Changing Permian Drivers in Wake of Price Collapse

OPEC + deal won't end shale distress.

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Shut-Ins

Crude prices haven't rebounded overnight from lows just before Easter despite the OPEC + agreement reached Sunday. This suggests the belated producer action won't be enough to overcome wholesale slashing of drilling and investment budgets in the U.S. shale sector. According to the latest Energy Information Administration weekly statistical bulletin, a crude production pullback of 600 thousand barrels/day occurred in the week ended April 3—a level of collapse normally associated with hurricane season in the Gulf of Mexico. During the same week, crude inventories jumped 15 million barrels and refined product supply dropped 19%. Nowhere is the pain felt harder than the West Texas Permian Basin, where prices and supply/demand fundamentals are backing crude away from refineries into scarce storage and forcing shut-ins at the wellhead. This note details changing Permian crude drivers in the wake of the price collapse.

Permian Triangle

In July 2018, we described market dynamics governing crude flows among the Permian Basin production gathering hub at Midland, Texas, the Midwest trading and refining hub at Cushing, Oklahoma, and the Gulf Coast crude market centered at Houston. We used the metaphor of a Permian triangle to symbolize crude flows on Trunkline pipelines among the three hubs that are determined by relative prices for West Texas Intermediate crude at each location (see our July 2018 note The Permian Triangle and U.S. Crude Dynamics). Volumes flowing on each leg reflect oil market supply/demand fundamentals influencing prices at the three trading hubs anchoring the triangle as well as the interplay between U.S. crude sold domestically and exports.

Midland to Cushing

Midland is the gathering center for the West Texas Permian Basin. Although a lot of new drilling and production in the basin is further west in New Mexico (see our March note New Mexico's Permian Shale Factory), most crude is still picked up by gathering systems that deliver into or through Midland. Crude not consumed by local refiners is then shipped to market on long-haul pipelines.

Cushing is the largest crude storage and trading hub in the United States with multiple inbound and outbound pipelines. Crude activity at Cushing is centered on WTI delivered from the Permian and traded for physical delivery throughout the Midwest and Gulf Coast refining regions. Cushing is also the delivery point for the dominant U.S. crude futures contract: CME Nymex WTI.

Since before the shale boom, three long-haul pipelines have carried Permian crude from Midland, Texas to the Midwest. The first two are the 100 mb/d Lotus Midstream Centurion and the 450 mb/d Plains All American Basin pipelines between Midland and Cushing. A third pipeline out of the Permian, the 300 mb/d Energy Transfer West Texas Gulf, delivers crude to Longview, Texas, and from there to the Chicago area via the Mid-Valley pipeline (as well as to the Gulf Coast more recently). In 2019, Plains extended the Sunrise pipeline from inside the basin to add 120 mb/d between Midland and Cushing.

Permian to Gulf Coast

This pipeline network was developed during the shale era to ship growing Permian production to refining centers in and around Houston, Beaumont/Port Arthur, and Corpus Christi on the Texas Gulf Coast. Since 2013, five trunklines have been developed between the Permian and Houston/Beaumont/Port Arthur: The Magellan Longhorn, Magellan/Plains/Calpers BridgeTex, Energy Transfer Permian Express, Plains Cactus, and Enterprise Midland-Sealy pipelines have over 2 mmb/d capacity in total. In 2019, midstream companies built out pipeline projects including Cactus 2, EPIC, and Gray Oak, adding at least another 2.0 mmb/d, and planned as much as 2.0 mmb/d of additional capacity including the ExxonMobil/Lotus/Marathon Wink to Webster and Enterprise Midland to Echo pipes to the Gulf Coast by 2021. Most of this new pipeline capacity was designed to ship Permian crude to export markets via the Port of Corpus Christi.

Cushing to Gulf Coast

All the crude in the first two legs of the Permian triangle is headed to destination refining markets on the Gulf Coast or in the Midwest. The third leg of the triangle delivers crude between these destination markets, representing a balancing mechanism of sorts, because crude can flow from Midland to Cushing in the Midwest and then to Houston on the Gulf Coast. The third leg of the Permian triangle also ships multiple grades and blends of crude shipped into Cushing from surrounding production in the Anadarko Basin or from further afield in North Dakota, the Rockies, and Canada.

The trunklines on this route are the 950 mb/d Seaway pipeline jointly owned by Enterprise and Enbridge and the 750 mb/d TransCanada Cushing Marketlink between Cushing and Nederland, Texas, that also has a lateral to Houston. These pipeline systems transport a mixture of light shale and heavy Canadian crude from Cushing to Gulf Coast destinations with most barrels ending up in the Houston region. Before the coronavirus oil price crash in March 2020, Phillips 66 had planned the Red Oak pipeline between Cushing, Houston, Beaumont, and Corpus Christi, but it is unclear now if this project will be completed.

Coronavirus Upheaval

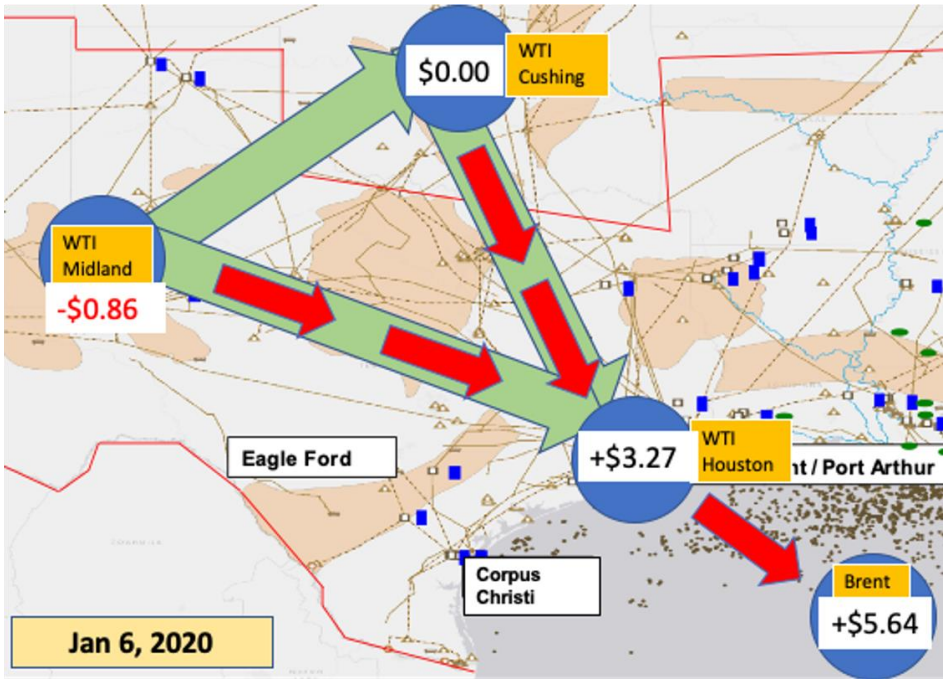
Price relationships between the three trading hubs in the Permian triangle are primarily based on crude supply demand fundamentals at Midland, Cushing and Houston as well as the export market. The past month saw dramatic oil market upheaval caused by the twin impacts of demand destruction from stay-at-home policies to defeat coronavirus and supply expansion following the breakup of the OPEC+ production agreement. This upheaval has upended price dynamics and flows on the Permian triangle as we detail next using before and after examples.

Before the Storm

Exhibit 1 shows the Permian triangle as of Jan. 6, before the coronavirus had any significant impact. U.S. domestic crude production reached record levels around 13 mmb/d, according to the EIA. New pipelines from the Permian to Corpus Christi that opened in the last six months of 2019 had relieved congestion and reduced transport costs out of Midland. With refineries in traditional seasonal maintenance, prices encouraged crude to flow to the Gulf Coast from both Midland and Cushing. Although WTI prices at Midland were $0.86/barrel below Cushing, a $3.27/barrel premium at Magellan East Houston provided a greater incentive for producers and shippers to move barrels to the coast instead. With WTI prices at Cushing $3.27/barrel below MEH, crude also had incentive to move to the coast from the Midwest.

In addition to higher prices for coastal delivery, international crude Brent was trading at $5.64/barrel above Cushing and $2.37/barrel over MEH, encouraging as much as 3 mmb/d of crude exports to Europe and Asia. This basic market structure had been in place since mid-2017, when Brent premiums over WTI encouraged ever-increasing exports of U.S. crude. Growing shale production, particularly in the Permian, was supported by WTI Cushing prices above $60/barrel in early January. The backbone of higher prices since 2017 had been the OPEC+ agreement that limited the output of Mideast and Russian producers as well as U.S. sanctions on Iran and Venezuela, which curtailed production from those two countries. In this environment, new production out of the Permian flowed to the Gulf Coast and export markets.

Exhibit 1 Permian Triangle Jan. 6, 2020



Source: CME Group, Morningstar.

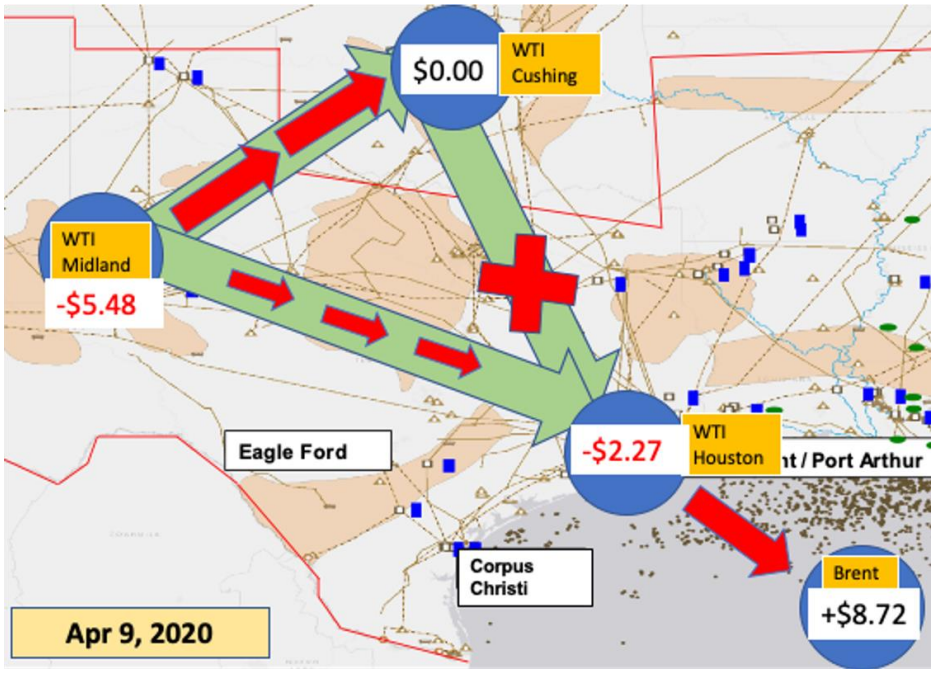
After the Storm

Then came the double whammy of the coronavirus and the breakup of the OPEC+ agreement, which crushed oil prices by 60% and sent WTI briefly below $20/barrel in the second week of March, pushing the market into a deep contango structure (see Corona Crude Contango).

The impact on the Permian triangle is illustrated in Exhibit 2, which shows prices for last Thursday, April 9 (markets were closed Friday for Easter). A lack of crude demand because refiners now have more than enough to meet reduced consumer appetite is reflected in heavily discounted prices at the Midland gathering hub, trading on April 9 at $5.48/barrel below WTI Cushing. Midland producers and shippers are desperately looking for storage to avoid taking a haircut on price. If producers can ship crude to Houston or elsewhere on the Gulf Coast, they get a better deal than Midland, with prices at MEH $2.27/barrel under Cushing or $3.21/barrel higher than Midland. Transport tariffs between Midland and Houston average about $1.50/barrel, creating a price benefit shipping barrels to the coast. However, the $3.21/barrel Gulf Coast premium over Midland is far smaller than the $5.48/barrel premium available at Cushing.

That means crude is pulled toward Cushing because the contango market makes storage the best option if you can source tankage. Since Cushing is the largest aboveground storage facility in the U.S. (71 mmb capacity) as well as the delivery location for CME Nymex futures, it facilitates virtually risk-free contango trades. Market demand for Cushing storage is therefore making it a magnet for U.S. crude with most other locations trading at a discount. EIA weekly data indicated Cushing crude inventory increased by 6.4 mmb during the week ended April 3 and 12 mmb or 32% since the end of February.

Exhibit 2 Permian Triangle April 7, 2020



Source: CME Group, Morningstar.

Export Market

The export market is harder to fathom in the current crisis. Based on the negative spread of $2.27/barrel on April 9 between Cushing and MEH, shipping crude from the Midwest hub to the coast is a losing proposition. Coastal refiners have their fill of crude, and storage is filling up, discouraging inbound barrels. However, the price of Brent crude in the international market is far more attractive than MEH, trading at a $10.99/barrel premium on April 9. That means if shippers can find waterborne transportation and deliver WTI at a Brent related price into (say) Northwest Europe in June, they'll make a hefty return. That $10.99/barrel WTI MEH discount is more than enough to cover higher freight rates that are twice their normal level to Europe and Asia, driven higher by demand for floating storage. In effect, although there's little demand for WTI at Houston, any crude stranded there that can't secure storage is being pushed offshore at deep discounts to Brent in order to find buyers. The EIA weekly export data corroborates this: Total U.S. crude exports averaged 3.7 mmb/d in March, and at 2.8 mmb/d during the first week of April remained close to levels seen all last year.

What is harder to understand is where U.S. crude exports are headed. Demand for crude in international markets is no different than in the U.S.—it's down sharply. The coronavirus lockdown is worldwide, so European refiners have no more use for crude than their U.S. counterparts, although there has been some pickup in sales to China in the past week. In fact resilient exports probably reflect demand to load crude onto floating storage rather than to ship it to specific locations for immediate refining. Crude is loaded onto tankers and either slow-steamed over a long distance to Asia or even parked in international waters to be delivered to market later as traders close out their contango futures position.

In the same way that we described the rush to use Caribbean storage for contango plays last week (see Caribbean Vacation for Surplus Crude?), we expect a good deal of the crude currently leaving the Gulf Coast to end up in floating storage.

Back to the Wellhead

During March, crude markets reversed from record domestic production and exports to drilling and production cutbacks and a scramble for storage. This weekend's OPEC + production agreement may be too little too late to stop the damage to shale output. The fundamental pressures on the market are reflected in changed Permian dynamics. The direction of choice for shippers and producers has changed from pipelines to Gulf Coast refineries and export markets to pipelines to the Midwest storage hub at Cushing. With storage filling up, however, the new fundamentals are discounting crude back to the wellhead and forcing producers to consider shutting in production.

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