

Eagle Ford takes flight

Nothing has changed the outlook for the American petroleum industry – and several Koch companies – quite like recent shale discoveries in the United States, including the Eagle Ford Shale in South Texas.

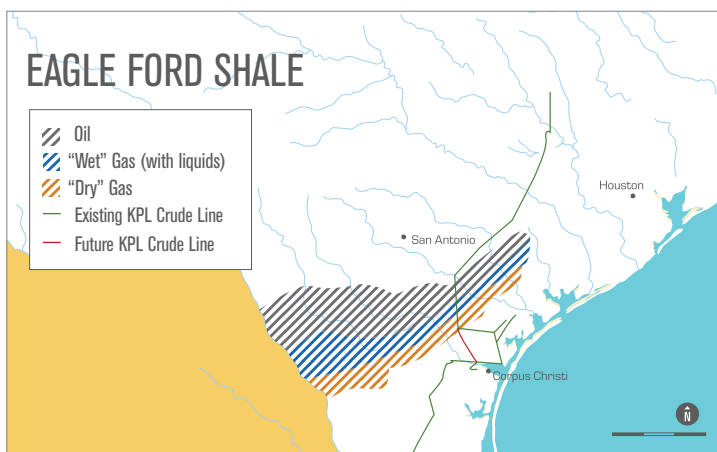
Eagle Ford is an underground rock formation that stretches from just north of Laredo to a point halfway between San Antonio and Houston.

Large quantities of crude oil and natural gas have been found in this area at depths ranging from 4,000 to 14,000 feet.

Efforts to reach those deposits have prompted the deployment of hundreds of drilling rigs. As of mid-September, there were more than 200 active rigs in the area, most of them drilling for oil.

Almost all of these rigs use horizontal drilling techniques and multi-fracking technology, developments that make efficient oil and gas extraction possible.

The Eagle Ford Shale is considered ideal for this type of extraction, especially when compared to other shale formations, such as the Marcellus in northeastern Pennsylvania.



The Eagle Ford Shale formation in South Texas is roughly 50 miles wide and 400 miles long.

A new strategic reserve

The ability to produce substantial quantities of oil and gas at a lower cost than imported petroleum (especially from unstable regions) is quite helpful to the U.S.

Increased domestic oil and gas production can also lead to increased job opportunities for Americans and increased revenues

for state and local governments – a big plus at a time of chronically high unemployment and a struggling economy.

In Corpus Christi, where much of the new production is refined, the local newspaper estimates that Eagle Ford already supports 13,000 full-time local jobs and has the potential to support as many as 70,000.

In short, all of this new, profitable activity involving shale plays in South Texas, North Dakota and elsewhere, is contributing to the overall prosperity of the U.S.

Thinking big, bigger

These effects are clearly visible at Koch Pipeline Company, the largest transporter of South Texas crude oil.

Bob O'Hair, executive vice president of Koch Pipeline, says new production from domestic sources has had a dramatic effect on the size of KPL.

"In the past year, we've upped our overall pipeline employment by at least 20 percent," O'Hair said. "In Corpus Christi, at least 35 new employees have been hired. And as more and more production comes online, those numbers will only increase."

Pipelines such as those operated by KPL in Texas and Minnesota are essential to the success of petroleum producers. Before crude oil or natural gas can be processed at a refinery or gas liquids plant, it must be collected and safely stored.

Pipelines are, by far, the safest, most economical and most efficient transportation medium for petroleum products. The first step in serving Eagle Ford producers was to take advantage of existing assets. In Bee County, Texas, where KPL has a relationship with NuStar Energy, a dormant 10-inch pipeline from Pettus to Corpus Christi was restarted in June.

That pipeline now transports more than 30,000 barrels of Eagle Ford crude every day.

Although KPL already has 540 miles of active crude oil transportation lines in Texas, it has developed plans involving more than 100 miles of new pipeline construction. Much of that could be in the ground by the end of next year.

Construction on a station in Helena with connections to nearby storage tank batteries is nearing completion, and a pipeline from Helena to Pettus is almost finished.

"Because there is so much new production, we've had to think in terms of bigger pipe," O'Hair said. "Before, our largest pipe in the Eagle Ford area had a 12-inch diameter. Now we're talking anywhere from 16 to 20 inches."

That difference is bigger than it may seem. Depending on pressures, pump stations and other factors, a 20-inch pipeline can carry four times more product than a 10-inch pipeline.

O'Hair estimates KPL's new 20-inch Pettus-to-Corpus Christi pipeline will have a carrying capacity of at least 250,000 barrels per day. It would take more than 1,200 tanker trucks to move that much crude oil over surface roads.

"That's a staggering amount of increased volume," said Brad Razook, president of Flint Hills Resources. "It took our largest refinery, Pine Bend, more than 35 years to get big enough to process that much crude."

Refined perspective

Flint Hills Resources, which owns and operates a refinery and chemicals complex in Corpus Christi, is also thinking of how to serve Eagle Ford customers.

"We are very focused on supporting market and infrastructure solutions for Eagle Ford producers," said Brad Urban, FHR's senior vice president of crude oil.

When Eagle Ford crude arrives in Corpus Christi, several things can happen. Typically, it is processed by refineries





KCTG's Optimized Process Designs was chosen to design and build this plant for processing gas liquids from Eagle Ford.

into a variety of products, such as fuels and building-block chemicals, including those used for many popular plastics.

Crude oil can also be stored at tank farms or directed to terminals where it can be offloaded onto ships and barges.

FHR recently purchased a small craft pier and wharf next to its existing crude oil terminal in Ingleside, Texas, which already has access to Eagle Ford production.

FHR expects those assets will enable large volumes of outbound waterborne shipments of Eagle Ford production by the middle of next year.

"We have several long-term purchase contracts with producers and are in discussions with many more," Urban said. "We want to reach terms with them that add value for the producers and also FHR."

Eagle Ford and other shale plays are also benefitting FHR's olefins facility in Port Arthur, Texas, by increasing the supply of natural gas liquids used as a feedstock.

Koch connections

The number of Koch companies involved in Eagle Ford production is significant.

Koch Supply & Trading, for example, is already trading Eagle Ford crude to help supply FHR's Corpus Christi refinery complex and other customers.

KS&T and FHR have also announced plans to transport Texas crude from the Permian Basin via a rail line.

Optimized Process Designs, a part of Koch Chemical Technology Group, designed and is building a gas liquids processing facility near Yoakum, Texas,

for Enterprise Products.

"Enterprise," explained Jim Kuehler, president of O.P.D., "wants a plant with three trains that will handle a total of 900 million cubic feet of gas per day."

"We've been working in the field with them for six months and expect the first of three trains to come online in April 2012. This is easily the largest project we've ever worked on – by a factor of three or more."

O.P.D. is also helping several other clients whose plants were not designed to process the "wet" gas coming out of Eagle Ford. "With all this demand, we've tripled our employment," said Kuehler, "with most of that increase directly related to Eagle Ford."

makes most of its products from natural gas. That feedstock is now more plentiful and less costly.

Shale developments have also prompted Georgia-Pacific to expand its capabilities in Lufkin, Texas, where it produces resins used to coat proppants (used in well completion to prop open micro-fractures, allowing oil or gas to flow through).

The big picture

Ron Vaupel, head of Koch's business development group, is excited about the potential for all of Koch Industries as a result of new shale production.

"What's important about this is not just the prolific amount of new domestic petroleum production, it's also seeing how Koch companies are working to provide the best solutions for shale producers, whether they're in Texas or North Dakota."

"We're having to adjust and be very entrepreneurial about this to capture the opportunities," Vaupel said.

"Buying an existing asset is relatively simple. Adapting to an unexpected opportunity like this is more challenging."

FHR, for example, wants to enable its Corpus Christi refinery complex to handle the different grades of crude produced from Eagle Ford. That effort is likely to cost hundreds of millions of dollars.



Corpus Christi - The widely varying characteristics of Eagle Ford crude pose a processing challenge for many South Texas refineries.

John Zink, another Koch Chemical Technology company, will provide the flares for KPL's new terminal in Helena.

The large quantities of natural gas coming from domestic shale formations have been a boon to Koch Fertilizer, which

"Doing all of this successfully means we've really got to pull together all our capabilities if we want to be competitive," Vaupel said. "Tackling that kind of challenge across so much of Koch Industries is really exciting."