Permian natural gas flaring exceeds 500 MMcfd in 4Q18

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Fresh data reveals that natural gas flaring in the Permian basin reached an all-time high of approximately 530 MMcfd in the fourth quarter of 2018, driven by persistent gas takeaway capacity constraints and increasing basin-wide gas production.

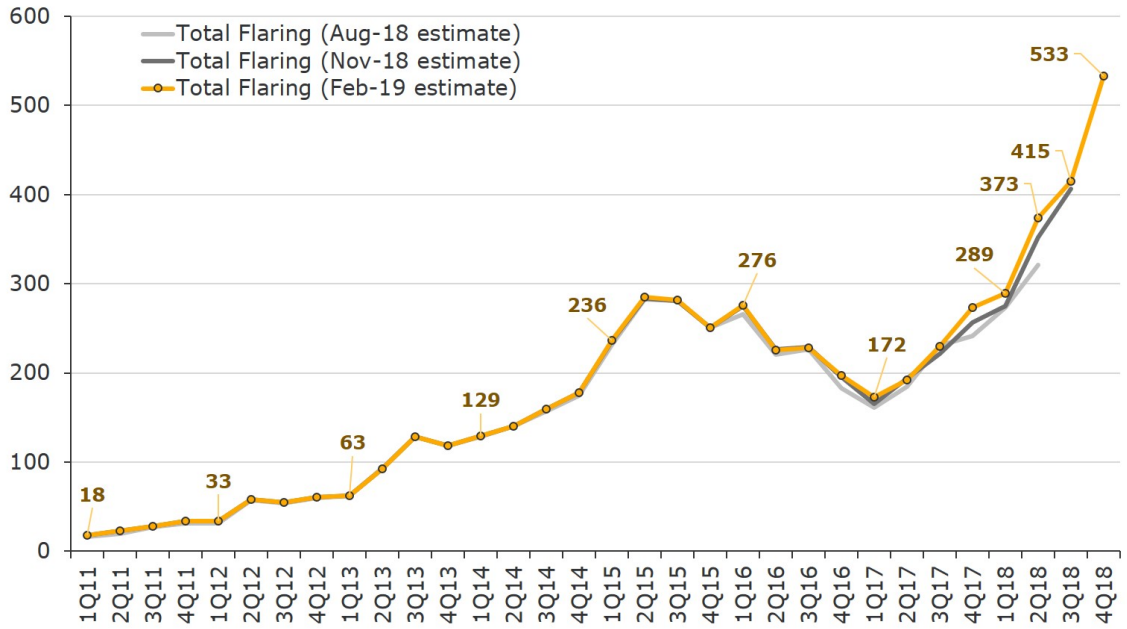
This trend was confirmed by long anticipated gas disposition data for December 2018, which has finally been made available by both the Railroad Commission of Texas (RRC) and the New Mexico Oil Conservation Division (NM OCD). Accordingly, we at Rystad Energy have refreshed our model to examine the evolution of natural gas flaring throughout the basin in the last quarter of 2018, making any necessary considerations for significantly underreported data within that period from the Texas side of the Permian. Our model is based on natural gas flaring reported by operator at lease level RRC or NM OCD, and adjusted for any reporting delay through a comprehensive analysis of recent activity at operator and county level.

Updated flaring figures reveal no big surprises for the fourth quarter of 2018. Given the continued rise in basin-wide production figures, and exacerbated by the pesky gas takeaway constraints, flaring jumped by around 120 million cubic feet per day quarter-over-quarter. Consequently, natural gas flaring in the Permian reached a record level of about 530 MMcfd in 4Q 2018.

The updated gas disposition record has also revealed upward revisions by an average of between 3% and 4% in 2017, and the first three quarters of 2018. Significant activity expansion and a rising share of new wells – which contribute the most to the flaring – have driven the systematic upward revisions of the historical estimates. Some operators have also delayed reporting disposition records to a greater extent than we have observed historically. The delay might originate on the RRC's side, as the Commission must now assess and approve a significantly higher number of well and lease reports than it did during the period of low activity in 2015-2016.

Hence, it should be noted that future upward revisions for 3Q-4Q 2018 flaring figures on the Texas side of the basin are likely, and current estimates should be regarded as conservative.

Figure 1: Natural gas flaring in the Permian Basin by quarter
Million cubic feet per day



Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube

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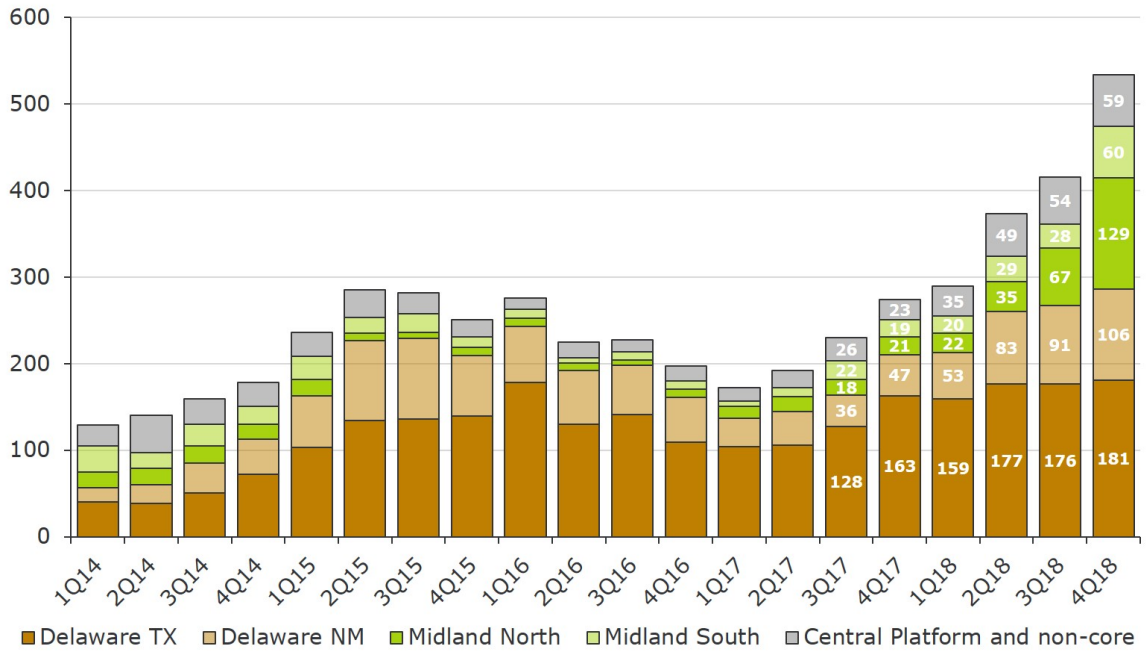
It is worth mentioning that the Delaware part of the basin, known for its weak infrastructure, has dealt with recent gas infrastructure constraints relatively well. While Delaware Texas is the most significant contributor to flaring throughout the basin in terms of absolute volumes, the total flaring level has remained unchanged since 2Q 2018 at around 180 MMcfd. This is largely thanks to new gas processing plants in Reeves and neighboring counties, which have supplied the capacity to handle increased demand for gas. In Figure 4, we can clearly see the benefits of the infrastructure improvements in Delaware Texas, as the gas capture level in the sub-basin is the highest since the second half of 2014.

The level of flaring on the New Mexico side of the Delaware platform is also at an all-time high, in excess of 100 MMcfd as of 4Q 2018. This increase was largely driven by normal, early life flaring on new "monster" completions, which had unprecedented initial production rates.

Surprisingly, it is the more developed Midland region of the basin which has recently developed "uncontrollable" flaring as a result of rapid growth. In Northern Midland, flaring surpassed 120 MMcfd in the last quarter of 2018, an incredible 900% increase from the average flaring levels in 2011-2017. This huge increase has been driven primarily by a large rise in production in the least developed, eastern part of Midland (Howard County). Around 6% of gas produced in Northern Midland was flared in 4Q 2018.

Even in Southern Midland, where gas is usually vital for well economics, the flaring level doubled between 3Q and 4Q 2018. The level of gas captured fell to 96.7% in the sub-basin, the lowest on record.

Figure 2: Natural gas flaring in the Permian Basin by area and quarter
Million cubic feet per day



Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube

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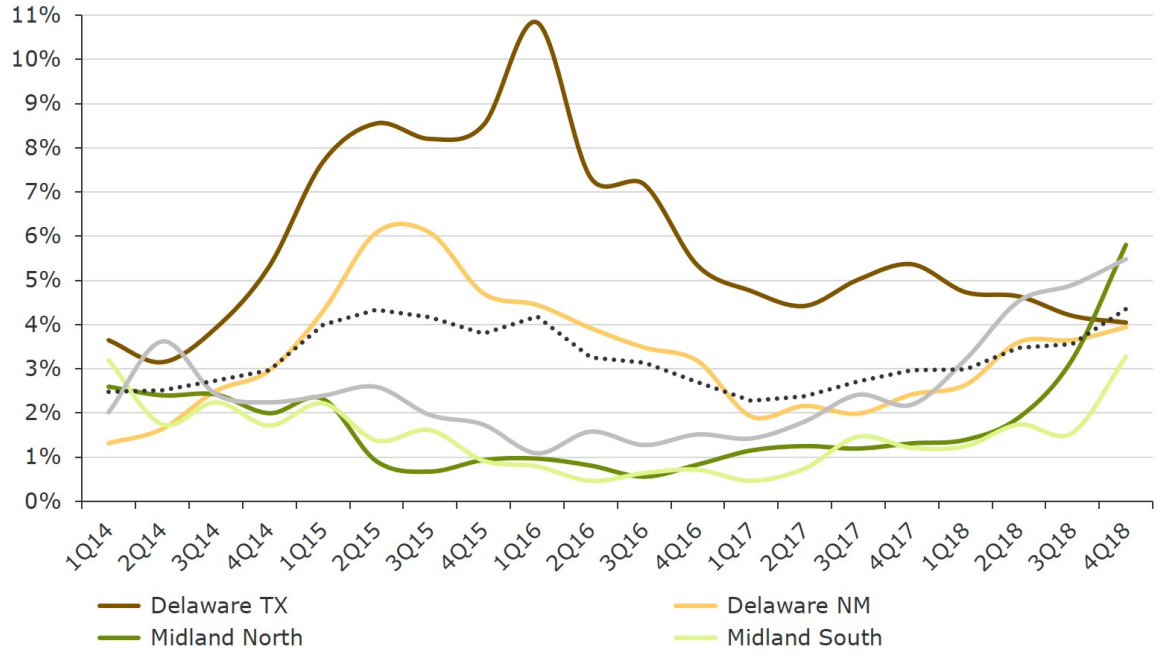
Figure 3: Natural gas flaring share by area and quarter
Percent of gross gas production



Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube

The 10 largest contributors to natural gas flaring in the Permian account for about 230 MMcfd of flared gas as of 20 (Figure 4). Looking at the period from 1Q 2017 through 4Q 2018, Rystad Energy concludes that flaring volumes evolved more or less identically for major and minor contributors, tripling for both operator groups.

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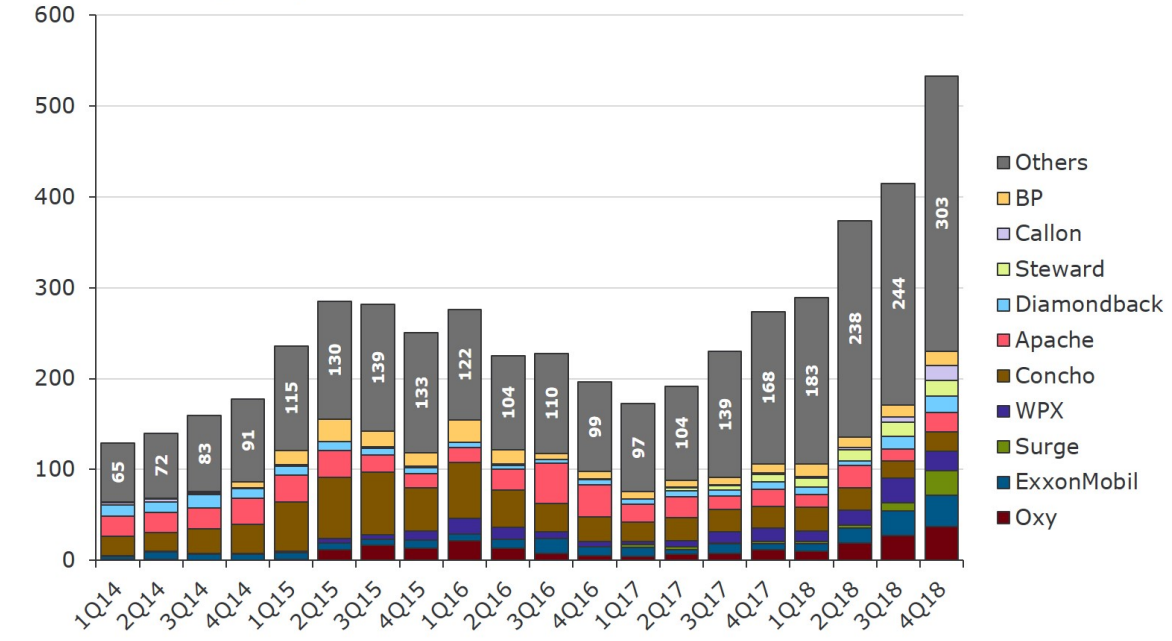
Figure 4: Natural gas flaring in the Permian Basin by operator and quarter
Million cubic feet per day



Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube

Yet, it comes as no surprise to see some of the largest gas producers in the Permian among the largest contributors to overall flaring. To examine this further, Figure 5 examines gas capture by operator, for all producers with gross operated production exceeding 50 MMcfd in 2018. Two operators are excluded from the peer group amid significant delays in the reporting of gas disposition. In particular, Enervest and Approach Resources do not have any flared volumes reported for 2018 as of February 2019.

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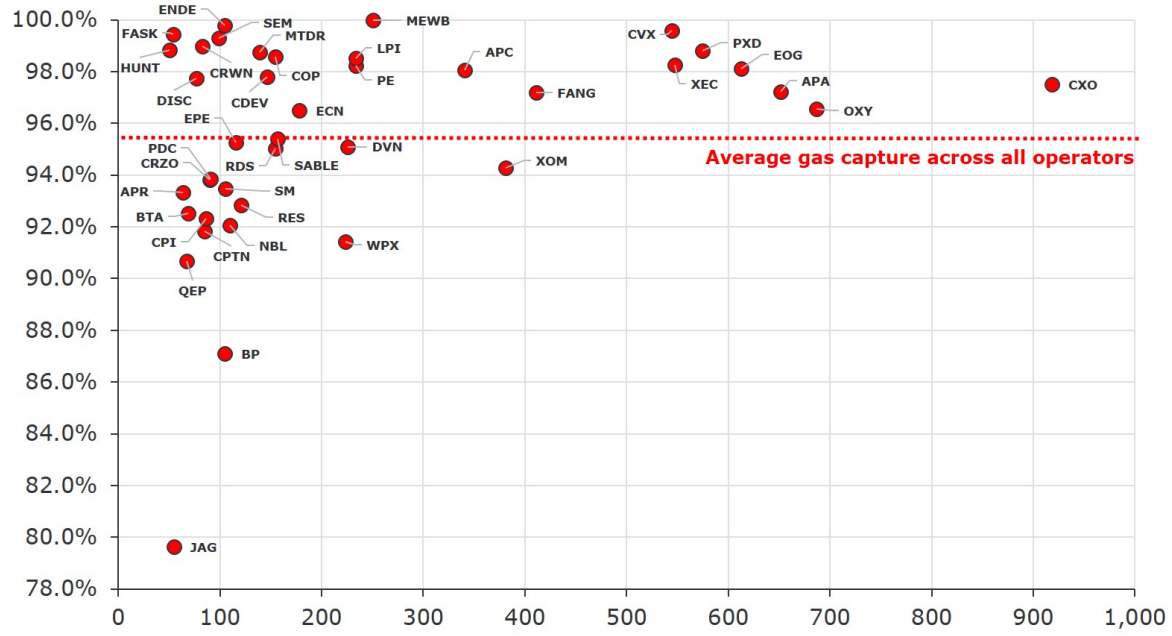
Figure 5: Gas production (X-axis) and capture (Y-axis) by operator in 2018
Million cubic feet per day



*Includes 40 operators with gross gas production in the Permian above 50 million cfpd in 2018
**Excludes Enervest and Approach Resources amid the lack of flared gas reporting for 2018 as of February 2019
Source: Rystad Energy research and analysis

Here we see that the average gas capture among all operators was 95.6% in 2018. Yet, the largest producers still typically have higher gas capture levels compared to the average operator. Concho Resources, Oxy, Apache, EOG Resources, Pioneer Natural Resources, Cimarex Energy, Diamondback Energy and Anadarko each produced more than 300 MMcfd in 2018, with a gas capture target ranging from 96.6% to 98.8%.

The only large producer with gas capture below the average is ExxonMobil (94.3%). Yet it should be noted that last year was associated with significant ramp-up in activity for Exxon and hence substantial number of new wells turned-in-line across different parts of the basin with varying state of infrastructure development. Therefore, it is very likely that ExxonMobil's gas capture will increase as acreage development enters into more mature phase.

As we move towards operators producing between 50 MMcfd and 100 MMcfd, the share of lower gas capture figures increases substantially. Jagged Peak Energy saw a gas capture level below 80% in 2018, and Capitan Energy follows with an overall gas capture level of 91.8%. While this may not seem especially low, Capitan's acreage is located in gaseous Culberson County, where a gas capture level of 91.8% is very low compared to historical numbers. However, many of Capitan's neighbors (APR, Carrizo, Resolute) exhibit only marginally higher gas capture levels, emphasizing area-wide infrastructure problems.

Rystad Energy expects the level of natural gas flaring might lag in 1Q 2019 amid weak fracking activity during the winter months. Yet, further growth is possible in 2Q 2019, as an early spring recovery could trigger a new phase of gradual production growth. We expect our previous estimate will hold true, as we anticipate flaring in the range of 600 MMcfd to 700 MMcfd could be reached and maintained at some point in 2Q 2019. As we move towards the second half of the year, the Gulf Coast Express and Pecos Trail pipelines have the potential to debottleneck the situation significantly when they enter into partial service.

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