Houston Infrastructure Responds to Prospects of New Crude Flows

Legal tussle over pipeline connections.

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Sandy Fielden
Director, Oil and Products Research
+1 512 431-8044
sandy.fielden@morningstar.com

Data Sources for This Publication

- ClipperData
- U.S. Energy Information Administration

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Midstream Competition for the Final Mile

As domestic crude production begins to recover and larger volumes flow to the Gulf Coast, competition is building among midstream companies for control over the final mile from pipeline to refinery or marine dock. Nowhere is this more evident than the Houston area, where more than a dozen pipelines can deliver as much as 4 million barrels/day, or mmb/d, to the region's 10 refineries as well as export docks. Owners of the long-distance incoming pipelines, seeking to secure terminal, storage, and dock fees, are making significant midstream investments in Houston, but smaller players are also building assets. An ongoing dispute about connection rights in the Houston crude oil distribution system reveals just how competitive the market has become.

Incoming Crude

Current incoming crude pipelines into Houston from the Permian Basin in West Texas, Eagle Ford in South Texas, Offshore Gulf of Mexico, and Legacy South Texas Basin can carry as much as 1.85 mmb/d of domestic crude. The two Enterprise/Enbridge Seaway pipelines and the TransCanada Marketlink from Cushing, Oklahoma, can between them ship an additional 1.55 mmb/d of domestic and Canadian crude into Houston. Another 0.5 mmb/d of pipeline capacity will be added into Houston in the coming year from the Permian via two sources: 1) the expansion of the Magellan/Plains BridgeTex pipeline by 100 mb/d mmb/d in second-quarter 2017; and 2) Enterprise Products Partners' new Midland, Texas, to Sealy, Texas, pipeline, which is expected on line in mid-2018. That's a grand total of 3.4 mmb/d of crude pipeline capacity (see complete listing in Exhibit 1). In addition to incoming pipelines, waterborne crude imports (all grades) to Houston-area refineries averaged 950 mmb/d in 2016 through November, according to the Energy Information Administration, or EIA.

Exhibit 1 Incoming Houston Crude Pipelines

Origin	Pipeline	Owner	Capacity Jan 2017 (mb/d)	Future Capacity (mb/d)	Date Online
Permian	Longhorn	Magellan	275		
Permian	BridgeTex	Magellan/Plains	300	100	Q2 2017
Permian	West Texas Gulf to OTI	Sunoco Logistics	100		
Permian	Permian Express II	Sunoco Logistics	200		
Permian	Midland-Sealy	Enterprise		450	mid-2018
Cushing	Seaway 1	Enbridge/Enterprise	400		
Cushing	Seaway 2	Enbridge/Enterprise	450		
Cushing	Marketlink Houston Lateral	TransCanada	700		
Eagle Ford	KMCC	Kinder Morgan	300		
Eagle Ford	Eagle Ford Crude	Enterprise	475		
South Texas	South Texas System	Genesis	12*		
Offshore GOM	Multiple	Genesis, XOM	200*		
		Total	3412		

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Eagle Ford	Eagle Ford Crude	Enterprise	475		
South Texas	South Texas System	Genesis	12*		
Offshore GOM	Multiple	Genesis, XOM	200*		
		Total	3412		

** estimated throughput*

Source: Morningstar, Company Presentations

The 10 refineries in the Greater Houston area can process a maximum 2.5 mmb/d of crude oil. Houston crude infrastructure has to deliver to these refineries and distribute surplus incoming crude to refineries further east along the Gulf Coast at Port Arthur/Beaumont, Texas, and Louisiana via the 250 mb/d mmb/d Shell Zydeco and the 750 mb/d mmb/d Enterprise Crude Houston, or ECHO, to Beaumont pipelines. Excess crude can also be exported from Houston docks or shipped along the Gulf Coast to Louisiana or up the East Coast to be processed in U.S. refineries. Crude waterborne exports from Houston docks averaged 137 mb/d mmb/d in 2016 (through November) according to ClipperData.

More on the Way

At the moment, Houston infrastructure is overbuilt because anticipated growth in domestic crude production ground to a halt in 2015, when many of the incoming pipelines were just coming on line. As we described in our January Note Shale Productivity, crude oil production from the Permian Basin is growing again after slowing down during 2015 and 2016 in response to lower prices. That means higher

volumes of crude can be expected into the Houston area this year from the Permian, with some estimates putting production increases during 2017 in the range of 400 mmb/d. The new Midland-Sealy pipeline and the BridgeTex expansion we noted above can accommodate these volumes. Output from the Eagle Ford is not expected to recover so rapidly, and volumes are still down considerably from their highs in 2015, leaving excess capacity on pipelines from that basin into Houston. There is also excess pipeline capacity between Cushing and Houston on the two Seaway pipelines and the Marketlink Houston Lateral because domestic supply from the Permian and Eagle Ford has supplanted light crude flows on these lines and heavy crude flows from Western Canada are constrained by congestion across the U.S. Canada border. Crude flows from Cushing to Houston can be expected to increase as volume ramps up on the newly opened Saddlehorn-Grand Mesa pipeline from the Niobrara Basin to Cushing. If the Trump administration approves a border crossing for TransCanada's Keystone XL pipeline, it could add as much as 800 mb/d mmb/d to Canadian crude flows into Cushing, most of which would then head to the Gulf Coast. The January EIA Short-Term Energy Outlook is also forecasting a 130 mb/d mmb/d increase in Gulf of Mexico crude production that will flow to refineries along the Gulf Coast, including Houston.

Houston Crude Distribution

So, while Houston is overserved with incoming pipeline capacity, the region expects to handle growing volumes of crude oil in coming years. Midstream infrastructure companies have not ignored this challenge. The Houston crude distribution system continues to expand and has lately become very competitive, as midstream companies not only want to maximize crude throughput and fees for their incoming pipelines, but also want to receive terminaling and storage fees from the final distribution process to refinery or export markets in Houston.

This is especially true for the larger players on the Midstream block—Enterprise, Magellan and to a lesser extent, Kinder Morgan. As we explained in our August 2016 Note Permian Midstream Adjusting to Lower Growth, owners of long-haul takeaway pipelines have expanded their control over gathering systems in that basin to lock up volumes into their transport hubs. The January acquisition of the Alpha Crude Connector gathering system by Plains All American is another example of this. It follows that pipeline owners also want to control barrels at the distribution end of their long hauls. As a result, these companies have invested heavily to increase storage, marine dock capacity, and even processing assets, in the case of Kinder Morgan (see our September 2016 Note Kinder Morgan Splitter). The purpose of building out these assets is to provide incoming pipeline shippers with the facilities they need to serve refineries in the Houston area and, as throughput increases, to provide marine dock access for domestic or export shipments out of the region.

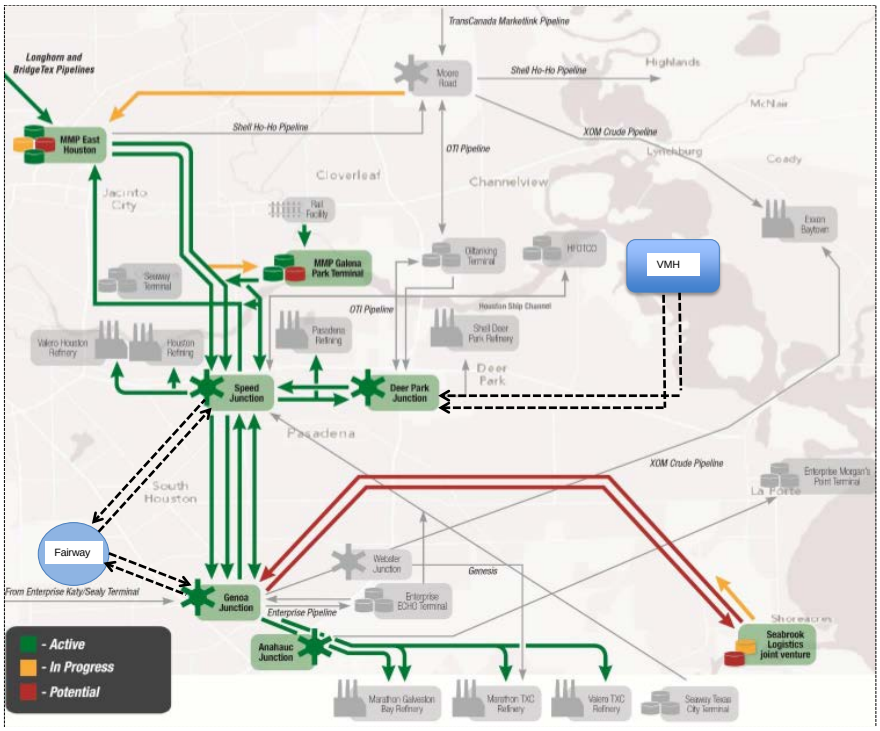
To that end, Enterprise increased its footprint in the Houston crude distribution system considerably through the late 2014 acquisition of OilTanking assets, which now include over 24 million barrels of storage capacity, seven deep-water ship docks, and two barge docks on the Houston Ship Channel. OilTanking assets, now called the Houston Ship Channel terminal, provide connections, storage, and dock services to the incoming TransCanada Marketlink, incoming Kinder Morgan Crude & Condensate, and outgoing Shell Zydeco pipelines, as well as four Ship Channel refineries. Enterprise has also

expanded export dock capacity at its Texas City and Freeport terminals on the Seaway pipelines from Cushing. The newer ECHO storage terminal southeast of Houston which provides a connection eastward to marine docks and refineries in Beaumont, Texas, is linked to incoming crude from Seaway, as well as the Enterprise Eagle Ford pipeline, and. provides a connection eastward to marine docks and refineries in Beaumont, Texas.

Magellan Midstream has built out its Houston assets by acquiring pipelines and terminals and building new storage and pipeline connections, such that it now plays a dominant role in Houston's crude distribution system (see map in Exhibit 2). Magellan owns 100% of the incoming Longhorn and 50% of the incoming BridgeTex pipelines from the Permian Basin and operates both assets, which deliver crude to its East Houston terminal. East Houston now has 4.6 million barrels of storage capacity and is a liquid trading hub for West Texas Intermediate Houston crude. The terminal is connected to refineries on the Ship Channel through the company's Speed Junction hub and to refineries in Texas City and Galveston through its Genoa Junction hub. East Houston is also connected to the Shell Zydeco pipeline (formerly Ho-Ho) to Louisiana, and Magellan expects to complete a joint-venture pipeline link with TransCanada in second-quarter 2017, to the latter's Houston terminal delivery point for the Marketlink pipeline from Cushing.

While Magellan dominates Houston pipeline distribution, the company lacks dock space for shippers looking to export crude. Magellan has docks at its Galena Park terminal on the Ship Channel, but these are primarily for refined products. To remedy that gap, Magellan entered into a joint venture with LBC Tank Terminals in 2015 to build out crude oil storage and a deep-water ship dock at LBC's existing Gulf Coast Seabrook, Texas, terminal. The first phase of the project, with 700,000 barrels of storage, is due on line in first-quarter 2017. Investment plans announced by the partners in December 2016 and due on line in mid-2018 include expanded storage at Seabrook, as well as pipeline links to and from Magellan's Houston distribution network at Genoa Junction and an expanded marine dock capable of handling larger Aframax tankers that can't be accommodated inside the Ship Channel.

Exhibit 2 Houston Ship Channel Crude Infrastructure



Source: Magellan, Morningstar

As we mentioned, Kinder Morgan has a smaller crude distribution footprint in the Houston area. The company's crude and condensate pipeline from the Eagle Ford delivers into the Enterprise Ship Channel terminal, as well as Kinder's Pasadena terminal. The Pasadena terminal is linked to Kinder Morgan's Galena Park storage and marine terminal, which also houses its condensate splitter. The Galena Park dock facilities are primarily used to ship out refined products.

Another smaller midstream company, Genesis Energy operates the legacy South Texas pipeline system, as well as offshore Gulf of Mexico pipelines that deliver into the Houston region. Genesis has recently completed a new terminal and pipeline to receive Gulf of Mexico crude production and distribute it to Texas City and Houston refineries, including under a long-term agreement to supply ExxonMobil's Bayway refinery.

Stand-Alone Projects

At the same time as these midstream pipeline companies have been carving up the Houston crude distribution network, two smaller stand-alone projects have emerged, one offering merchant storage and the other offering both storage and dock facilities. The first of these is the Fairway Energy Partners Pierce Junction facility, offering an initial 11 million barrels of underground salt cavern crude storage that is currently expected on line in April 2017. The Fairway facility is connected by pipeline to and from both the Genoa and Speed junction terminals and will lease storage space to Houston shippers and refiners looking to stage incoming crude supplies for processing or to build up larger volumes for export cargoes.

The second, more recent project is a joint venture between international terminal company Vopak and Houston-based operator Moda Midstream, backed by Encap Flatrock Midstream Capital. The Vopak Moda Houston, or VMH, terminal will be constructed on land owned by Vopak adjacent to the Ship Channel. The terminal will include storage (up to 12 million barrels eventually), blending capability, and deep-water vessel docks. The partners have received environmental permits and are proceeding to build out the facility, which is currently expected on line in late 2018 or 2019.

These two projects aim to provide crude storage, blending, and distribution services for Houston-area shippers that complement and compete with those provided by the bigger midstream pipeline players. However, these stand-alone assets rely on connectivity to the rest of the Houston crude distribution system to receive incoming crude or deliver outgoing crude. As we have described, Magellan owns much of that system, including Genoa and Speed Junctions. The Magellan system also includes access to Magellan East Houston, as well as the Houston Ship Channel refineries.

Railroad Commission Complaints

Recent filings with the Texas Railroad Commission, the state pipeline regulator, suggest that the process of connecting Houston infrastructure has become strained in the past nine months. Both Fairway and VMH have filed complaints with the TRRC concerning Magellan's failure to provide them with requested pipeline connections to their crude distribution system. Fairway filed an initial complaint in March 2016, and VMH filed its subsequent complaint in January 2017, requesting that the Commission combine both complaints under the same docket. A TRRC administrative law judge is expected to provide a further ruling on the dispute in April.

Importance of Connectivity

We don't know how this turf war will end. Fairway has already negotiated connection agreements with both Enterprise and Kinder Morgan. VMH is relying on pipeline connections to Magellan at Deer Park Junction. Both complainants allege that Magellan should be required to provide connections under common carrier pipeline regulations. Although relatively rare, this kind of dispute is arguably inevitable in a region where multiple players are building new infrastructure and no one wants to give their competitors an advantage. The conflict highlights the importance of connectivity for stand-alone assets and the desire of larger players with consolidated assets to hold onto every barrel passing through their system as the post-shale crude distribution system matures.

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For More Information

+1 800 546-9646 North America
+44 20 3194 1455 Europe
commoditydata-sales@morningstar.com

MORNINGSTAR®

22 West Washington Street
Chicago, IL 60602 USA