Hydraulic Fracking:
Why it matters, and what the natural gas industry should do to assure the public that it's safe

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Thank you, Peter, and good afternoon, everyone. I'm honored to join you today.

My assignment today is to help frame the issues for the panel discussion on hydraulic fracture (HF) stimulation. Colorado Congresswoman Diana DeGette and others have proposed legislation that would shift HF regulation from the states to the EPA. The debate about that proposal is taking place against the backdrop of the blowout in the Gulf. Some proponents of her bill conflate the deepwater Horizon tragedy with onshore gas-directed drilling. On top of that, HBO's pseudo-documentary "GasLand" accuses natural gas producers of deliberately injecting dangerous chemicals into drinking water. "GasLand" proves once again that some in the mainstream media won't let facts and accuracy get in the way of a good apocalypse. That said, our industry's credibility has taken a hit. Taken together, the blowout and "GasLand" have eroded the public's trust in our industry's ability to develop natural gas in a safe and environmentally responsible way. We have to respond effectively.

Mark Twain once said: "When you don't have all the facts, what you know is the truth." My goal today is to try to separate fact from fiction. "GasLand," if nothing else, is useful because it's a comprehensive collection of all the misinformation – and deliberate disinformation – about HF. I'll call out a few of the most egregious lies in the film. But I'll explain why our industry can't "just say no" to public concerns about HF. We need to do more to assure the public that our operations are safe. Prior to turning it back to Peter and the panel, I'll offer an open letter to the environmental groups that backed "GasLand" by posing this question: "If not natural gas, what?"

In preparing my remarks for today I reflected back on the conversation we all had at the COGA conference a year ago. You'll recall that the U.S. House had just narrowly passed the Waxman-Markey bill. Waxman-Markey was a wake-up call for the natural gas industry – a climate bill that was by design anti-natural gas, a get-out-of-jail-free card for coal, proof that natural gas had virtually no mindshare in Washington. I criticized our trade associations for not working together. Well, what a difference a year makes. Over the past year our industry woke up, got out of bed. Our trade associations have worked together like never before. We've changed the energy policy debate. Natural gas has moved to the head of the class.

On June 25, MIT released its interim report: "The Future of Natural Gas," the result of an in-depth two-year examination of the role of natural gas in the 21st century. Dr. Ernie Moniz from MIT will be here on Friday. I won't steal his thunder other than to say that MIT confirms earlier work by the Potential Gas Committee and others on the enormous size of the natural gas resource base, both here and around the world.

This should be great news for everyone. Unfortunately, not everyone is celebrating – more on that in a moment.

Most of you are too young to remember a British rock band named Ten Years After and the song "I'd Love to Change the World, (But I Don't Know What to Do)." Well, the 2.8 million people who comprise America's natural gas industry have changed the world – and the "what to do" should now be clear. MIT reports that the mean estimate for recoverable natural resources worldwide could be 16,000 Tcf – equivalent to 150 years supply at current usage. Others are even more optimistic. The IEA now estimates that global recoverable gas resources may ultimately exceed 30,000 Tcf. That's equivalent to 5 trillion barrels of oil – and as folks in the room know, these estimates are just a snapshot. The 150-year history of our industry suggests that with advances in technology we will continue to add to those estimates over time.

U.S. natural gas supply is booming – and HF, combined with horizontal drilling and multi-stage completions are the technologies that make this possible. In 2009, the U.S. overtook Russia to become the world's largest natural gas producer. This is great news for the U.S. economy. It's great news for natural gas consumers – natural gas today sells for less than $30 per barrel of oil equivalent. And it should also be great news for those who worry about manmade CO2 emissions. In 2009, U.S. CO2 emissions were down roughly 6% from 2005, the baseline year in the 1,428-page Waxman-Markey bill. *How can that be?* No other country in the world can make that claim – and we didn't need Kyoto, Copenhagen, or a 1,428-page bill to do it! Yes, some of that drop in U.S. CO2 emissions results from lower energy use in a recession. But much of the drop comes from a market-driven switch from coal to natural gas, primarily in the electric power generation. Thanks to America's natural gas industry, the market doesn't have to wait for politicians to decide what to do about carbon emissions.

The policy implications are profound. Reduce America's dependence on foreign oil? Improve air quality in major U.S. cities? Create jobs? Reduce the trade deficit? Natural gas, produced in America primarily by American companies, who hire American workers and pay taxes in America helps do all of this.

Marshall McLuhan famously said: "I'm not sure who invented water, but I'm damn sure it wasn't a fish." "Fish" in Washington take note: America and the world are swimming in natural gas.

Now, to be sure, not everyone's happy about this. Certainly not Vladimir Putin, nor Mahmoud Ahmadinejad. For years these guys have dreamed of a global natural gas cartel

in the image of OPEC. Sorry, guys, but those dreams have been plugged and abandoned by America's natural gas industry.

The coal industry and some large electric utilities aren't celebrating. Booming gas supply threatens coal's dominance and a nuclear renaissance in the electric-power market. They'd hoped to roll back the clock, thirty-two years ago, to get Congress to repeat one of the biggest energy-policy blunders in American history. In 1978, Congress passed the *Fuel Use Act* which in effect banned the construction of gas-fired power plants. Over the next nine years until the *Fuel Use Act* was repealed in 1987, "king coal" capitalized on this boneheaded federal intervention in energy markets – 26% of the coal-fired power plant capacity in this country today was built during that nine-year period in which natural gas was shut out of the power generation market by government fiat. The *Fuel Use Act* happened because policy makers believed that America and the world were running out of natural gas. The coal and nuclear industries continue to make that argument today, despite unequivocal evidence to the contrary.

Booming natural gas supply is also not welcome news for promoters of wind, solar, and other uneconomic forms of energy. They can't compete with gas without heavy taxpayer subsidies and government mandates. Over the past three decades our government has pumped billions in subsidies into wind and solar power – and yet wind and solar power today contribute less than 1% of America's *primary* energy supply. *How can that be?* We've been told that wind and solar are the "next big thing" – America's energy future.

This past weekend *The New York Times* published a misleading article about taxpayer subsidies for oil and gas. Predictably, *The Times* failed to provide context. U.S. independents have been investing well over $200 billion a year in the development of domestic natural gas and oil. Over the past three years our industry paid over $200 billion in taxes and royalties, yet taxpayer subsidies for natural gas today amount to about 20 cents per MMBtu of energy delivered into the U.S. market. By comparison, in 2007 taxpayer subsidies for wind power totaled about $7 per MMBtu delivered. So what are we getting for all this taxpayer largesse? In 2008, wind and solar power combined contributed the energy equivalent of 540 MMcfd of natural gas. To put 540 MMcfd into perspective, Questar's new E&P spin-off QEP Resources today is producing about 630 MMcfed of natural gas – roughly 17% more energy than all of the windmills and solar power plants combined in 2008.

Yes, wind and solar power are the "next big thing" – and they probably always will be. It's not about political will. It's not about who's in the White House, or who controls the gavel in Congress. Our energy choices are ruthlessly ruled by the immutable laws of thermodynamics and physics. Yes, wind and sunshine are free – but wind power and solar power are hugely expensive on any meaningful scale.

Now, many environmental groups welcome the news about natural gas supply – but some do not. Natural gas is by far the most environmentally benign fuel. But for some groups it's all or nothing. They hate drilling, and they hate all fossil fuels. The recent HBO smear-job "GasLand" shows just how far some will go to knock natural gas off the perch.

Show of hands please: How many have seen "GasLand"? "GasLand" was the work of a previously unknown producer, funded by environmental groups, Hollywood types, and a handful of foundations that are long on good intentions but short on diligence when it comes to writing checks for causes.

Simply put, "GasLand" is fraud. You would think that a mainstream media organization like HBO would do some basic fact checking before aiding and abetting fraud.

"GasLand" producer Josh Fox reveals his agenda early in the film. He tells the viewer that Dick Cheney pushed the 2005 EPACT through Congress with what Fox later calls a "Halliburton loophole" that (quote) "exempts the natural gas industry from the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act, the Superfund law, and about a dozen other environmental and Democratic regulations" (unquote). Every part of this is false. The natural gas industry is regulated under every one of these laws. Here are the facts. As vice president, Dick Cheney couldn't vote for EPACT. But 74 out of 100 U.S. senators did vote for EPACT 2005 – including current Interior Secretary Ken Salazar, then a Colorado senator, and a former junior senator from Illinois named Barack Obama – one of the few times then-Senator Obama actually voted "aye" instead of "present."

Fox claims that EPACT "authorizes oil and gas drillers exclusively to inject known hazardous materials, unchecked, directly into or adjacent to underground drinking water supplies." This is a bald-faced lie.

And then there are those disturbing images of burning tap water and dead fish along a 35-mile stretch of Dunkard Creek in Pennsylvania. Fox suggests that both are the consequence of HF. Here's the truth: Long before HBO aired "GasLand," the Colorado Oil and Gas Conservation Commission investigated and found that methane in the tap water in Fort Lupton and Divide Creek Colorado resulted from naturally occurring biogenic gas. Fox's attempt to blame natural gas operations for polluted water in Dunkard Creek is contradicted by an EPA report. EPA concluded that the fish kill was linked to water runoff from *coal mining* operations.

The nose-stretchers keep right on coming: Fox interviews Calvin Tillman, the Mayor of DISH, Texas. Tillman gets his 15 seconds of fame when he looks straight into Fox's camera and blames natural gas development for benzene in the blood of the some residents of DISH. Turns out, the Texas Department of State Health Services investigated the mayor's accusations and found that the only people in DISH who had higher levels of benzene in their blood were smokers. Cigarette smoke, of course, contains benzene, so this should not be a surprise.

Fox films himself on drilling locations wearing a gas mask. He wants the viewer to conclude that the air around a natural gas development is so harmful to humans that you have to wear a gas mask. Again, the truth: Air emissions from natural gas development are subject to strict federal and state regulation.

Fox claims that a typical frack job contains "a mix of over 596 chemicals." The truth: A typical frac job contains only a few chemicals. Fox fails to mention that over 99.5% of the volume in a typical frac job is sand and water. Most of the remaining ½ of one-percent are typically chemicals you might have around the house – for example, guar, an emulsifier commonly found in ice cream.

Fox uses a cartoon to suggest that fracking obliterates the rock around the wellbore. An uninformed viewer might conclude that a frac 8,000 feet below ground could propagate all the way to the surface. In truth, the cracks induced by fracking are typically less than a millimeter thick and frac height is at best only a few hundred feet.

Fox grossly exaggerates the amount of water used in fracking operations. Yes, in some shale plays we do use a lot of water. But that water use is generally "one-time" and the volumes, while large, pale in comparison to other common uses of water.

For example, QEP Resources operates in the core of the Haynesville shale play in NW Louisiana. We use roughly 7 million gallons of water to drill and complete a typical Haynesville well. Most other shale plays use far less water. But for sake of argument let's use the Haynesville shale as an example. 7 million gallons sounds like a lot of water – and it is. But let's put that into perspective. That's about the amount of water consumed by a 1,000 MW coal-fired power plant *in just 17 days*. It takes about 7 million gallons of water to irrigate just 12 acres of corn for one growing season. That's the amount of water required to keep an average golf course green in the summer for about 35 days.

Fox also grossly exaggerates the volume of truck traffic associated with natural gas development. I could go on and on with the errors and outright lies in "GasLand," but you get the point. "GasLand" is not a documentary. "GasLand" is fraud. Fox gets away with it because the U.S. media doesn't do its job. But it works for Josh Fox. He's getting rich. He's now a folk hero among the far left. Anyone want to bet that Hollywood will further reward his work with an Academy Award nomination? Who knows, Fox may even be nominated for a Nobel Prize, following in the footsteps of another famous producer of a science-fiction film, Al Gore.

Let's set the record straight. HF is extensively regulated at the federal, state, and local level. *The Clean Water Act* governs the discharge of pollutants to surface and storm runoff. The *Safe Drinking Water Act* (SDWA) governs produced water disposal by injection. The *Clean Air Act* governs air emissions from engines, gas processing plants, tanks and other equipment associated with production and drilling activities. The *National Environmental Policy Act* (NEPA) governs the federal leasing, permitting, and drilling process. Water impacts get extensive scrutiny in a NEPA EIS. OSHA requires Material Safety Data Sheets (MSDS) for all chemicals used in drilling and completion operations – including frac fluids. The federal *Emergency Planning and Community Right-to Know Act* requires producers to report to local and state emergency responders on an annual basis the chemicals stored on a production site. My list is by no means comprehensive – and those are just the federal regulations. Many state and local regulations also govern natural gas development.

HF has been extensively studied in the past. In 1995, then EPA administrator Carol Browner – now President Obama's environmental czar – reported that repeated testing under the supervision of the EPA had failed to show any chemicals that would indicate the presence of fracturing fluids. Over 1 million wells have been fracked over the past 60 years. DOE Undersecretary of Science Dr. Steve Koonin recently told an audience at the Citigroup conference in Washington, D.C., that the DOE is not aware of a single, documented instance of a gas well being fracked into a groundwater formation.

All that said, in the wake of the Gulf blowout, recent well control events – and to be frank, the recent carelessness of a few operators in handling produced water – we need to do more to assure policymakers and the public that HF activities are safe. All this has revived Congresswoman DeGette's push to shift HF regulation from the states to the EPA under the SDWA. For the sake of the U.S. economy, we can't let that happen. Our industry should reach out to and try to work with Congresswoman DeGette, and in fact, several of our trade groups have met with her recently and those that have believe she has a sincere interest in compromise. We should move quickly to forge a good-faith compromise. Here are the core principles.

First, we have to keep the EPA out of the process. EPA jurisdiction under the SDWA is a non-starter – and it's not necessary. The states can and already do effectively regulate frac operations. The states have the expertise, and the incentive – unlike federal bureaucrats, state agencies will be held accountable by the citizens of the state. Based on past experience, we have to question the motives of some environmental groups that are pushing for EPA regulation. Those of us who operate on federal lands here in the Rockies have seen *this* movie before. Anti-development groups know how to manipulate federal regulatory process to delay or kill energy development. EPA regulation of HF under the SDWA will drive up the cost and drive down the supply of natural gas. Thankfully, the 30 or so states that currently regulate HF activities have awakened to the fiscal threat – and job destruction – posed by EPA regulation, and the states have begun to push back.

Second, we can't "just say no" to the public's desire for greater assurances that HF activities are safe. We've got nothing to hide! Several of our industry trade groups have proposed expanded disclosure supervised by the Interstate Oil and Gas Compact Commission (IOGCC) in partnership with the federal government – not the EPA, but Department of Energy's National Energy Technology Lab (NETL). NETL's involvement would hopefully ensure that disclosure is science- and fact-based. The IOGCC and NETL would develop a database management system. The service companies would provide producers with a list of the chemicals (but not the volumes) used in each frac, in each well. Frac chemicals would be classified, and posted on a website accessible to the public. This would protect proprietary know-how of the service companies. I think this approach merits our consideration.

Third, those of us in leadership roles have to redouble our efforts to ensure that our commitment to safety and environmental performance is getting through to employees on the front lines. We *know* we're serious about safety. We know we're serious about

protecting the environment. But the folks on the rig floor, the people who turn valves, push buttons, and make real-time decisions in the field, do *they* know we're serious? Do our contractors know we're serious? And how do they know? Are we sending consistent messages? What do we ask about when we're in the field? What do we talk about when at employee meetings? Do we talk about safety in the boardroom – or with investors? Most of us do, but I suspect there's going to be even more emphasis on safety and environmental policy from the boardroom to the driller's shack going forward.

Some groups who advocate federal regulation of HF under the SDWA try to conflate the tragedy in the Gulf with HF risk. That's like comparing a plane crash to a car wreck. Macondo was not the result of a failure to regulate. Macondo was not the result of a failure of technology. Macondo happened because humans failed. Indeed, the common thread in all of the major calamites of the past decade – from 9/11 to Enron to the sub-prime lending crisis – is that regulation failed to prevent humans from doing either dumb things, or illegal things.

There's a lot we don't yet know about the causes of the Macondo blowout. Clearly, some new regulations may be necessary. The industry and the federal government were unprepared to deal with an unprecedented series of events. Five years after Katrina, the government's response plan was once again woefully inadequate. The public is angry, and the Obama administration's political reflex is to punish the entire oil and gas industry. But the market has already rendered the punishment. Certainly BP shareholders around the world have been "punished" – BP has lost nearly 50% of its market value since April 20 – that's nearly $100 billion in market value vanished. Every company that operates in the Gulf has been punished – combined more than $150 billion in market value has been destroyed. If $150 billion in value destroyed is not enough to ensure that the industry takes every conceivable action to ensure that this never happens again, then no amount of oversight by bureaucrats in Washington is going to matter. The lesson from Macondo is that the only truly effective regulation is self regulation. That's also true for HF.

Before I close I'd like to offer an open letter to the environmental groups that funded "GasLand" and press Congress for onerous, redundant, costly, and unnecessary new regulation of HF. Have you considered the unintended consequences of your actions? If not natural gas, what? More coal? More imported oil? More nuclear power?

You say you want a revolution – a "green" jobs revolution. Do you really believe that mankind can harness enough wind and sunshine to power the planet? There's nothing wrong with vision, but there's a fine line between vision and hallucination. A vision of a planet powered by wind and sunshine crosses that line.

President Obama likes to point to Denmark as a role model for America's green jobs transformation. Would someone in the media please take a closer look? Two decades ago Denmark made a commitment to combat global warming and reduce its dependency on imported energy by shifting to wind power. Today, Denmark has more wind turbines per capita than any other country in the world. But what the president fails to tell us is that the average Dane today pays over 30 cents per kilowatt-hour for electricity – the highest in

the developed world, more than three times the U.S. average. Part of this is the consequence of very high energy taxes, but much of it is the result of the Danish government substituting its judgment for that of the market. And what are the Danes getting for all that sacrifice? CO2 emissions in Denmark in 2008 were about the same as they were in 1990 – and yet Denmark today is more dependent on foreign energy than it was two decades ago! Windmills didn't reduce CO2 emissions and didn't help Denmark become "energy independent"! This is quite a story – I'm sure *The New York Times* will get right on it.

What is a "green job," anyway? If a utility builds a combined-cycle gas-fired power plant and shuts down an old coal-fired power plant, is that "green"? If a mechanic converts a garbage truck or a school bus to run on compressed natural gas, is that a "green job"? If a homeowner replaces appliances that run on coal-fired electricity with appliances that use natural gas directly, is that "green"? And if those *are* "green" jobs, then why aren't the jobs of the people who find, produce, and deliver clean-burning natural gas also "green" jobs?

When you consider the scale and magnitude of America's energy needs in the 21st century, the inescapable conclusion is that if you're anti-drilling, anti-coal, and anti-nuclear power, then you're anti-prosperity, pro-blackouts, pro-imports, pro-higher energy costs, and, therefore, pro-poverty.

The bottom line: HF is game-changing technology, courtesy of America's natural gas industry. HF has already unlocked a century of natural gas supply here and around the world. It's proven. It's safe. It poses minimal risk to drinking water. When used in combination with horizontal drilling and multistage completions, it may be the closest thing America has to a "silver bullet" for energy supply in the 21st century. We should all be thankful.

And I'm thankful for your attention. Peter, back to you.