capacity out of the Permian has shrunk dramatically, from well over 2 Bcf/d in early 2017 to about 600 MMcf/d as of June 2018. For July, that narrowed further to less than 500 MMcf/d. That is not much of a cushion, considering Permian production has grown that much in just the past three months.

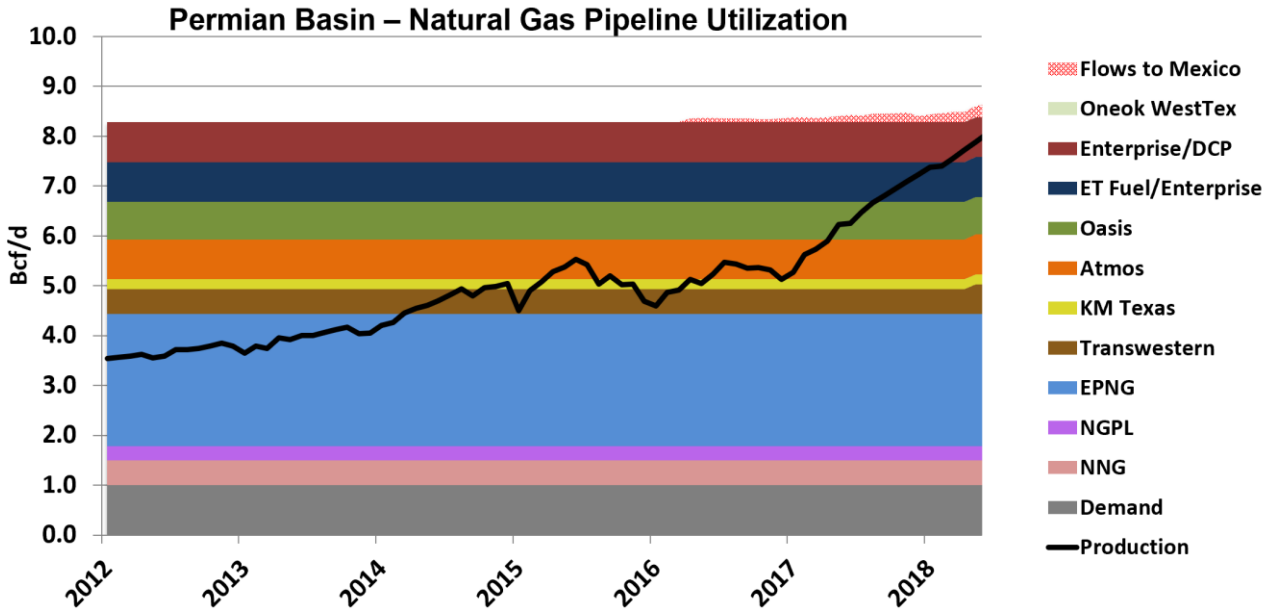


**Figure 2 - Permian Basin Gas Pipeline Utilization; Source: RBN Energy**

Constraints are already being felt at the pipeline level, and regional gas prices already have buckled under the pressure. Spot gas prices at Waha — the benchmark pricing hub for Permian gas supply — have averaged $2.16/MMBtu this year to date, which is $0.76/MMBtu weaker than Henry Hub (green line in Figure 3), compared with $0.25 behind Henry for the same period in 2017 (red line), according to the *Natural Gas Intelligence (NGI)* daily index. That differential to Henry Hub (i.e. basis), fell as low as minus $1.42/MMBtu on April 25, 2018, and was back down to near that level in mid-June 2018. Overall, these were the weakest discounts to Henry that have been observed in nearly a decade (since early 2009). They strengthened in July to an average of minus $0.63/MMBtu, as seasonal power demand and deliveries to Mexico have both increased. But that is still 14 cents weaker than this time last year, and without additional takeaway capacity or demand, the multi-year basis lows are all but guaranteed to return — and worsen.

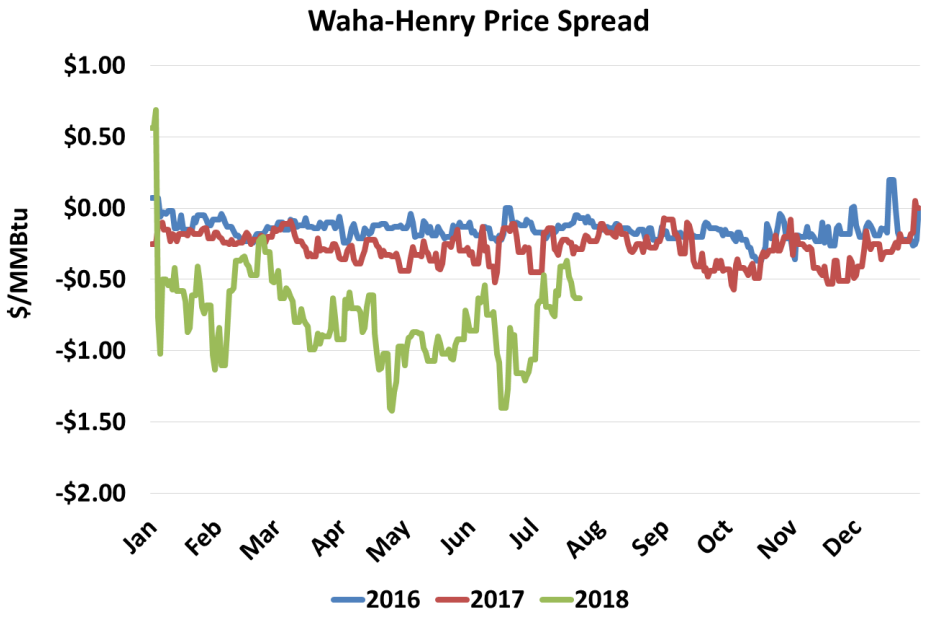


**Figure 3 – Waha-Henry Price Spread; Source: Natural Gas Intelligence (NGI)**

There are a number of large-scale pipeline expansions totaling close to 12 Bcf/d of takeaway capacity that have been announced to provide a relief valve for Permian producers, particularly in the 2019-22 timeframe. The majority of that is targeting LNG export along the Texas Gulf Coast, as well as piped exports to Mexico from South Texas, while one project is targeting LNG exports from southwest Louisiana. If all 12 Bcf/d of that were to be built, total takeaway capacity out of the Permian, including Waha's export capacity to Mexico, would approach 25 Bcf/d by 2023. Assuming the current crude and gas futures curve (our mid-curve scenario), Permian production in that timeframe is expected to remain below 14 Bcf/d, or at most each 15 Bcf/d in our high-price scenario. That implies that much of the new capacity would go underutilized, unless production ramps up. Put another way, not all that capacity will be needed, at least not in the five-year timeframe. But that does not mean constraints will be averted.

The fact is that in the near- to mid-term, Waha's export flows to Mexico on existing infrastructure are likely to grow only gradually and not fill up existing capacity due to insufficient demand at the other end of the pipe. That means that, with gas production still on the rise, effective takeaway capacity will be exhausted and at least one pipeline will be needed as soon as early 2019, at least six months before the first of the pipeline projects is due to start service. That disconnect all but guarantees severe — albeit temporary — supply congestion, price volatility and extreme price weakness at Waha in the interim, unless producers somehow reduce the need for additional takeaway capacity.

There are a number of mitigating factors — some within the control of producers and some not — that could prevent, or at least soften, the effects of such a meltdown. Regardless, all signs suggest the Permian market is in for a rough ride over the next year or so.

Of course, once sufficient takeaway capacity is built, the Permian will be competing head on with other growing supply regions also targeting Gulf Coast demand. As we discussed in detail in our previous Drill Down report, Down Louisiana Way, there is a flood of gas targeting the Louisiana and Texas Gulf Coast from the east and north, including Marcellus/Utica, Haynesville and SCOOP/STACK supplies. While more gas is needed on the Louisiana coast to serve growing LNG export demand, this deluge of gas means that Louisiana's gas infrastructure is also likely

to be tested, with bottlenecks expected to worsen between northern Louisiana, where much of the supply is landing, and the coastline, where the demand growth is happen. Between this and the Permian expansions, the Texas market is headed for a tumultuous time over the next couple of years.

In this Drill Down Report, we focus on the effects that surging gas supply from the Permian is having on pipeline utilization and prices in Texas, including developing constraints. We then provide detailed discussion of the infrastructure expansions announced to solve the problem, before combining our supply and takeaway capacity outlook to present a thesis for how we see the Permian and overall Texas market evolving over the next five years.



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