Breakout 1E – The Future of Renewable Fuel Industry and the Impact of Natural Gas

Senator Eddie Fields (OK) moderated this panel. He introduced the two speakers. Geoff Cooper, Exec. VP of the Renewable Fuels Association, who oversees market analysis policy research and strategic planning; and John Harpoole, President of Mercato Energy, LLC, a natural gas service brokerage and energy market analysist company.

ETHANOL

Mr. Cooper began the discussions by bringing a brief update on the current state of the ethanol industry. His Renewable Fuels Association is the national trade association that represents the ethanol industry whose members are producers of ethanol, and also marketers and vendors to the industry.

Marketplace Update

The ethanol industry continues to grow. There are currently approximately 200 plants in 29 states that are producing ethanol today. In 2017, sales of ethanol hit record highs, producing approximately 15.8 billion gallons. For reference, in 2005, under 4 billion gallons were produced.

The ethanol produce is being used domestically. Almost 14.4 billion gallons was blended domestically in the gasoline pool, most of that as E-10 (10% ethanol blends), but some of it is E-85, which is used in flex fuel vehicles (FFVs), 20 million are on the road today, or 1 out of 10 vehicles, capable of using 85% ethanol. Twelve hundred stations in states across the country sell E-15, which was approved by the EPA for use in 2001 in newer vehicles, or 90% of today's fleet.

Exports of ethanol are increasing as well. In 2017, 1.3 billion gallons of ethanol were exported, or 7% of production. Canada is the top importer. Brazil is the second, whose ethanol production is short of their requirements. Europe and other South American countries, even the Middle East, are all importers of U.S. ethanol. Demand is solid in the global marketplace.

With the low price of corn, farmers need to have more ethanol produced. The E-15 benchmark is insufficient. They need to see E-30 in order to make a profit on the corn. If gasoline demand decreases the way EIA projects that it will, E-15 will be at the same levels as today with E-10 fifteen or twenty years down the road. A midlevel blend in the E-30 range is really the sweet spot for ethanol because of the octane content. Changes to existing regulations would have to be made, and automakers would have to adjust as well.

Feedstock

The feedstock is primarily corn. Approximately 95% of the ethanol made comes from corn. Three to four percent comes from grain sorghum, and another 1-2% coming from food and beverage waste and cellulosic biofuels (crop residues, wheat straw, etc.) The most recent trend is using the cellulosic fiber in the corn kernel. Ethanol plants are today converting that cellulose into ethanol, as well as the starch.

In addition to the 15-16 billion gallons of ethanol, the industry also produces a tremendous amount of animal feed. Every bushel of corn that goes into the process, about 1/3 of that comes back to the animal feed market in the form of distiller's grains, fed to cattle as well as poultry and swine.

Policies that are Affecting the Industry

The Renewable Fuel Standard (RFS) is the federal requirement that refiners blend increasing amounts of renewable fuels in gasoline and diesel every year. This year, 2018, the requirement is about 19.5 billion gallons of renewable fuels, 15 billion of which is primarily corn-based ethanol, and the other 4.5 billion gallons is going to be primarily biodiesel. There are also smaller amounts of advanced biofuels that are required to be blended as well.

The RFS has been a critically important program to the U.S. ethanol industry, providing access to the gasoline market, which has been dominated by the fossil fuels in the past.

A few state policies are impacting the industry as well. The California Low Carbon Fuel Standard (CLCFS) is a policy that requires fuel suppliers in the state of California to reduce the carbon intensity of the fuels that they are supplying to the market. Ethanol reduces greenhouse gas emissions compared to fossil fuels by 40-45%, so it is an important tool in compliance with the CLCFS.

The Fuel Economy Standards (CAFÉ and Tailpipe Standards the EPA administers) are going to be very important for the industry as well. The Obama-era standards requires significant increases in fuel economy, with a goal of 55 mpg by 2025. Those standards are now under review by the EPA. It is expected that Sec. Pruitt will come out with a determination of whether those long-term targets are achievable or not. However, automakers are looking at the CAFÉ standards, and are investigating every possibility. One alternative they are researching is the use of high octane fuel in a high compression ratio engine, which gives significant increases in efficiency. There is a real opportunity here for ethanol.

NATURAL GAS

There has been so much interest in natural gas as a transportation fuel as well. Ethanol is effectively a natural gas transportation fuel, whether it is the fertilizer on the farm or the thermal energy used at the ethanol plant. Ethanol has very good synergies with the natural gas industry.

John Harpoole spoke next, and said the story is simple on natural gas. The U.S. has been exploring for over 30 years for natural gas. We are now tapping the source rock, and it's now just a question of manufacturing. He feels it is the biggest energy breakthrough – the combination of horizontal drilling and hydraulic fracturing in the source rock – that we've seen in energy since splitting the atom.

Fracking is predicated on private property ownership of minerals, and the arm's length transaction between a publicly-traded company and that private property owner that has given rise to the Shale Revolution.

Stories of Change

Mercato manages about 1.5 billion cu ft of gas per day. They are a broker of natural gas. A client of theirs, Dyno Nobel in Louisiana, buys 100,000 mmbtu a day of gas. There are 8 sugar beet plants that have been a client for 25 years. But most efforts are showing producers how to find a market.

In the past, the only place to buy natural gas was off the Gulf Coast, and estimates were that 20% of the U.S. demand for natural gas would have to be imported. The pipeline from the Rockies was built in the early 2000s. Now, with the Marcellus Utica Shale Play, this has all changed. See complete data here.

There is now 14 billion cu ft of new gas in Ohio and Pennsylvania and West Virginia. There was a swing of 4 in need to 14 in supply – an 18 bcf swing per day – thanks to the Shale Revolution. The real issue is there is a superabundance of natural gas, enough so we are exporting 4 billion cu ft of gas per day now. Mr. Harpoole thinks that this is the greatest story of capitalism that the U.S. has had in the last 50 years.

The United States is the only country that has private ownership of minerals. Therefore the royalties paid to private landowners for mining under their land is unique and profitable for them. However, the landowners should carefully review the payments for accuracy. There was discussion about the safety of fracking and potential ground water contamination and disposal.

Capacity of Infrastructure

The Marcellus Shale Play is a similar environment that the Rockies were in ten years ago, in that they have to build pipeline capacity in order to get that gas out. What is interesting is that, with the Marcellus Play, you are in a higher populated area than you are in the west, and the DOT regulations and the injection of opinions about natural gas pipelines that caused a lot of states to slow down the development of pipeline expansion.

In gas pipelines, demand is balanced on a 24-hour basis, unlike solar or wind. The presumption in the tariff is you will transport your gas ratably over that 24 hours. So the pipelines are not incented to be built out because of shipper commitments for 24 hours to bill out for 4 to 6 hours. So the question is do we build out pipeline capacity to meet the needs of a service territory that's overbuilt renewable energy? Does it make sense?

A question was asked about the future of building cellulosic ethanol plants. There are plans to build new facilities. Where there is most investment in cellulosic ethanol is in the corn kernel fiber.

Another question was asked about the possibility of importing natural gas through pipelines from Western Canada into the Western United States. The potential has not been realized. Another question was asked about Mexico's exporting capacity, and Mr. Harpoole said there was no competition for the U.S. He sees Mexico importing natural gas from us to retrofit their coal burning power plants.

The Export Market

Questions were asked about the potential of foreign markets, including Asia and Africa. Alaska has a huge advantage with the Asian markets, because gas from other locations has to go through the Panama Canal. The costs of crossing the Canal is exorbitant. But Alaska's proximity to Japan, South Korea and China, 98% of the gas comes in by boat. Alaska has a 4-5 day advantage over any Gulf Coast suppliers.

China

He went to China and taught a two-day course on how the U.S. gas system works. He met the country manager for EOG Resources, a U.S. based company drilling in the Szechuan Basin. He asked the man, 'How many horizontal wells have been drilled in China?' In the U.S., over the last ten years, we have drilled over 160,000 horizontal wells. He said, 'Twenty-two.' Our capacity is so much greater.

This capacity and expertise will change the way we interact with people around the world.