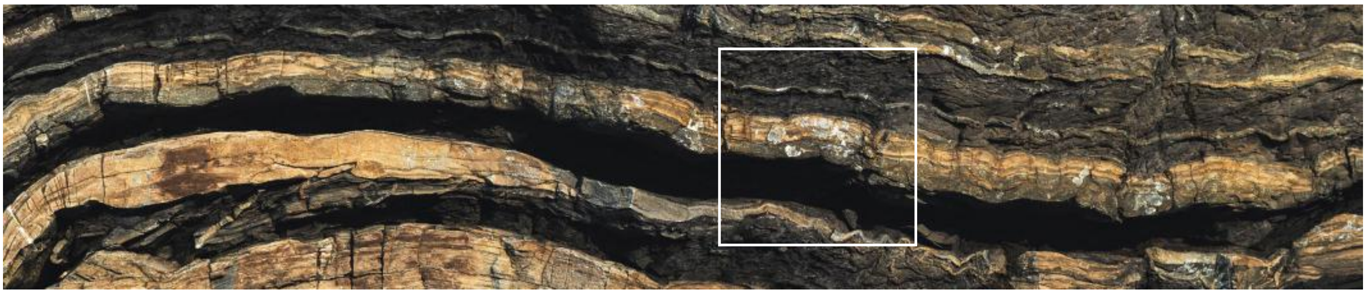
Arthur D Little

Viewpoint

Rethinking Independents

How the US's role as an exporter shifts the strategies of independent operators



To survive and thrive, independent US operators must position themselves for long-term value creation through new business models that consider the risks and opportunities of excess production and delivery to global markets.

The development of shale oil and gas production in the US has been truly miraculous, which can be credited to the combination of innovation, well-developed infrastructure, and readily accessible capital markets. As a result, shale production had increased from nil to about 4 million barrels per day in the interval 2008 to 2014 – and by 2022, it is poised to add another 4 million barrels per day, largely from the prolific Texas/New Mexico basin called the Permian. At that point, US production in the Permian alone will be equivalent to a large OPEC producing country such as Kuwait or Nigeria.

Because of this dramatic increase, the US has become an oil exporter, having moved some 2 million barrels per day already in 2018. Most of the new Permian oil is expected to be exported, but to what markets, and at what price?

Permian basin fundamentals

US independents have been largely responsible for the domestic boom to this point. Maintaining their leadership position will require a significant change in behavior and capabilities. These shale developers must consider and manage a number of complex issues, including:

Permian forecasted production growth vs. selected exporting countries

3MM — Production in the Permian is expected to rise by up to **3 million barrels** of oil equivalent per day (BOE/d) by 2023

5.4MM — With that much new production, the Permian **could produce up to 5.4 million BOE/d** by 2023 – more than every OPEC country except Saudi Arabia

41k — Up to **41,000 new wells – mostly unconventional** – will need to be drilled between 2018 and 2023 to meet the production outlook

$310B — Upstream operators would have to spend over **$300 billion in capital expense over the next 5 years** in order to keep pace with growth projections

Source: IHS Markit, Rystad Energy Consultants

1. Partnerships

Independents are just that: "independent," specifically in terms of refining and marketing operations. As a result, these companies sell their oil at the wellhead and move on to the next drilling campaign. It is a simple world, but a risky one as the US becomes a major exporter and competition rises in global markets such as Latin America and the Pacific Rim.

In this environment, the "drill, sell direct at the wellhead, repeat" behavior will need to change if independents want to maximize steady cash flow. They will need to comprehend and exploit global markets, just as Canadian heavy oil producers have done with excess heavy production. For example, in order to cover shortages in refinery input, Husky and Devon have entered into long-term supply arrangements with Reliance in India, in exchange for a slight price premium on the heavy oil index.

Plenty of opportunities exist for US independents. Mexican, Latin American, and Chinese refineries are the most likely destinations. Suncor, a major Canadian oil sands producer, offers a model to consider. Suncor systematically builds demand-pull for its production by establishing trading and marketing offices in markets it considers attractive, such as Houston, China, and Mexico.

2. Commanding and maintaining a price premium

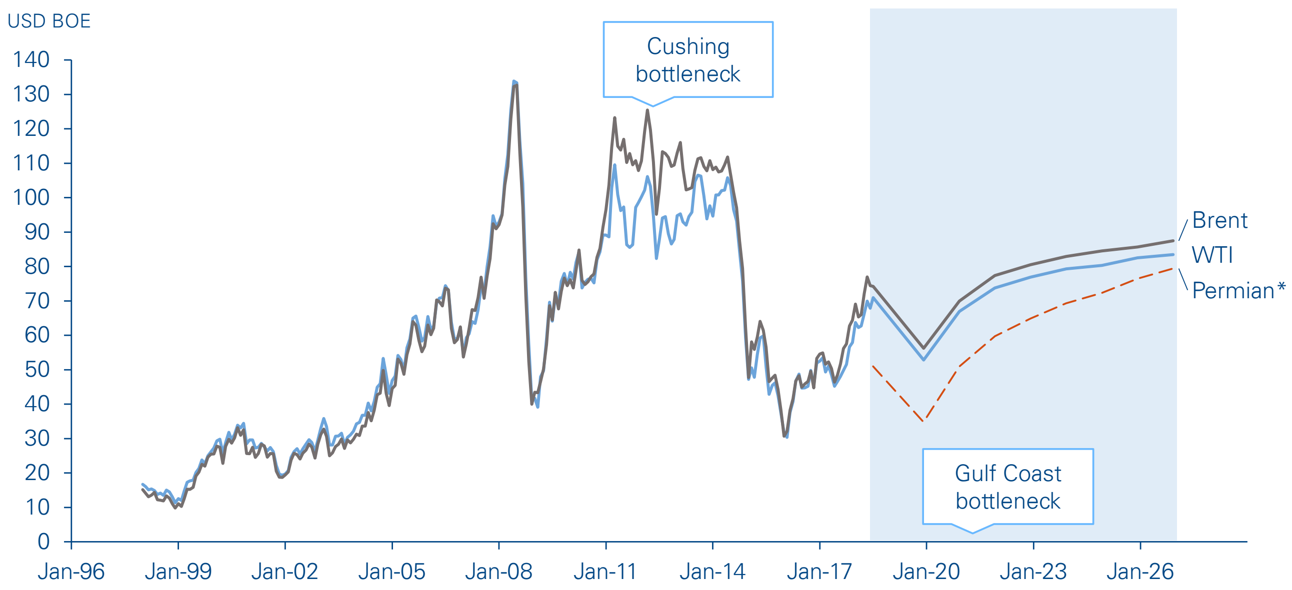
Under the traditional model of selling oil at the wellhead, independent producers have become accustomed to success without factoring in fluctuations in the global markets. Those days are gone, as regional pricing spreads will certainly impact producers' ability to stay predictably profitable.

Consider the widening gap between the two primary benchmarks for the pricing of oil, West Texas Intermediate (WTI) and Brent light, a North Sea-based index. Since the advent of shale, WTI has traded at a discount to Brent as steep as $10/barrel (2011–2014), which largely reflects the lack of "take-away infrastructure" as production has ramped up in North America. As Permian production once again now exceeds take-away capacity, a separate Permian discount has arisen. This discount, now at $25/bbl, may persist well into 2019, dramatically affecting Permian profitability.

Independents can stay ahead of the pricing fray by identifying and establishing strategies for not only reducing that discount, but also realizing premiums for their oil in some cases. These players will need to develop new export-shipping capacity at ports such as Brownsville to alleviate the growing bottlenecks at Houston and Corpus Christie. Additionally, new, dedicated pipelines for ultra-light Delaware basin production can avoid blending with lower-quality crude and command premium pricing. Finally, independent operators with sophisticated trading capabilities can take advantage of short-term WTI pricing variations by timing hedge puts and calls with "on-demand" well completions – similar to the strategy that Shell is currently following.

These actions will serve to reduce the differential and, in some cases, command a premium as high as $5+ over the more stable Brent index.

WTI & Brent Spot Price FOB forecast

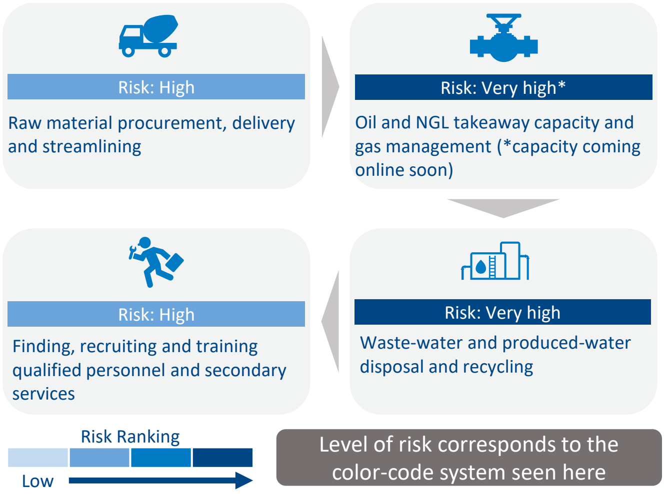


Source: Energy Information Administration, Forecast Reference Case (2017), Note: Permian*: Arthur D. Little Forecast

3. Operator collaboration

According to a recent Arthur D. Little (ADL) study on production growth challenges in the Permian, "Permian Production Constraints, 2018–2022", more than 41,000 wells, at a total capital cost of approximately $300 billion, are planned over the next five years. The demands on infrastructure will be tremendous. Trucking, roads, water usage, power consumption, and sand to frack the wells, as well as community services such as housing, schools, and hospitals, will all be necessary to sustain rapid development. By ADL's estimate, about 1 million barrels per day in production growth are at risk due to the inability of the local infrastructure to support daily operations.

Collating production outlooks with average inputs, ADL identified the services and materials most at risk of supply shortages



Source: Energy Information Administration, Forecast Reference Case (2017), Note: Permian*: Arthur D. Little Forecast

As one example, the Wall Street Journal estimates that as activity increases, 120,000 truckloads of sand will be hauled in the Permian on a road system that was built to handle less than 1,000. Considering that this figure does not account for the water and chemicals that will also need to be transported in and out of the area, this is clearly unsustainable. It offers an opportunity for operators to pool capital and planning to build a robust road system, which would also reduce trucking demand by 10 to 20 percent.

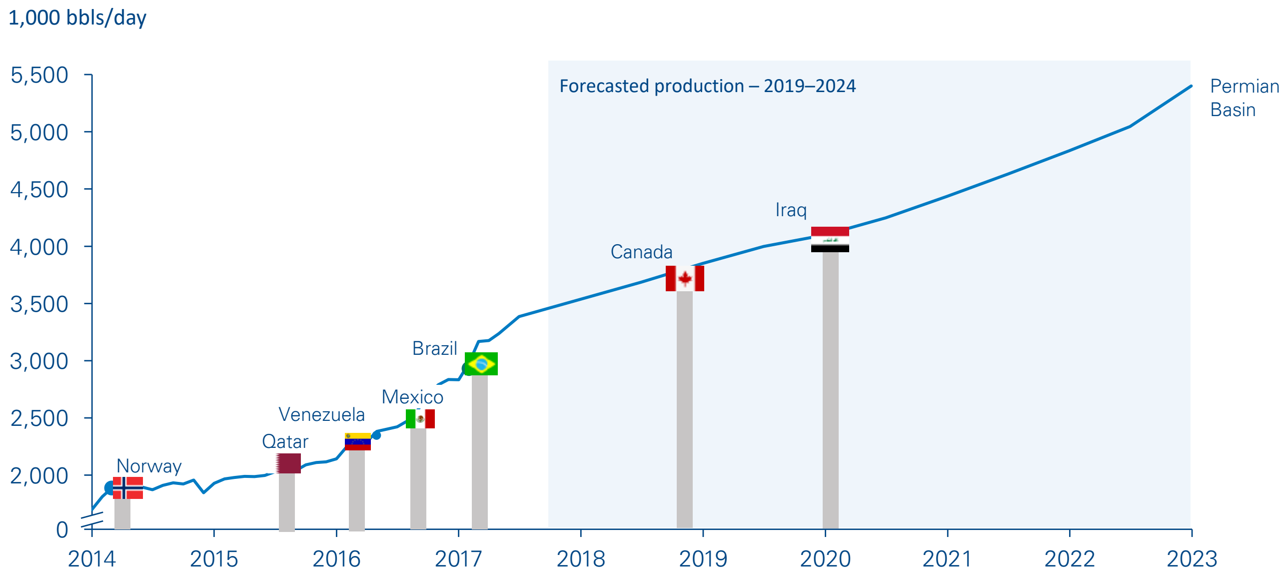
In other expensive offshore basins such those in as West Africa and the Gulf of Mexico, operators pool demand for non-competitive services such as lodging, supply boats, safety management, and helicopter transportation to lower costs and improve the collective quality of service. Unfortunately, the "independent" nature of shale operators is a strong cultural barrier to this type of collaboration. Unlike the philosophy of deep-water operators such as Shell, ExxonMobil, and BP, in the eyes of independents, a "rising tide sinks all ships," rather than lifting them.

Pioneer, a leader in community stakeholder management in the Permian, has initiated an effort to potentially pool power generation for the mutual benefit of the operator community and the local towns and ranches. This is a good start to addressing the demand for common services, but much more will be required.

4. Feeding the capital machine

While building out the Permian requires collaboration, it also calls for a massive influx of capital.

Permian forecasted production growth vs. selected exporting countries



Source: US Energy Information Administration, Chevron Permian forecast, ADL projections

This is perhaps the greatest challenge in the basin. To provide potential solutions, operators have to think more creatively about funding structured projects. Pioneer's power generation scheme also offers a strong example in this case, as the company seeks to pool demand and provide a 20-year, annuity-like return to patient investors such as insurance companies, retirement funds, and family offices. Similar projects have already become commonplace in the pipeline space, but these practices need to expand to areas such as water management, community infrastructure, roads, and transportation to enable sustainable development.

The development of the Permian basin is a challenge unlike any yet encountered in the global oil industry: to grow production to exceed that of all oil-exporting countries except Saudi Arabia and Russia in less than five years.

It is uncertain whether this challenge can be met. It demands that US independents go against their nature by collaborating in key areas. It requires establishing markets, building new partnerships to a level not yet seen in the sector, and giving up control of traditionally competitive capabilities in order to attract the necessary investment capital. Forward-thinking players will change the way they do business, giving rise to a new ecosystem that will be able to capitalize on current opportunities and create new avenues for growth.

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