



Energy Resources UPDATE

The Drivers of Change at Ceraweek 2013

Optimism dominated this year's CERAWeek as presentations and discussions explored the unconventional energy resources that will undoubtedly continue to play a key role in the future of the U.S. and global energy industries. However, the conference also offered a reality check to the growing enthusiasm. While past global energy transitions have often been driven by resources that were more inexpensive, abundant and versatile, this year's conference highlighted how today's energy decisions are being driven by realities that will require market, policy and environmental solutions. Key conversations revolved around:

The Future of U.S. Oil Refineries

Similar to last year, shale was a primary focus for discussions of unconventional resources. Natural oil-producing shale formations, such as Eagle Ford in Texas and Bakken in Montana and North Dakota, have been driving a renaissance in U.S. oil production. As this production continues to grow, it will further strain U.S. oil refining capacity. With most U.S. refineries designed to handle conventional, heavy sour crude oil, fewer U.S. refineries have the ability to refine the light sweet crude extracted from shale formations.

The United States has several options for handling this situation. It can adapt and grow its refining infrastructure to better incorporate and support the production of shale. Alternatively, lawmakers can try to alter existing laws that prohibit the exportation of unrefined petroleum products, allowing the United States to sidestep the capital outlays required to adapt its refining capacity. Attendees at CERAWeek indicated that while no decisions on the matter are imminent, the future of U.S. refining will grow more pressing as the United States ramps up its shale production.

A more immediate concern for the United States may be the Keystone XL Pipeline, a plan that proposes constructing a 1,179-mile, 36-inch diameter crude oil pipeline beginning in Hardisty, Alberta, and extending south to Steele City, Neb. With the United States' Canadian neighbors developing their own unconventional oil resource—their oil sands—the pipeline would have the ability to transport 830,000 barrels of heavy sour crude per day from the oil sands to U.S. Gulf Coast and Midwest refineries. While this plan would reduce American dependency on Middle Eastern and Venezuelan oil by up to 40 percent, the White House has yet to sign off on the plan. Serious concerns over the environmental ramifications of the plan have delayed the decision and, with many complex factors to consider, the final decision is expected to be made in early fall.

Executives also discussed the idea of replicating U.S. shale exploitation overseas. Many thought it would be wise to capitalize on natural oil-producing shale formations on an international level. Some of the world's leading energy producers have already set down this path, with Saudi Arabia recently announcing its intention to begin exploiting its own shale resources.

Growth in the U.S. Natural Gas Industry

The market implications of U.S. natural gas production were also widely discussed during the conference. While natural gas trades at a rate of \$3 per MCF in the United States, prices overseas are notably more expensive, with China's rate hovering around \$20 per MCF. This gap provides the United States with a strategic advantage in relatively low-cost energy, allowing it to offer lower prices for products and services as compared to other countries. In addition, the United

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States' low prices are leading to a domestic manufacturing industry renaissance, which has bolstered the chemical and metal industries and could lead to the repatriation of U.S. jobs that had previously moved overseas.

Natural gas may also be poised to play a pivotal role in the transportation industry's future. Dan Akerson, CEO of General Motors, explained how natural gas could be used as fuel in automobiles, trucks, public transit and, potentially, even in trains to provide a cleaner, less expensive option than standard gasoline fuel. The potential benefits of using natural gas in the transportation industry could be significant when looking at the trucking industry alone: The United States' trucking industry relies heavily on diesel fuel, accounts for about 10 percent of the nation's oil consumption, and is one of the largest contributors to the nation's greenhouse gas emissions. While the future use of this energy source is still under consideration, the substitution of natural gas for traditional fuels in the transportation industry could have extraordinary benefits for the industry, consumers and the environment.

Finally, industry leaders addressed the benefits and costs of developing liquefied natural gas (LNG) plants in the United States. Domestic plants would allow the United States to export LNG globally and take advantage of its relatively low pricing. At the same time, however, development would be protracted and expensive. While debates over whether to build plants continue, installations of LNG fueling stations have already begun.

According to a recent article in National Geographic, Clean Energy Fuels is well on its way to building a network of natural gas filling stations for heavy duty trucks in the United States, and has already installed 70 stations in

33 states. Most are currently dormant but will open when the first generation of heavy duty trucks equipped to run on LNG roll out.

Mitigating Environmental Risks

Speakers also addressed the industry's perennial environmental and safety concerns. The theme emerged that industry leaders and the government must work together to strike a balance between the need to meet future energy demands and support economic growth, and the need to ensure a clean and sustainable environment. Fracking and horizontal drilling for shale remain a leading concern; industry transparency within affected communities and among state and federal regulators must improve moving forward. Careful adherence to safety regulations is also paramount. Deputy Secretary of Energy Dan Poneman stated that "an accident anywhere is an accident everywhere," underscoring the fact that any high-profile accident negatively impacts the industry on an international scale.

CERAWeek highlighted the tremendous amount of enthusiasm not only for where the U.S. and global energy industries currently stand, but also for the direction in which they are headed. The overall optimism at the conference was coupled with serious consideration of how certain key decisions will play out, how proposed plans will be executed, and what the implications for rapid development and growth may be. If industry and governments can work together to face political and market realities to find the best solutions for society, the economy and the environment as a whole, the industry may be well-positioned to capitalize on current opportunities and parlay them into long-term growth.



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