# Corpus Christi: New Permian Window on the World

Pipeline and marine terminal investment ramps up.

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**Data Sources for This Publication**

- CME Group
- Port of Corpus Christi

To discover more about the data sources used, click here.

### Infrastructure Responds to Shale 2.0

CME Group West Texas Intermediate futures have averaged just under $52/barrel through April 14, a 21% increase from the $43/barrel average for 2016, following OPEC production cuts agreed to at the end of 2016. In this higher price environment, rig counts have recovered and major oil companies and independent producers alike are piling investment into Shale 2.0 production. Output is edging up in the Eagle Ford basin for the first time in two years and accelerating in the Permian basin, where the Energy Information Administration estimates production will increase by 200 thousand barrels/day in the first four months of this year. Within easy reach of the Eagle Ford and increasingly accessible to Permian barrels, the Port of Corpus Christi on the Texas Gulf Coast is the focus of significant investment in crude pipeline and marine export terminals. This note details infrastructure investment to deliver new crude output to refineries and splitters in Corpus Christi as well as export markets beyond.

### The Corpus Christi Advantage

Corpus Christi is no stranger to crude oil flows. The city is home to three large refineries with 750 mb/d processing capacity among them as well as two smaller condensate splitters (see our September 2016 note on Kinder Morgan's condensate splitter for more on these basic distillation units). At least 10 pipelines with nominal capacity of 2 mmb/d deliver crude from the Eagle Ford to Corpus Christi with one also linked to the Permian. During the initial shale crude surge, producers ramped up shipments out of the port from virtually nil in January 2012 to an average 670 mb/d in 2015, according to Port of Corpus Christi statistics. Before export regulations were lifted in December 2015, most of those shipments went by barge along the Gulf Intracoastal Waterway to refineries in Texas and Louisiana. At least seven marine dock terminals were developed in Corpus Christi to accommodate the armada.

All this development screeched to a halt in 2015 when oil prices crashed and production slumped in the Eagle Ford. Now the southern Gulf Coast port is back in the spotlight as higher inbound crude flows are expected from the Permian.

Corpus Christi is an attractive destination for incremental crude flows because it is accessible from both the Permian and Eagle Ford by pipeline. It is also a less congested alternative to the Houston market, discussed in our February note "Houston Infrastructure Responds." With Gulf Coast refineries now struggling to process more of the light crude produced from shale, all eyes are on the export market (as outlined in our February note "Crude Exports Top Million Barrels/Day"). Corpus Christi offers better real estate opportunities for midstream companies looking to develop marine dock and storage infrastructure as well as the possibility to accommodate larger tankers to deliver crude to world markets at lower cost.

## Pipelines

Exhibit 1 lists existing and planned pipelines to deliver crude into Corpus Christi. The first 11 entries are existing pipelines with combined capacity of 2 mmb/d that primarily deliver crude from the Eagle Ford basin. The first entry in the table is the 250 mb/d Plains All American Cactus pipeline that delivers crude from the Permian to Gardendale in Texas, from where barrels can be shipped to Corpus Christi via the 600 mb/d Plains/Enterprise Product Partners joint venture Eagle Ford pipeline or to Houston via Enterprise's Eagle Ford crude pipeline. Cactus was the first pipeline to serve both Permian and Eagle Ford basins. Increased shipper demand due to rising Permian output has prompted Plains to expand capacity on Cactus by 140 mb/d to 390 mb/d in the third quarter of this year.

**Exhibit 1** Crude Pipelines Delivering to Corpus Christi

| Pipeline | Owner | Basin | Origin | Destination | Capacity Mb/d | Future Expansion (mb/d) | Expansion Online |
|---|---|---|---|---|---|---|---|
| Cactus | Plains | Permian/ Eagle Ford | McCamey | Gardendale | 250 | 140 | Q3 2017 |
| Eagle Ford JV | Plains/ Enterprise | Eagle Ford | Gardendale | Corpus/ Houston | 600 | | |
| Double Eagle | Morgan | Eagle Ford | Gardendale | Corpus/ Houston | 100 | | |
| South TX Crude Pipeline | NuStar | Eagle Ford | Gardendale | Corpus | 250 | | |
| Oakville | NuStar | Eagle Ford | Oakville | Corpus | 30 | | |
| Pettus-to-Corpus | NuStar | Eagle Ford | Pettus | Corpus | 40 | | |
| Pawnee | NuStar | Eagle Ford | Pawnee | Corpus | 100 | | |
| Harvest | Hilcorp | Eagle Ford | Gardendale | Corpus | 250 | | |
| Pettus South | Koch | Eagle Ford | Pettus | Corpus | 250 | | |
| Rio Bravo | Energy Transfer | Eagle Ford | McMullen | Corpus | 100 | | |
| Victoria Express | Enlink Midstream | Eagle Ford | Victoria | Port Lavaca | 50 | | |
| South Texas Gateway | Buckeye | Permian | Wink/ Midland | Corpus | | 400 | 2019 |
| EPIC | TexStar, CCI & Ironwood Midstream | Permian/ Eagle Ford | Orla/ Midland | Corpus | | 590 | Q1 2019 |
| | | | | **Total** | **2020** | **1130** | |

Source: Company presentations, Morningstar

Expanding Permian production has also prompted at least two new pipeline projects to deliver crude from the Permian to Corpus Christi. If permitted and built on schedule, they would add another 1 mmb/d of capacity into Corpus Christi by the end of 2019.

- At the end of March, Buckeye Partners announced an open season for its proposed 400 mb/d South Texas Gateway pipeline to deliver crude and condensate from origination points in Wink and Midland, Texas, to existing Buckeye Texas Partners refining and export facilities in Corpus Christi. Buckeye plans to add additional storage, distribution, and marine dock facilities in Corpus Christi to accommodate crude flows if the pipeline is built. Buckeye will hold an open season in the third quarter with the expectation that the pipeline will be in service in 2019.

- A consortium of TexStar Midstream Logistics, Castleton Commodities International, and Ironwood Midstream Energy announced at the beginning of March an open season for its proposed Epic pipeline with up to 590 mb/d capacity that would deliver crude and condensate from Orla, Pecos, Crane, and Midland in the Permian Basin to Corpus Christi via Gardendale in the Eagle Ford. The initial open season is for 200 mb/d capacity, but the pipeline would be expandable to 440 mb/d between the Permian and Gardendale and 590 mb/d between Gardendale and Corpus Christi. The Epic pipeline would be supported by a storage and distribution terminal in Taft, just outside Corpus Christi, as well as a proposed marine dock on Corpus Christi's Inner Harbor. The planned in-service date for the pipeline is the first quarter of 2019.

**Local Corpus Christi Processing**

Crude and condensate barrels arriving in Corpus Christi by pipeline that are not shipped out for export or transported by water along the Gulf Coast are either processed locally by three refineries belonging to Valero, Flint Hills Resources (part of Koch Industries), and Citgo or (in the case of condensate) processed for Trafigura at one of two 50 mb/d condensate splitters. The first splitter, jointly owned by Trafigura (20%) and Buckeye (80%), has been up and running since mid-2016. The second, owned by Magellan but 100% contracted to Trafigura under a long-term agreement, is due online this month. Another 50 mb/d of splitter capacity planned by Magellan at Corpus Christi is currently waiting on customer commitments, and a 100 mb/d splitter planned by Castleton Commodities has been delayed until 2019. A former refinery owned by Gravity Midstream since 2015 was planned to be revamped as a condensate splitter or stabilization unit but so far has not begun operations, according to filings with the Railroad Commission of Texas. Among them, we estimate that current Corpus Christi processing plants consume approximately 450 mb/d of Texas shale crude, leaving significant remaining inbound pipeline volumes headed for the water.

**Marine Terminals**

Exhibit 2 lists the 11 crude terminals operating or planned in the Corpus Christi region together with associated incoming pipelines, crude storage capacity, and the largest vessel that can use the marine dock. The first eight rows in the table are currently operating facilities; all have marine docks except the Buckeye/Trafigura joint-owned Texas Processing hub and Texas Hub terminal, which share dock space. The joint venture Eagle Ford Terminal owned by Plains and Enterprise is currently being built out and expected to be complete in 2018. Castleton Commodities is a joint venture partner in the Epic pipeline and marine terminal project set for completion in 2019. Castleton also plans to complete its own terminal and dock in 2019 in conjunction with the completion of the Epic pipeline and its proposed condensate splitter. Together, these terminals boast 20 million barrels of crude storage capacity.

**Exhibit 2** Corpus Christi Terminals

| Terminal | Company | Incoming Pipelines | Largest Vessel | Crude Storage (Million Barrels) |
|---|---|---|---|---|
| North Beach Terminal | NuStar | Multiple Koch/ | Suezmax | 2.00 |
| Martin Terminal | NuStar | Harvest | Aframax | 0.90 |
| Ingleside | Koch/FHR | Texas | Aframax | 2.70 |
| Oxy Ingleside Crude | Occidental | JV | Aframax | 2.10 |
| Texas Processing | Buckeye/ Trafigura | South Texas Gateway? | N/A | 2.20 |
| Texas Hub | Buckeye/ Trafigura | Rio Bravo | Aframax | 2.30 |
| Magellan Avery Point | Magellan | Eagle | Aframax | 3.00 |
| Viola | Plains | JV | Barge | 0.10 |
| Eagle Ford Terminals (2018) | EPD/Plains | Eagle Ford JV | Aframax | 1.50 |
| EPIC Corpus Marine Terminal | TexStar, CCI & Ironwood Midstream | EPIC | Aframax | 1.00 |
| Castleton Commodities | CCI | EPIC | Aframax | 2.20 |
| | | | **Total** | **20.00** |

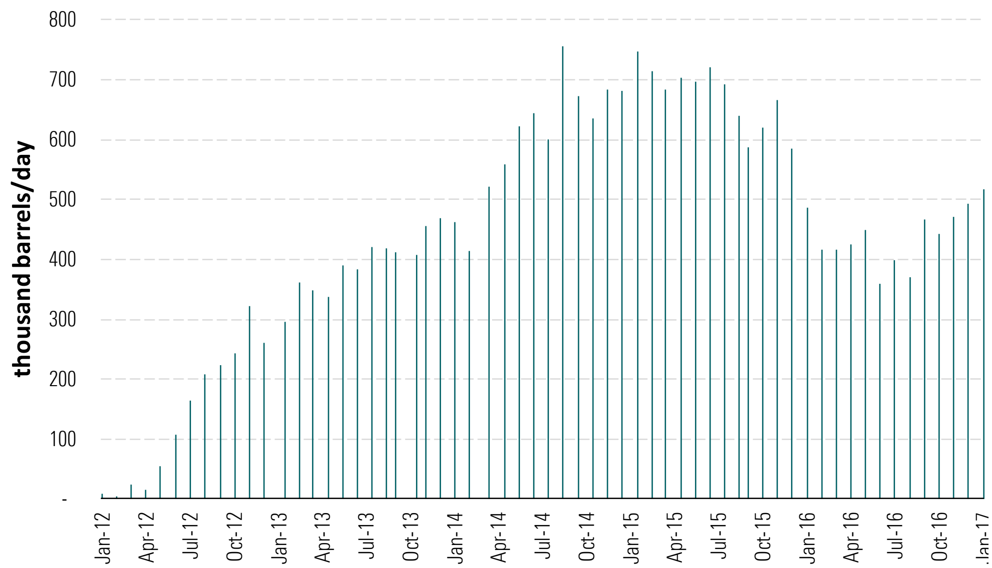
Source: Company presentations, Morningstar

The largest tanker vessel currently fully accommodated by the Port of Corpus Christi is the 700,000-barrel capacity Aframax. However, during the first week of April, NuStar loaded 930,000 barrels onto a Suezmax tanker (which can carry 1 million barrels) at its North Beach terminal—the largest tanker ever loaded at Corpus Christi. The Corpus Christi ship channel is not deep enough to accommodate a completely loaded Suezmax at present, although the port is currently investing in a channel-dredging and bridge-replacement project that will accommodate fully loaded Suezmax vessels in 2020. That addition gives Corpus Christi an important advantage over competing Gulf Coast ports, which mostly only accommodate Aframax vessels. The only U.S. port that handles 2 mmb-plus very large crude carriers is the Louisiana Offshore Oil Port (see our recent two-part note "Can LOOP Be a Gulf Coast Cushing?"), but that is currently an import-only facility.

### Outbound Shipments

The volume of crude and condensate crossing the docks onto barges and tankers in Corpus Christi zoomed from virtually nil in early 2012 to an average 670 mb/d in 2015. Exhibit 3 shows monthly outbound throughput since then, according to port statistics. After oil prices crashed in 2015 and Eagle Ford production declined, outbound shipments fell to a low of 358 mb/d in June 2016 but are now recovering, up 64% to 587 mb/d in February 2017. Port data indicates that the volume of barge traffic has fallen off since 2014 and the volume of oil tankers has increased, suggesting more crude is traveling on larger vessels, presumably over longer distances. Corpus Christi docks were the origin for the first U.S. crude export cargo shipped in January 2016 after restrictions were lifted. Crude export cargoes are now leaving the port regularly.

**Exhibit 3** Corpus Christi Crude and Condensate Outbound Shipments




Source: Port of Corpus Christi, Morningstar

### Too Much Too Soon?

Pipeline capacity into Corpus Christi is overbuilt today, with 2 mmb/d in service. Eagle Ford production was estimated by the EIA at 1.1 mmb/d in February, and if the Cactus pipeline (from the Permian) were full, it could carry another 250 mb/d for a theoretical total of 1.35 mmb/d that these existing pipelines could carry—or 650 mb/d less than capacity. That total takes no account of volumes flowing out of the Eagle Ford on Kinder Morgan and Enterprise pipelines direct to Houston rather than Corpus Christi. Although this existing overcapacity makes building new pipelines sound ill-advised, today's new projects are all designed to take Permian crude to Corpus Christi rather than add to the glut of Eagle Ford pipelines. If bullish production estimates for the Permian are realized, then we could see another million barrels a day of Permian production by 2022, according to Bentek. Given that existing refining capacity and dock infrastructure in Houston is congested already, the investment to get incremental new barrels delivered to tidewater at Corpus Christi for export makes sense. The midstream planners are doing their part to anticipate that infrastructure need and make ready for a new flood of shale crude.

Nevertheless, it should be noted that without increased world demand for expanding U.S. crude exports, an oversupplied market could prompt lower prices that might in turn choke off new shale production before planned new pipelines come on line. That is the quandary for today's midstream developers in a postshale world with shorter boom and bust cycles.

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