

Independent Producers Dominate Majors in the Permian

Executive Summary

Acquisitions have changed the production volume leadership landscape in the largest oil-producing field in the world, the Permian Basin. Pioneer Natural Resources, an independent oil and gas company, surged to the rank of top Permian producer in early 2021. Pioneer, upon acquiring Parsley Energy and DoublePoint Energy in 2021,^{1,2} overtook OXY, the independent producer that had been the Permian's top producer in 2020. Soon, another independent producer, ConocoPhillips, could vie for the top Permian producer title once its recent acquisition of Shell's Permian assets is folded into its results.³ The key point is that independent producers, not "Big Oil," are the leading producers in the Permian Basin.

Both Chevron and ExxonMobil have made spending capital on the Permian a priority for their upstream growth and beefed up their Permian positions through acquisitions in recent years. After losing its bid for Anadarko Petroleum to OXY in 2019,⁴ Chevron purchased Noble Energy,⁵ which was pumping around 65,000 barrels of oil equivalent per day (BOE/day) from the Permian at the time of purchase,⁶ in October 2020. Chevron produced 623,000 BOE/day from the basin during the third quarter of 2021. ExxonMobil increased the size of its Permian resources through its acquisition of the Bass family's properties in 2017.⁷ ExxonMobil produced 500,000 BOE/day from the basin during the third quarter of 2021. This has not been sufficient, however, to win either company a leading role in the Permian.

Although both companies' narratives focusing on future upstream operational success place a high reliance on results from the Permian Basin, their production levels trail Pioneer, which pumped 676,000 BOE/day during the third quarter of 2021 in the Permian Basin.

¹ Pioneer Natural Resources. [Pioneer Natural Resources Completes Acquisition of Parsley Energy Following Stockholder Approvals](#). January 12, 2021.

² Pioneer Natural Resources. [Pioneer Natural Resources Completes Acquisition of DoublePoint Energy](#). May 4, 2021.

³ Reuters. [Shell exits Permian with \\$9.5 bln Texas shale sale to ConocoPhillips](#). September 21, 2021.

⁴ CNBC. [Chevron, the loser in the Anadarko buyout battle, is actually a winner on Wall Street](#). May 9, 2019.

⁵ Chevron. [Chevron Completes Acquisition of Noble Energy](#). October 5, 2020.

⁶ BOE stands for barrels of oil equivalent. Producers typically report BOE using the energy equivalency ratio, where 6 million British thermal units has the energy equivalency of one barrel of oil.

⁷ ExxonMobil. [ExxonMobil to acquire companies doubling Permian Basin resource to 6 billion barrels](#). January 17, 2017.

In this briefing, IEEFA analyzes how ExxonMobil and Chevron compare with all identified operators in the Permian, and also with a selected peer group (see Appendix) of higher-performing operators. The data was segmented into three main plays within the Permian Basin: The Bone Spring, the Wolfcamp Delaware, and the Wolfcamp Midland. The number of newly producing wells a company develops, along with the average peak production of these new wells, were plotted over time to provide a reasonable gauge of each operator's progress in the Permian. The report finds that:

The highest-producing wells in the Permian are drilled by independents.

- Chevron and ExxonMobil do not lead in Permian well activity.
- The highest-producing wells in the Permian are drilled by independents.
- Metrics used by Chevron and ExxonMobil to portray leadership in the Permian actually favored independent producers, and also fail to focus on daily production volumes, the most important metric of productivity.

Based on observations collected between 2018 and 2020, the data does not suggest that future operations exclusive of additional acquisitions will likely propel either Chevron or ExxonMobil to the top rankings and past the leading independent producers in the Permian.

Background on the Permian Basin

The Permian Basin, a region encompassing more than 75,000 square miles in southwest Texas and southeast New Mexico,⁸ boasts vast oil and gas reserves. Two subregions within the Permian—the Midland Basin and the Delaware Basin—currently produce the vast majority of the Permian's oil and gas. The area in between these two basins, the Central Basin Platform, has not seen as much activity in recent years because its geology is more suited to conventional drilling techniques.

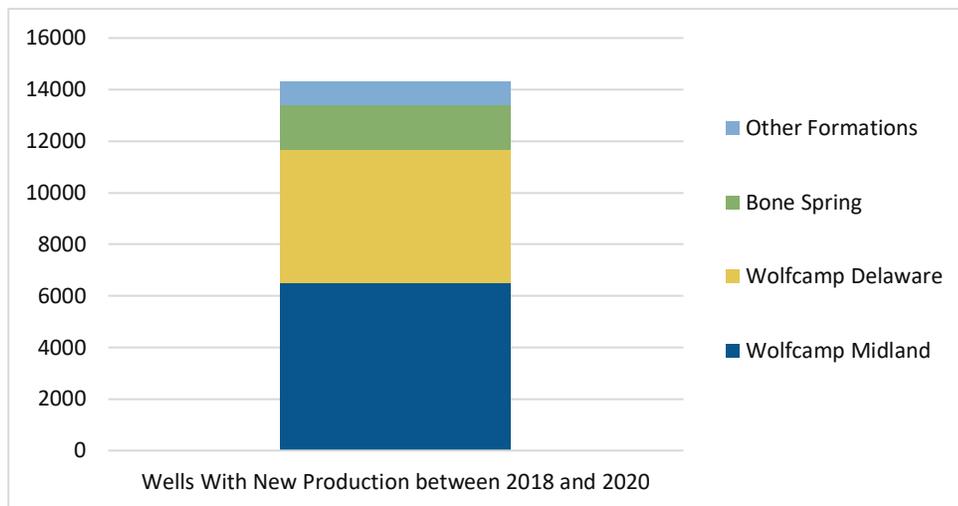
Between January 2010 and December 2020, the Permian Basin accounted for 60% of total growth in U.S. oil production, according to the Energy Information Administration. Output in the basin more than quadrupled over the decade, rising from 890,000 barrels per day (bpd) to 4.3 million bpd. The increase was more than

⁸ University of Texas Permian Basin. [About the Permian Basin](#).

twice the pace of total U.S. crude production growth, which doubled from 5.4 million to 11.1 million bpd over the same period.⁹

Between 2018 and 2020, activity that targeted the Wolfcamp Midland, the Wolfcamp Delaware, and the Bone Spring included 13,416 wells out of 14,300 wells, or 93% of all Permian wells that were turned-in-line.¹⁰

Figure 1: Newly Producing Permian Wells Between 2018 and 2020



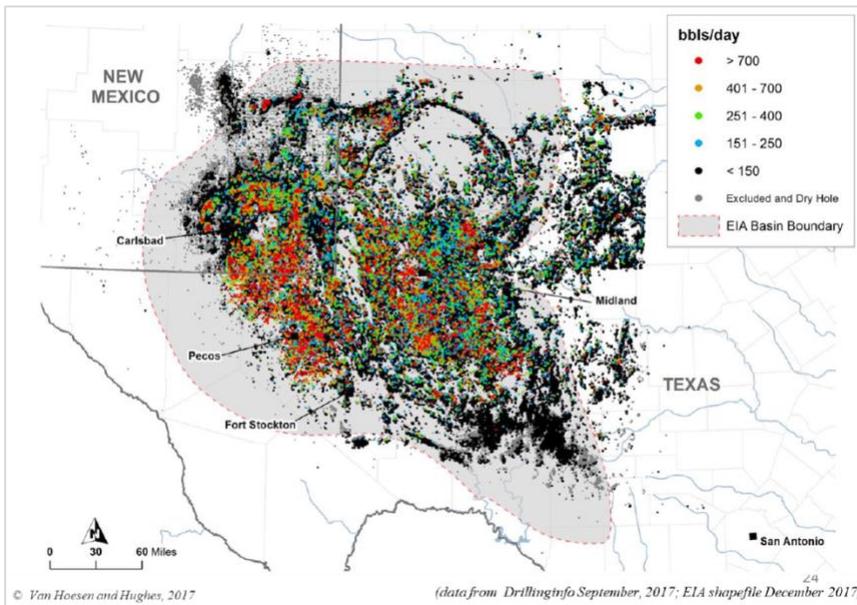
Source: IHS Markit Dynamic North America Database.

The concentration of wells into these formations is no coincidence: Producers have focused their efforts where well quality is highest. As illustrated in Figure 2, most of the wells with the highest peak production (identified on the partial map of New Mexico and Texas with red dots) were concentrated in the Midland and Delaware sub-basins where these three production zones occur (see Appendix).

⁹ Energy Information Administration. [Drilling Productivity Report](#). August 2021. Also see: EIA. [Crude Oil Production](#). August 2021.

¹⁰ Industry term that means production was turned into sales.

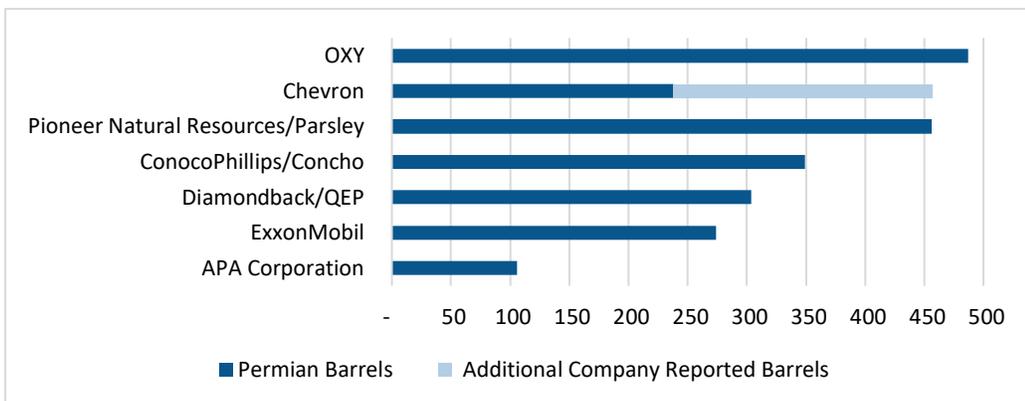
Figure 2: Permian Basin Well Quality



Source: Hughes Shale Reality Check 2019.

IEEFA used data from the Railroad Commission of Texas and the New Mexico Oil Conservation Division to identify the largest oil producer in the region for 2020. OXY was the largest regional producer for the last full calendar year, with approximately 487,000 barrels of oil and liquids produced daily in the Permian.

Figure 3: 2020 Annual Average Daily Oil Production in the Permian Basin¹¹



Source: Railroad Commission of Texas, New Mexico Oil Conservation Division, and Chevron's Supplement to its 2020 Annual Report.

¹¹ For 2020, the oil production totals IEEFA derived from New Mexico and Texas data were slightly different but similar to company-reported data in their annual reports, supplements, or presentations for all companies but Chevron. The lighter-shaded blue bar represents the difference between what Chevron reported and what we were able to track via state production databases.

Compiling the oil production data recorded by these two states is complicated by the fact that the state data in both Texas and New Mexico is stored at a subsidiary level as reported on individual permits. This requires an aggregation of all relevant subsidiaries into the parent company's production totals to calculate an accurate representation and ranking of output by company.

A primary factor for the proliferation of oil production in the Permian, as opposed to other unconventional, predominantly oil-producing basins like the Anadarko (*i.e.*, Woodford Shale) and Williston (*i.e.*, Bakken Shale), is the lower break-even costs per barrel associated with the Permian.¹² Other factors that operators also find appealing about the Permian are its proximity to end markets on the Gulf Coast and availability of infrastructure to transport the production.

I. Chevron and ExxonMobil Do Not Lead in Permian Well Activity

A simple way to assess which company holds an industry-leading position in a basin is to look at well activity over time, where the observations on well activity specifically focus on wells that are selling new production into the market. When a newly drilled well commences commercial production, the well is said to have been turned-in-line.¹³

Aggregating the results for wells turned-in-line across the three key play designations in the Permian illustrates this point (see Appendix). We previously mentioned that Pioneer Natural Resources is producing the highest daily volumes across the Permian. So, it should come as no shock that Pioneer brought the most wells online between 2018 and 2020.

For the three-year period between 2018 and 2020, Chevron ranks eighth across the entire Permian with 645 wells, and ExxonMobil ranks fifth, with 825 wells. ExxonMobil trailed OXY, Diamondback Energy, ConocoPhillips, and the leader, Pioneer Natural Resources, which brought 1,479 wells into production.¹⁴ The activity breaks down among the three plays as follows:

A. The Bone Spring

The Bone Spring play, situated in the Delaware Basin, hosted the smallest number of turned-in-line wells over the past three years. Our sample data identifies 57 operators who brought a total of 1,764 wells into production in this play. Dividing these Bone Spring wells by their operators yields an average of 31 wells brought online between 2018 and 2020. Fourteen operators met or exceeded the above-average benchmark of 31 turned-in-line wells, ranked below (Figure 4).

¹² Federal Reserve Bank of Dallas. [Energy Slideshow](#). October 13, 2021, p. 333

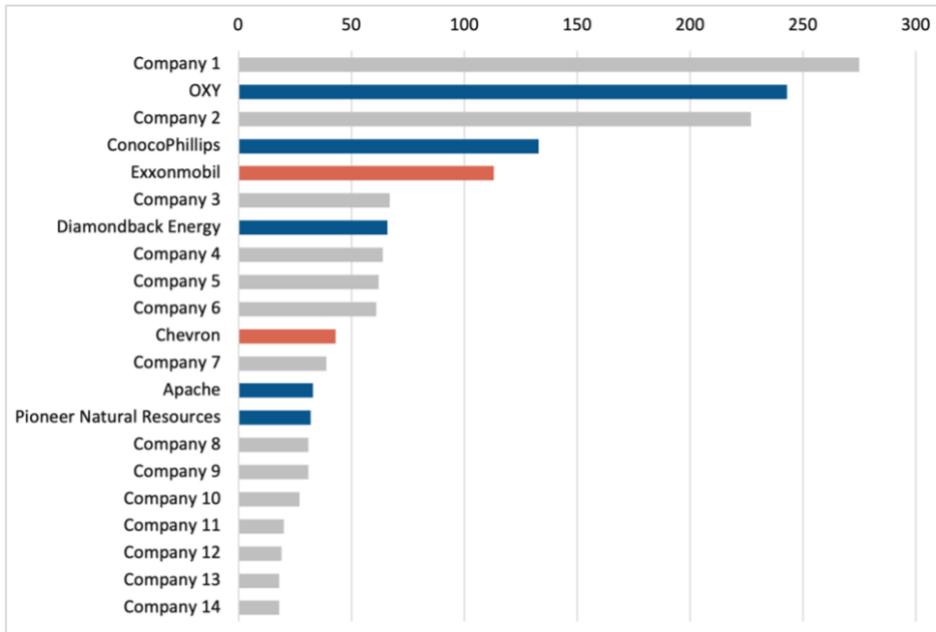
¹³ This term is often abbreviated as TIL.

¹⁴ EOG and Devon were the operators who fell between Chevron and ExxonMobil in the sixth and seventh slots.

Chevron held the 11th spot in the Bone Spring well activity rankings, with 43 wells turned-in-line over the past three years, less than half the average of the 14 operators that met the benchmark. ExxonMobil ranked fifth, with 113 wells turned-in-line in the Bone Spring—fewer than half the number of wells that the top-ranking operator brought online (see Figure 2) during the measurement period.

The overall leader for wells turned-in-line was Devon Energy,¹⁵ with 275 Bone Spring wells.

Figure 4: Bone Spring Wells Turned-In-Line Between 2018 and 2020



Source: IHS Markit.

Note for Figures 4-9: IHS Markit contract terms prevent release of all company names.

B. The Wolfcamp Delaware

The Wolfcamp Delaware play, also situated in the Delaware Basin, is the second-largest play in the Permian Basin as measured by turned-in-line well activity over the last three years. Our sample data identifies 70 operators who brought a total of 5,122 wells into production in this play.

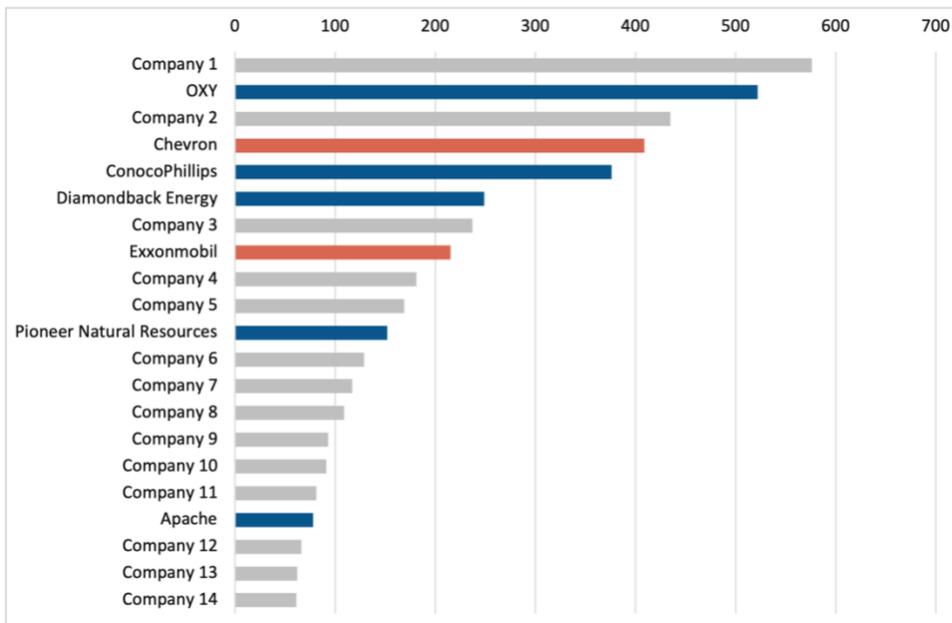
Besides Chevron and ExxonMobil, 12 other oil and gas producers in the Wolfcamp Delaware met or exceeded the filter of 31 wells over the three-year period in this play.

¹⁵ Devon's results are pro forma for the past three years, to include its recent acquisition of WPX Energy.

Chevron held the fourth spot in the Wolfcamp Delaware well activity rankings, with 409 turned-in-line wells. ExxonMobil ranked eighth among all operators, with 215 turned-in-line wells in the Wolfcamp Delaware.

The overall leader for wells turned-in-line was EOG, with 576 Wolfcamp Delaware wells. While not the largest in total production volume in the Permian, which is discussed in the productions ranking section of this report, EOG stands out in the Wolfcamp Delaware play because of its well production performance.¹⁶

Figure 5: Wolfcamp Delaware Wells Turned-In-Line Between 2018 and 2020



Source: IHS Markit.

C. The Wolfcamp Midland

The Wolfcamp Midland play, situated in the Midland Basin, is the largest play in the Permian Basin as measured by wells turned-in-line over the last three years. Our sample data identifies 62 operators who brought a total of 6,530 wells into production in this play.

Besides Chevron and ExxonMobil, 12 other oil and gas producers in the Wolfcamp Midland met or exceeded the filter of initiating production at 31 wells over the three-year timespan in this play.

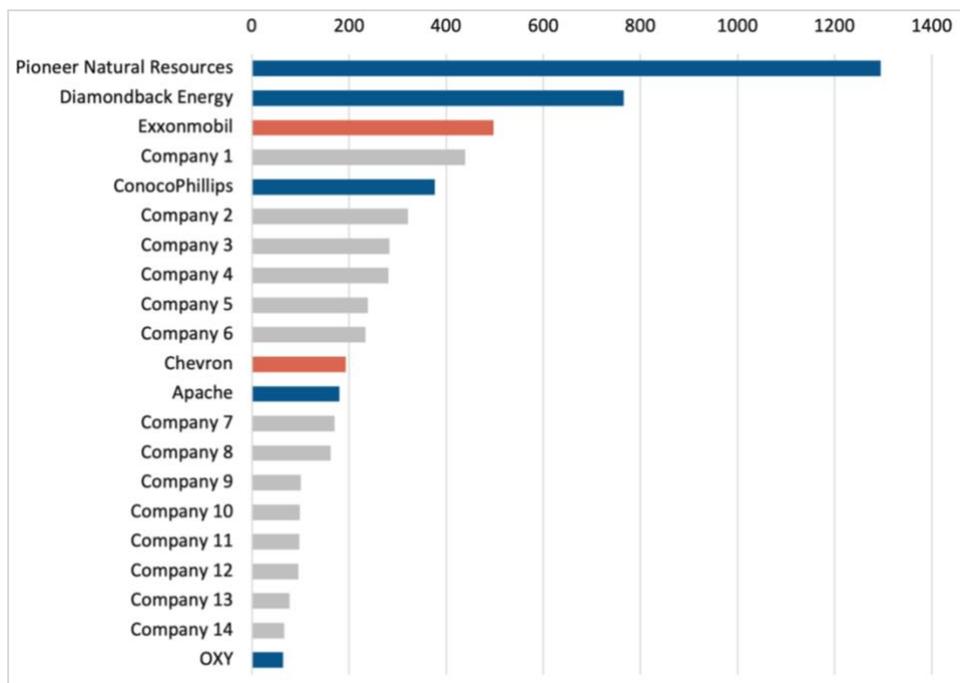
Chevron held the 11th spot in the Wolfcamp Midland's well activity rankings, with 193 wells turned-in-line. ExxonMobil ranked third among all operators in the

¹⁶ EOG has many of the highest-producing peak wells in the region, which is discussed in further detail in the productions ranking section of this report.

Wolfcamp Midland, with 497 turned-in-line. Diamondback claimed the second spot in the Wolfcamp Midland, with 766 wells turned-in-line.

Pioneer Natural Resources stands head-and-shoulders above all producers in the Wolfcamp Midland, with 1,295 wells turned-in-line. Diamondback and ExxonMobil's well activities, even if combined, did not surpass Pioneer's well activity over the three-year period.

Figure 6: Wolfcamp Midland Wells Turned-In-Line Between 2018 and 2020

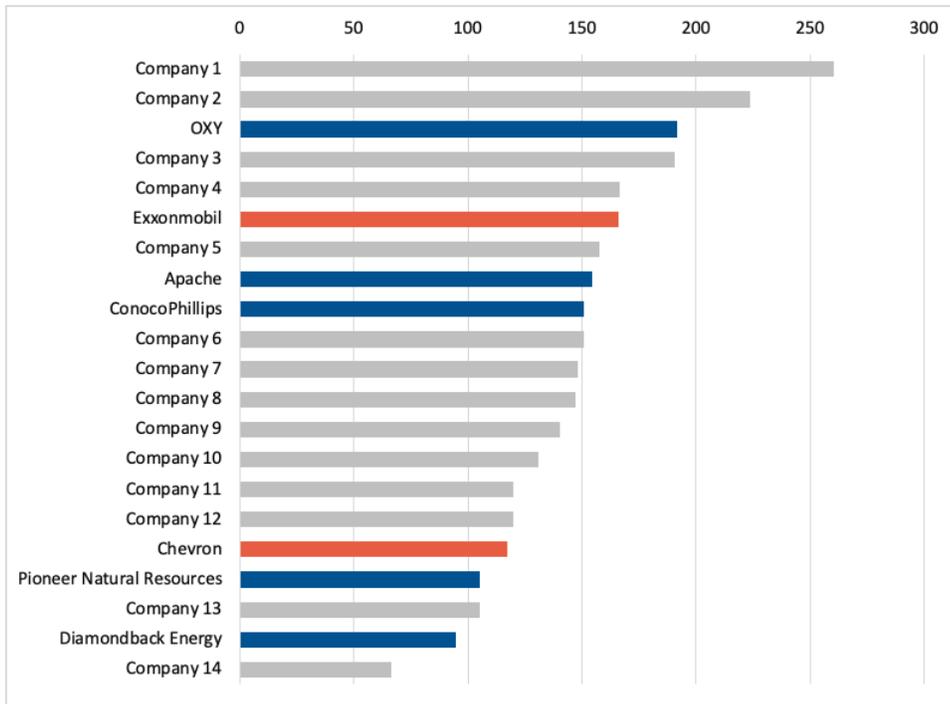


Source: IHS Markit.

II. The Highest Producing Wells in the Permian Are Drilled by Independents

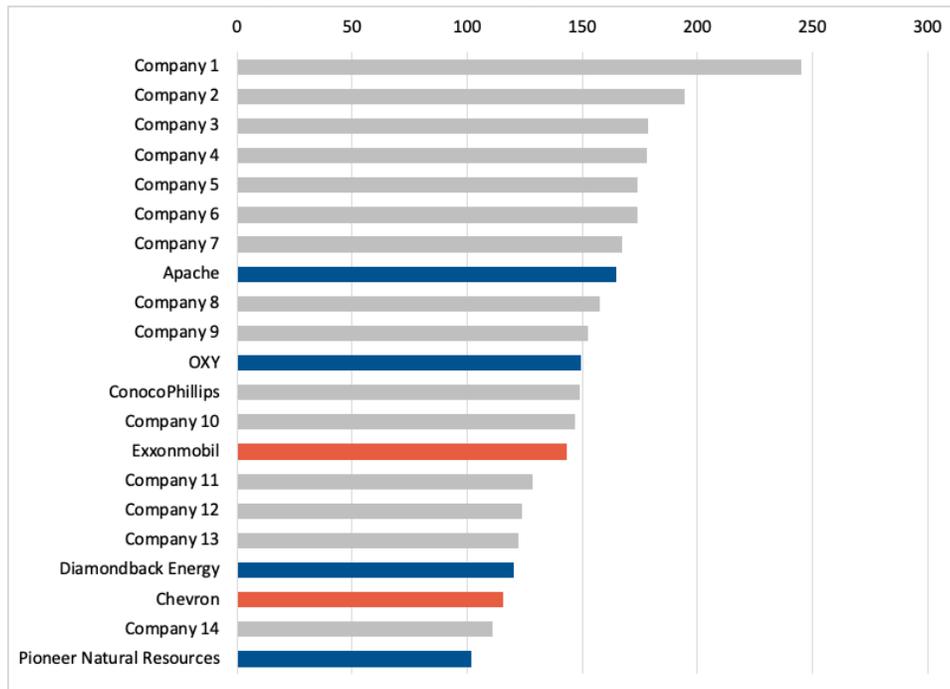
The average peak production (see Appendix) results per individual company illustrate clearly that the supermajors are not setting themselves apart from the pack. ExxonMobil posted mid-tier results in the Bone Spring (see Figure 7) and Wolfcamp Delaware (see Figure 8), while lagging relative to its peers in the Wolfcamp Midland (see Figure 9) play. Chevron's peak production results were subpar relative to its peers in the Bone Spring and Wolfcamp Delaware, although superior when compared to the Wolfcamp Midland.

Figure 7: Bone Spring Average Peak Production



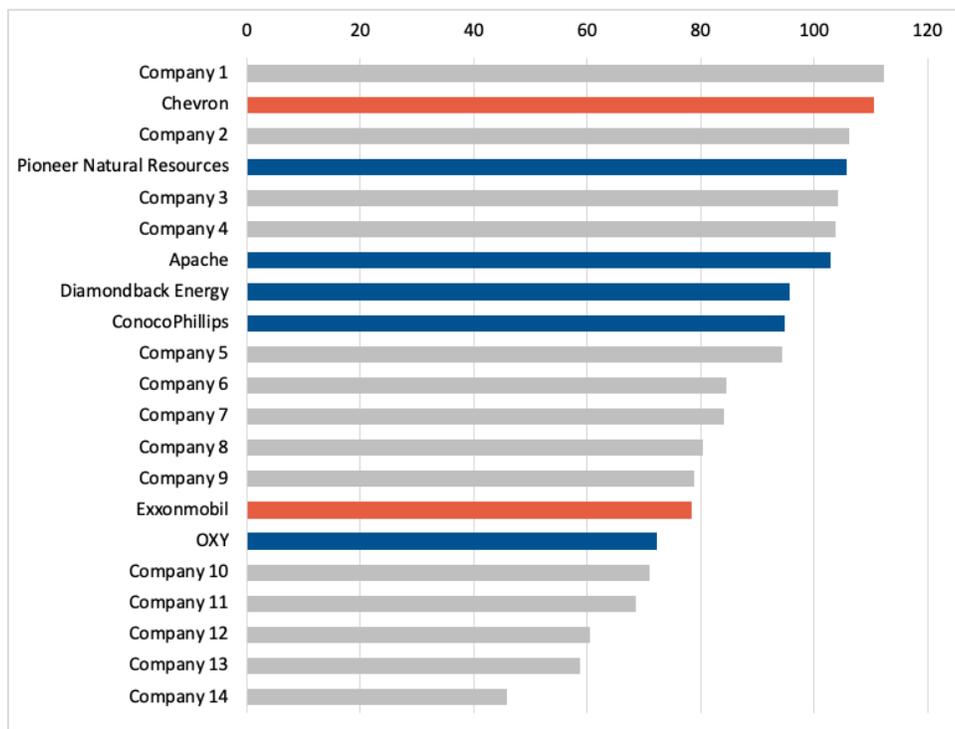
Source: IHS Markit.

Figure 8: Wolfcamp Delaware Average Peak Production



Source: IHS Markit.

Figure 9: Wolfcamp Midland Average Peak Production



Source: IHS Markit.

The data indicates that EOG’s wells lead the industry for average peak BOE production per 1,000 lateral feet.¹⁷ Between 2018 and 2020, EOG topped both the Bone Spring and Wolfcamp Delaware average peak production per 1,000 lateral feet rankings with 260 BOE/day and 245 BOE/day, respectively. The operator with the highest average peak production per 1,000 lateral feet in the Wolfcamp Midland was Ovintiv at 112 BOE/day.

To put these results into perspective, the peers’ and the supermajors’ weighted average peak productions were 164 BOE/day, 135 BOE/day, and 98 BOE/day across the Bone Spring, Wolfcamp Delaware, and Wolfcamp Midland plays, respectively. Individually, Chevron’s average peak production was similar across all three plays at 117 BOE/day in the Bone Spring, 116 BOE/day in the Wolfcamp Delaware and 111 BOE/day in the Wolfcamp Midland. ExxonMobil’s peak production figures were 166 BOE/day in the Bone Spring, 143 BOE/day in the Wolfcamp Delaware, and 79 BOE/day in the Wolfcamp Midland.

Relative to the peer group, Chevron drilled longer lateral wells in the Bone Spring and Wolfcamp Delaware. ExxonMobil drilled longer laterals than its peers in the Wolfcamp Delaware and Wolfcamp Midland plays. IEEFA reconstructed peak production per well in each play to ensure that neither Chevron nor ExxonMobil were penalized in their rankings in plays where they drilled longer lateral wells.

¹⁷ IHS calculates BOE using a 20 mmBtu to 1 bbl ratio (i.e., market parity set by price and not energy equivalency, which is a 6 mmBtu to 1 bbl ratio) in its peak production averages per 1,000 lateral feet.

When we multiplied peak production per 1,000 lateral feet by average lateral lengths per operator, we found that:

- Oxy ranked highest for average peak well production in the Bone Spring (1,669 BOE/day versus a play average peak rate of 1,243 BOE/day).
- EOG ranked highest for average peak well production in the Wolfcamp Delaware (1,700 BOE/day versus a play average peak rate of 1,162 BOE/day).
- SM Energy ranked highest for average peak well production in the Wolfcamp Midland (1,096 BOE/day versus a play average peak rate of 859 BOE/day).

The highest ranking by a supermajor in any of the three plays for peak production per well was a third-place ranking logged by Chevron in the Wolfcamp Midland.

III. Metrics Used by Oil Majors To Claim Leadership Actually Favor Independent Producers—and Divert Attention From the Most Important Metric

As of August 2021, Pioneer Natural Resources was using 23 rigs in the Permian to drill wells for future production,¹⁸ higher than any other operator's active rig count focusing on the basin. Yet, ExxonMobil, through its subsidiary XTO Energy, makes a banner claim near the top of its Permian Operations website that "XTO Energy is the most active operator in the Permian Basin."¹⁹ Only after clicking on the link to "learn more" are we redirected to a press release published in July 2019 with the out-of-date details regarding XTO's rig activity. As of this writing (October 28, 2021), the main web page for XTO Energy's Permian Operations still displayed the claim that it is the most active operator in the Permian Basin, without explaining on the same page that its representation is about past—not current—activities.

OXY currently controls the most acreage of any publicly traded operator in the Permian with approximately 2.9 million acres. In its supplement to its 2020 Annual Report,²⁰ Chevron boasts that the company holds a "premier position" in the Permian. The context of this claim was specifically referring to its acreage position. Given that Chevron quantifies its position as 2.2 million acres net, Chevron did not hold the most Permian acreage under its control. To be fair, on the same page with the premier position remark, Chevron also states that it has "one of the largest net acreage positions."

In summary, while Chevron and ExxonMobil boasted about their leadership in the Permian, the metrics that each chose to define their leadership actually favor independent producers upon closer inspection. Furthermore, representations by the

¹⁸ Midland Reporter Telegram. [Drilling Activity Continues to Trend Higher](#). August 2021.

¹⁹ ExxonMobil. [Permian Basin](#). October 28, 2021.

²⁰ Chevron. [2020 supplement to the annual report](#). September 2021, p. 15.

two companies about being the largest in the Permian are misdirection away from the metric that has a greater economic impact—daily production volumes.

Conclusion

Chevron and ExxonMobil have positioned their U.S. upstream operations with an emphasis on the Permian Basin. Both companies are pointing to expectations of continued production growth in the Permian, sticking to their respective game plans and relying on past strategies to pull them through the current commodity cycle.

**Neither Chevron nor
ExxonMobil activity levels
in the Permian stand out.**

But neither Chevron nor ExxonMobil activity levels (*i.e.*, the number of wells turned-in-line between 2018 and 2020) in the Permian stand out. Based on the 2018–2020 data reviewed in the report, each would have to increase their drilling and completion campaigns significantly to surpass all independent producers in the Permian. Their well productivity, moreover, lags far behind EOG’s prolific wells in the Delaware Basin. Thus, we see that the two main paths to the top-producing status in the Permian in recent years have not been available to either Chevron or ExxonMobil.

Appendix

Data Sources and Methodology

Of the numerous plays and formations within the Permian Basin responsible for production, just three production zones account for almost 90% of all new wells brought online over the past decade. Those key play designations are the Bone Spring, the Wolfcamp Delaware, and the Wolfcamp Midland. The three key play designations differ significantly with respect to optimal well designs, production stream compositions, and other production characteristics. Thus, each play designation needs to be analyzed individually.

In this analysis, we spotlight Chevron and ExxonMobil's results and compare their well activity and production performance with:

- (a) The entire sample; and
- (b) A peer group of producers who operated in all three key plays and brought a significant number of news wells into production in each play.

To define significant number of new wells producing, IEEFA started with the smallest play of the three in terms of recent activity and used IHS Markit's Dynamic North America Database to identify wells that began production from 2018 to the end of 2020.

The smallest key play as measured by well count over the past three years was the Bone Spring. Within that play, IEEFA identified 57 operators who brought a total of 1,764 wells into production, or an average of 31 wells per operator. Any operator that met or exceeded the benchmark of 31 wells, regardless of play, is included in this report's presentation of data. IEEFA chose this filter for selection of a peer group from all three plays, to allow for the largest possible sample size of peers. But across the three key plays, IEEFA identified just seven producers surpassing our 31-well filter in each of the production zones. Those producers are APA Corporation, ConocoPhillips,²¹ Diamondback Energy, OXY, Pioneer Natural Resources, and supermajors Chevron and ExxonMobil. Collectively, we refer to the five independent producers within this group as the peer group.

To compare productivity, oil and gas analysts commonly estimate the quality of an oil and gas well based on its production in the peak month, which usually occurs early in a well's lifecycle once production begins. Peak production serves as a rough proxy for a well's total producible reserves; higher peak production generally implies a greater estimated ultimate recovery (EUR).²² For individual wells, peak output may not serve as a reliable predictor of long-term production, since many factors can cause variances from the norm for individual wells.²³ However,

²¹ ConocoPhillips' results are pro forma for the past three years to include its recent acquisition of Concho.

²² The Estimated Ultimate Recover (EUR) is the cumulative production from a well over its lifecycle.

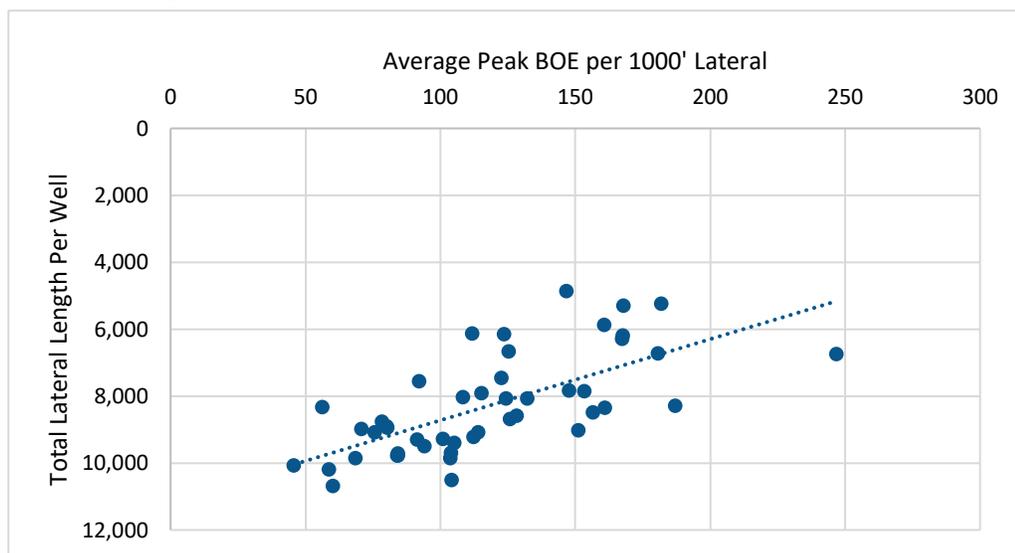
²³ Enverus. [Peak Oil and EUR – Let's Be Careful Out There](#). February 2020.

aggregating several wells in a specific play and taking the average for an operator's peak production does generally provide a useful means to benchmark company wells, assuming both are drilling in relatively homogenous environments and using similar methods.

Longer wells—those whose lateral well bores have a greater amount of surface area exposed to the target reservoir—generally produce more oil and gas per day than wells with a shorter lateral length, if both are drilled in similar environments. Producers with greater activity levels in the Permian have tended to focus on drilling and completion efficiencies, to drive down costs and generate cash flow efficiencies. Longer lateral wells have tended to offer performance that meets both objectives. As a result, newer wells in a play tend to have longer lateral lengths than wells drilled in prior years, and longer wells also tend to produce more total oil and gas.

To provide a consistent comparison of well productivity across operators, across years, and across wells of different lengths, IEEFA observed peak production per a standard length of 1,000 lateral feet. The drawback to this method is that well pressure tends to drop as the lateral length is extended, so it is not uncommon for the longer well to have less production per thousand feet (see Figure 10), due to the drop in pressure.²⁴ IEEFA used IHS Markit's Dynamic North America Database for well observations regarding average peak production per 1,000 lateral feet drilled.

Figure 10: Permian Peak Production BOE per 1000' Lateral versus Total Lateral Length Per Well



Source: IHS Markit.

²⁴ Ammar Al-bayati & Adil Ismail. [Optimum horizontal well length considering reservoir properties and drainage area](#). September 2020.

As expected, the differences in depths drilled horizontally offer a yield from sample wells with shorter laterals that tend to have higher peak averages than the yields from longer laterals. Nevertheless, the seven companies selected for the peer group in our analysis of the Bone Spring, Wolfcamp Delaware, and Wolfcamp Midland all exhibit longer-than-average lateral well designs. And given the comparable lateral lengths of these peers, the rankings for peak production within the peer group are illustrative for comparing average peak well performances among this select group.

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