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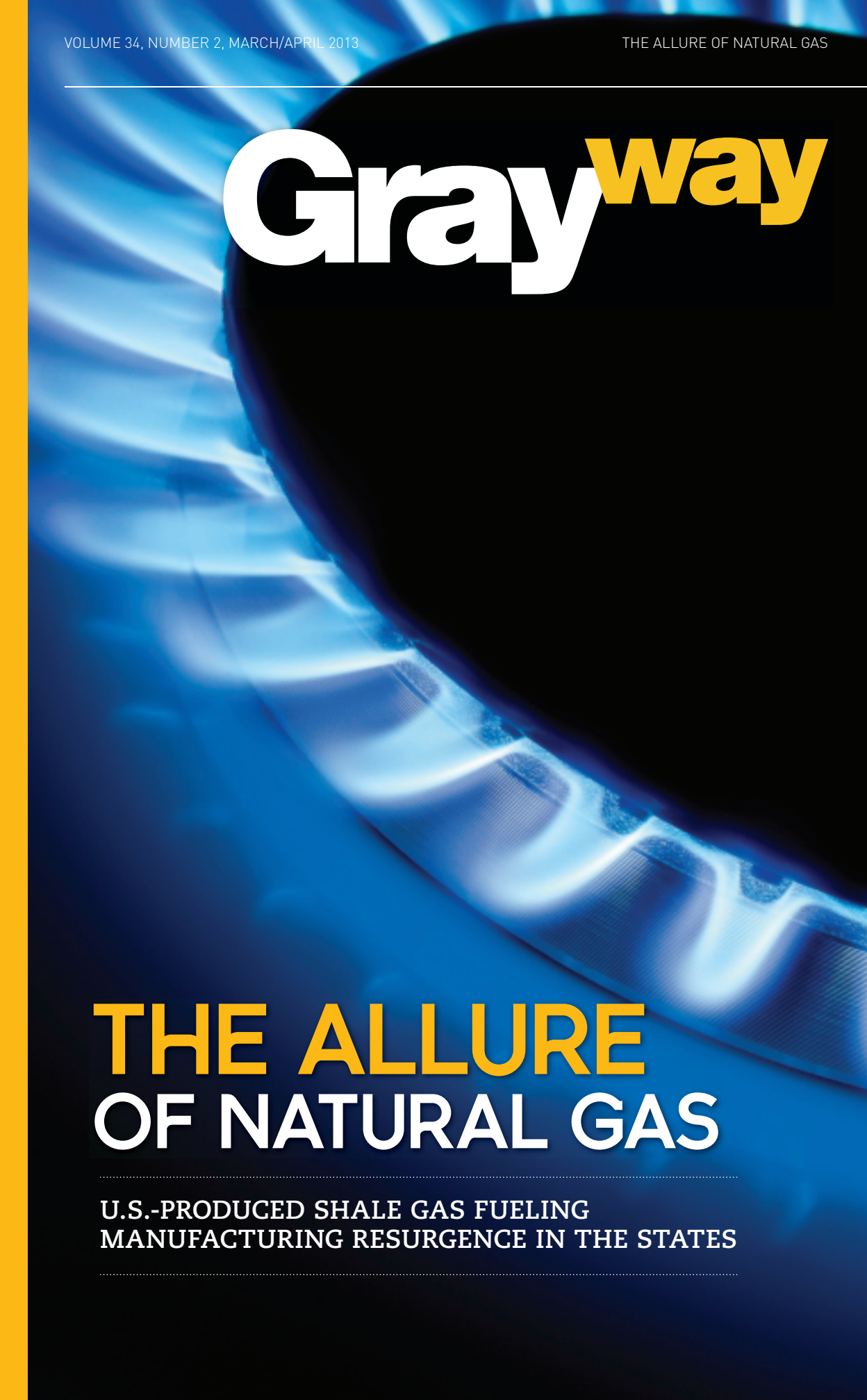

THE ALLURE OF NATURAL GAS

U.S.-PRODUCED SHALE GAS FUELING MANUFACTURING RESURGENCE IN THE STATES

THIS ISSUE / The Allure of Natural Gas

Stephen Gray
Chief Executive Officer

Energy and the pursuit of energy have been key to many of the questions and policy decisions of our times. In the first few years of this century and the latter part of the previous century, America's energy sources had limits on quantity and recoverability. This has changed, and changed quickly. In terms of the history of energy exploration and recovery in America, we are clearly in an era with renewed optimism... the natural shale gas era. This era will have huge meaning for America, and our manufacturers here. At Gray, we make it a priority to follow the latest trends affecting our customers and are already seeing an impact the natural shale gas boom is having on manufacturing in America. As further evidence, Gray's online news service, *Manufacturing Pulse*, has seen a steady increase in the number of stories about the shale gas boom. Most of these stories suggest the trend is far from over.

This issue of the *GrayWay* is dedicated to exploring the story behind the natural shale gas boom in America and its impact on manufacturing. Also discussed are the challenges associated with natural shale gas exploration, extraction and exportation, and what is being done to address these challenges. We close this issue with an exciting announcement about a large expansion Gray has been selected to build for Michelin in Starr, S.C.

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THE U.S. ENERGY REVOLUTION

BOOMING NATURAL SHALE GAS INDUSTRY A KEY FACTOR IN U.S. MANUFACTURING RESURGENCE

Deep below the earth's surface in shale rock deposits across America lies a resource many believe is playing a vital role in the resurgence of manufacturing in the U.S.: natural gas. According to the U.S. Department of Energy, the U.S. sits atop one of the largest natural shale gas reserves in the world, and may hold the key to an energy-independent America in the not-so-distant future.

Some have estimated there is enough natural gas in these reserves to supply the country for the next 100 years. Others believe this estimate is conservative. But what's most alluring about this ever-more-plentiful resource… simply put… it's really cheap.

The U.S. Energy Information Administration (EIA) says that, today, shale gas reserves account for some 25 percent of the country's total natural gas production. In its 2013 Annual Energy Outlook, the EIA predicts that natural gas use by the industrial sector will increase 16 percent over a 14-year period. What's more, a September 2012 analysis by the Boston Consulting Group estimates up to five million manufacturing and related service jobs will be created by 2020, partly as a result of the U.S. shale gas boom.

Hal Sirkin

"I think when you put natural gas advantages together with the labor advantages that we have right now, it's a very powerful combination," said Hal Sirkin, a Chicago-based senior partner with the Boston Consulting Group and coauthor of *The US Manufacturing Renaissance: How Shifting Global Economics Are Creating an American Comeback.*

"Even if you're a small business, taking one point off your cost structure could be the difference between winning and losing," he continued. "And so I think this gives U.S. companies a really tremendous advantage."

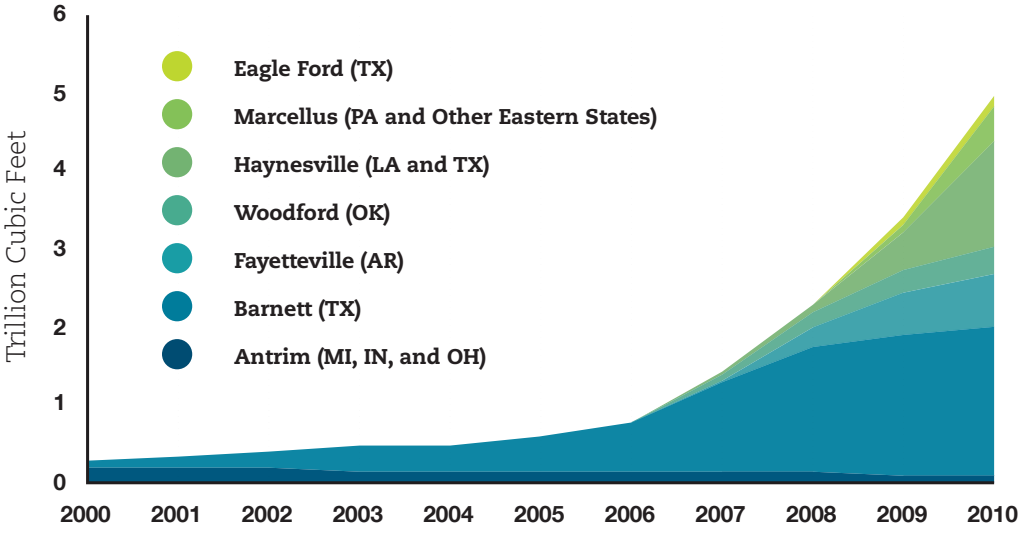
Manufacturers whose products are dependent upon natural gas as a chemical feedstock in their manufacturing processes are among the biggest users of natural shale gas at the present time, says Chris Faulkner, founder and CEO of Breitling Oil and Gas in Irving, Texas, an oil and gas exploration and production company.

Over the last decade, U.S. shale gas production has increased 12-fold and now comprises about **25 percent** of total U.S. production.

Annual Shale Gas Production

Sources: Energy Information Administration and Lippman Consulting

Released: January 2013



Chris Faulkner

"If you look at 2011 alone, 17 different chemical, metal, industrial, fertilizer, and ethylene manufacturers commented in their public filings with the SEC that the shale gas developments are driving the cost of their products down, and also driving them to relocate jobs back in the United States," said Faulkner.

Faulkner says Dow Chemical provides the perfect example of a manufacturer bringing jobs back to the states due solely to cheap natural gas prices. In December of 2012, the company announced its comprehensive plan to "further connect its U.S. operations with cost-advantaged feedstocks from increasing supplies of U.S. shale gas is moving forward, and remains on-track to deliver long-term competitive advantage for many of Dow's downstream businesses."

Dow is planning multimillion-dollar feedstock and other capital investments on the U.S. Gulf Coast, including construction of an ethylene production plant for startup in 2017, and a new propylene production facility at Dow's Texas operations for startup in 2015.

"Our U.S. Gulf Coast investments represent a game-changing move to strengthen the competitiveness of our high-margin, high-growth derivatives businesses as we continue to capture growth in the Americas," said Brian Ames, Dow business president of Olefins, Aromatics and Alternatives. "Today, 70 percent of the company's global ethylene assets are in regions with cost-advantaged feedstocks – and we've seen the benefits this advantage provides even while the global industry is at mid-cycle operating rates."

While a bountiful natural gas industry is good news for manufacturers with plants here, there are still a number of manufacturing sectors that are not taking advantage of its cost-reducing potential. Likewise, the U.S. transportation industry has been hesitant to invest in natural shale gas as a cheap fuel source. Faulkner says this is because there is not enough access to natural shale gas for it to be a reasonable fuel alternative for the average U.S. vehicle or fleet owner.

"That requires a domestic energy policy that puts natural gas at the forefront of power generation and transportation," said Faulkner. "There's only 980 compressed natural gas or liquefied natural gas refueling stations; there's 260,000 gasoline and diesel refueling stations, so it doesn't take a rocket scientist to figure out why it hasn't caught on. Folks aren't going to embrace it if there isn't a way to go to their neighborhood convenience store and refuel their car."

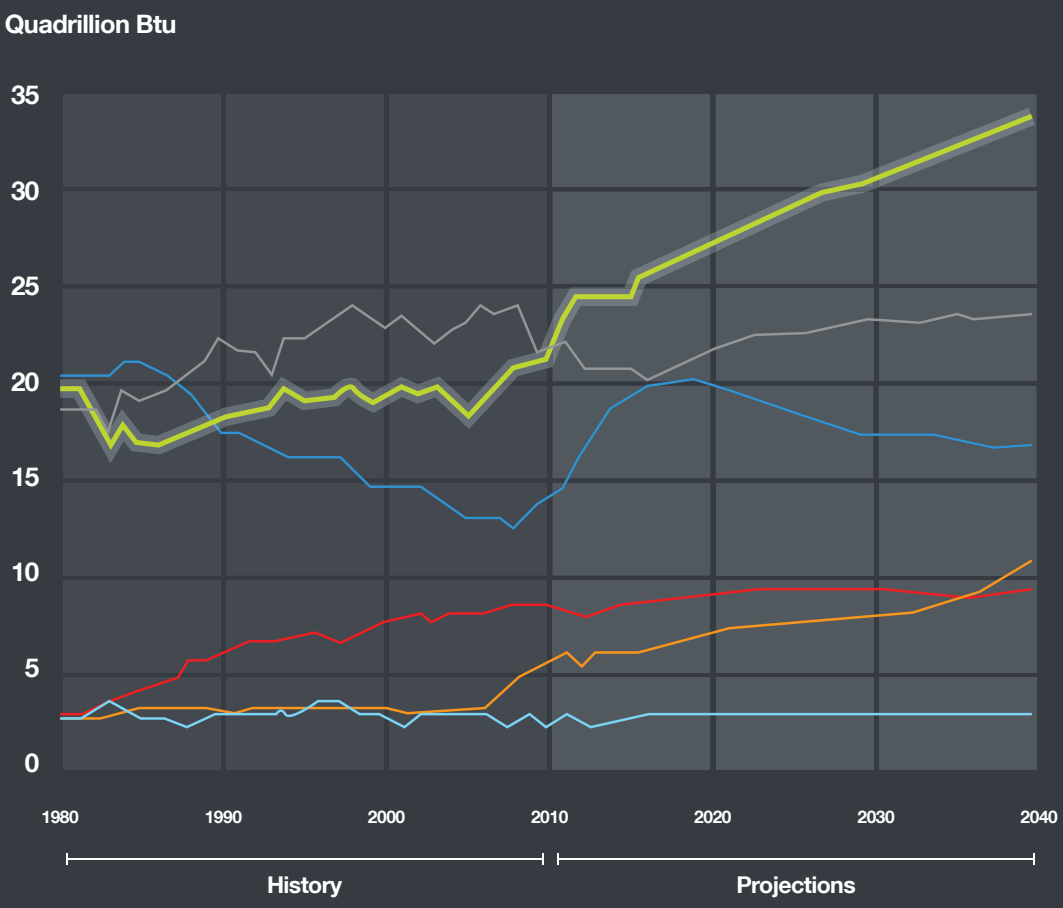
Both Faulkner and Sirkin agree the time is now to use domestic energy to create a competitive advantage for business and industry across the U.S.

"One person said to me, we shouldn't be saying God Bless America… we should be saying God has blessed America because we've been given this incredible opportunity one more time," Sirkin said. "With relatively low-cost labor and incredibly cheap natural gas, we need to make the best of it because this is for our children. We are in a position today that, five years ago, no one had predicted."

Faulkner concurred, "From an energy executive's point of view, I'm not getting a lot of money from my natural gas production, but I think the lemonade from lemons here is that it's creating an opportunity for America. And that outweighs the near-term financial impact that we can have in the oil and gas industry… creating a boon for America."

U.S. ENERGY PRODUCTION

by Fuel 1980-2040



Source:
Energy Information Administration

The "Ex" Factor

The Challenges of Natural Gas Exploration, Extraction, and Exportation

It has long been known that natural shale gas is plentiful in America, but the cumbersome task of finding and extracting it from deep below the earth's surface proved to be cost-prohibitive for many would-be investors. However, after some 30 years of intense research and development by the U.S. government and private industry, technological advances have eased the exploration and extraction process, giving rise to an energy renaissance in the U.S.

Today, there are two primary extraction processes of natural gas from shale formations: hydraulic fracturing, or fracking, and horizontal drilling. While effective, both processes present their own set of safety and environmental concerns.

In the simplest of terms, horizontal drilling is the process of first drilling vertically down into the earth, and then turning to drill horizontally. This process is used primarily for improved access to hard-to-reach deposits and vastly expands the area of exploration. The downside: some believe the wider the area of exploration, the greater potential for the drill to cross a geological fault line and possibly ignite an earthquake, although this theory has been widely debated.

Fracking involves making fractures in deposits by use of a pressurized liquid, namely water. This process requires quite a large amount of water and, in many parts of the U.S., droughts have driven the need for conservation of this most precious natural resource. Secondly, fracking poses concerns for groundwater contamination and ultimately the surrounding communities' drinking water supply.

An aerial view of a Breitling Oil & Gas Corporation hydraulic fracturing and drilling operation at the Bakken shale formation in North Dakota.

Charles Dewhurst

Charles Dewhurst is an international liaison partner and leader of the natural resources practice at BDO USA, LLP, an accounting firm providing audit, tax, and consulting services to clients in the U.S. and internationally. Dewhurst, who was recently named to the "Who's Who in Energy 2012" by the *American City Business Journal*, publishes an annual energy outlook that examines the opinions of 100 CFOs at U.S. oil and gas companies on major developments and key issues facing the oil and gas industry. Dewhurst says BDO's 2013 outlook found that issues surrounding fracking are the biggest environmental concern for U.S. oil and gas companies in 2013, ahead of spills and pollution cleanup by a 44-to-25-percent margin.

"I would have to say that the industry has made great strides in the past few years to really decrease the amount of water that is used in fracking, and to safeguard the groundwater supplies," said Dewhurst.

The survey also indicated "heightened anxiety over the impact of increased government regulation and impending legislation from the new Congress

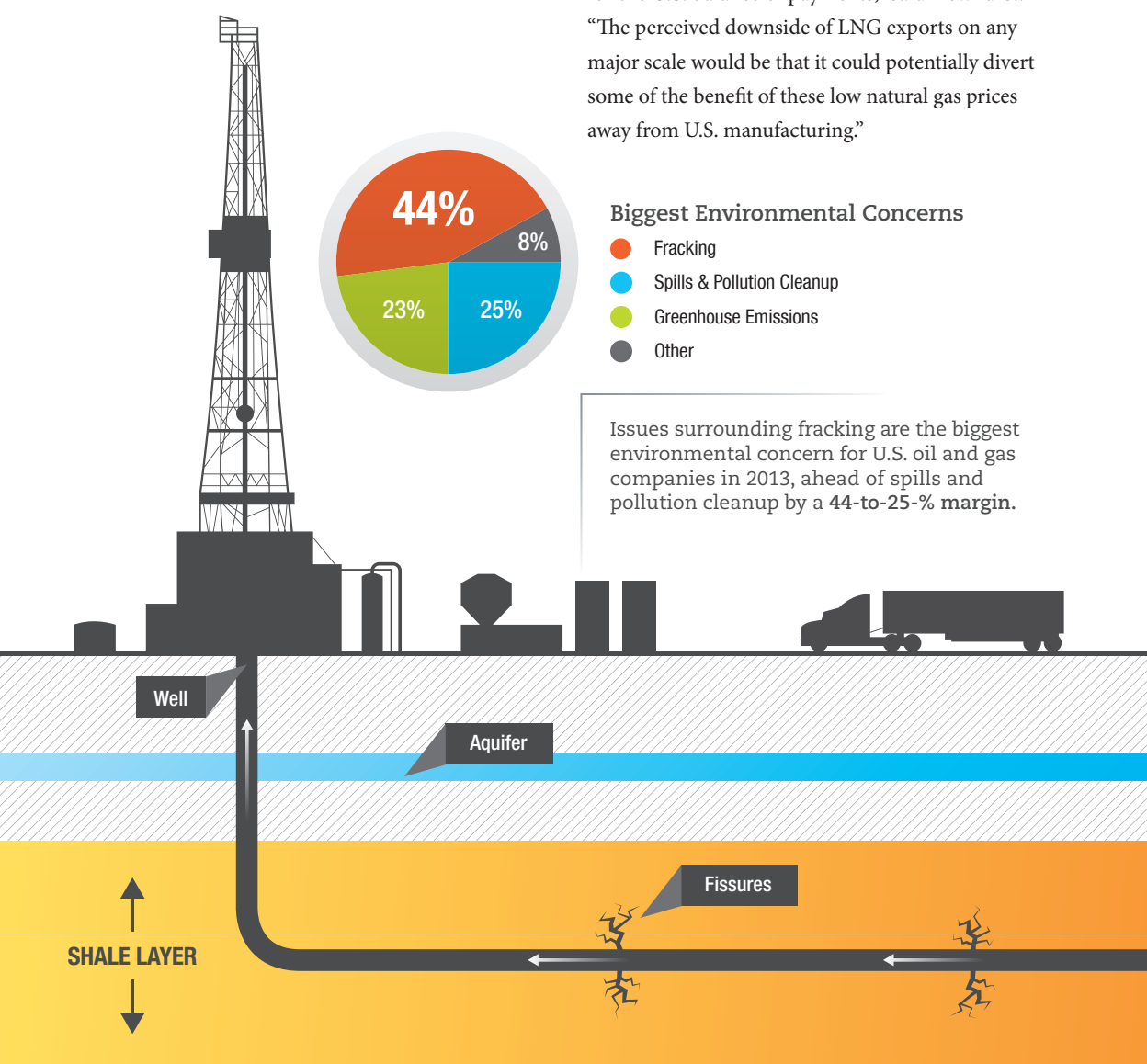
convening in 2013." Some 36 percent of respondents view more restrictive regulations as having the biggest impact on how they conduct business in the coming year, while 37 percent said the same for legislative changes. Additionally, half of those surveyed said legislative changes will be "the most important factor inhibiting the overall growth of the oil and gas industry in 2013."

"I think the industry welcomes sensible regulation as it's trying to be more efficient and safe in both horizontal drilling and fracking," said Dewhurst.

Despite anxiety over environmental issues and new government regulations, most of the respondents indicated intent to increase capital investments in "nonconventional areas," including shale plays, and likewise make investments in more environmentally friendly exploration and processing technologies.

Another issue being widely debated by energy executives, regulators and politicians is whether the U.S. should begin exporting liquefied natural gas (LNG), given the current surplus of natural gas in the U.S.

"The upside of that, of course, is that it would be great for the U.S. balance of payments," said Dewhurst. "The perceived downside of LNG exports on any major scale would be that it could potentially divert some of the benefit of these low natural gas prices away from U.S. manufacturing."



> **"We're just very fortunate to have these abundant reserves that can fuel this transition over the 30 or 40 years that it may take."**
>
> -Charles Dewhurst

The U.S. is currently not involved in the exportation of LNG, but a handful of companies are applying for approval by the Department of Energy (DOE) to do just that. In January of 2012, the U.S. Energy Information Administration released a study examining the "effect of increased natural gas exports on domestic energy markets," which concluded that increased natural gas exports would lead to increased domestic natural gas prices. But, in December of 2012, the DOE released results of a similar study it commissioned by NERA Economic Consultants, which concluded, "Across all scenarios, the U.S. was projected to gain net economic benefits from allowing LNG exports."

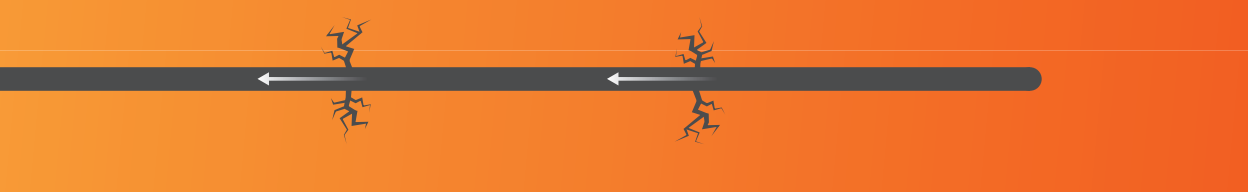
"I think our perspective as a firm would be some sort of balanced approach that allowing some LNG exports under certain specific criteria would probably be a good thing as long as we don't slow down this manufacturing renaissance," said Dewhurst.

Even if exportation of LNG is eventually approved, huge transportation obstacles stand in the way. Domestically, LNG is transported by pipeline but the same can't be done for delivery overseas. And transportation by tanker is largely perceived as unsafe, given the explosive nature of LNG.

One thing, however, that most people involved in the LNG debate can agree upon is that an energy-independent America would have enormous impacts on the future of the country.

"The potential for the U.S. being energy self-sufficient is very exciting from a number of perspectives," said Dewhurst. "It would make us less reliant on foreign, sometimes unstable, sources of oil. And it would have a huge economic benefit."

"The great thing about natural gas is that it gives us as a country and as an economy a very clean and abundant fuel that can ease that transition from some of the less clean fuels like coal, oil even, to a totally clean future somewhere down the line," concluded Dewhurst. "We're just very fortunate to have these abundant reserves that can fuel this transition over the 30 or 40 years that it may take."



GRAY... WE'RE BUILDING

MICHELIN NORTH AMERICA
Starr, S.C.

Gray has been selected by Michelin North America for a major expansion of its Starr, S.C., manufacturing plant to increase the company's output of rubber compound material used to build tires in North America. This investment is expected to create more than 100 new jobs. The Starr factory is one of two Michelin semi-finished rubber production plants in Anderson County.

The expansion is among a string of major manufacturing commitments made by Michelin over the past two years. Together, these projects represent a $1.15 billion investment by Michelin in South Carolina and the creation of at least 870 new manufacturing jobs in the state.

Construction has begun on the Starr plant expansion, which will be adjacent to the current facility.

Gray is currently building Michelin's previously announced Earthmover tire plant, which is scheduled to begin producing tires later this year.

Operations will begin at the expansion in 2014 and will supply material for tire production in North America, helping meet heightened overall production demands.

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