RHETORIC V. REALITY, PART II: ASSESSING THE IMPACT OF NEW FEDERAL RED TAPE ON HYDRAULIC FRACTURING AND AMERICAN ENERGY INDEPENDENCE

HEARING

BEFORE THE

SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY, INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM

OF THE

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

MAY 31, 2012

Serial No. 112–148

Printed for the use of the Committee on Oversight and Government Reform

Available via the World Wide Web: http://www.fdsys.gov
http://www.house.gov/reform

U.S. GOVERNMENT PRINTING OFFICE

74–754 PDF WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

DARRELL E. ISSA, California, *Chairman*

DAN BURTON, Indiana
JOHN L. MICA, Florida
TODD RUSSELL PLATTS, Pennsylvania
MICHAEL R. TURNER, Ohio
PATRICK T. MCHENRY, North Carolina
JIM JORDAN, Ohio
JASON CHAFFETZ, Utah
CONNIE MACK, Florida
TIM WALBERG, Michigan
JAMES LANKFORD, Oklahoma
JUSTIN AMASH, Michigan
ANN MARIE BUERKLE, New York
PAUL A. GOSAR, Arizona
RAÚL R. LABRADOR, Idaho
PATRICK MEEHAN, Pennsylvania
SCOTT DESJARLAIS, Tennessee
JOE WALSH, Illinois
TREY GOWDY, South Carolina
DENNIS A. ROSS, Florida
FRANK C. GUINTA, New Hampshire
BLAKE FARENTHOLD, Texas
MIKE KELLY, Pennsylvania

ELIJAH E. CUMMINGS, Maryland, *Ranking Minority Member*
EDOLPHUS TOWNS, New York
CAROLYN B. MALONEY, New York
ELEANOR HOLMES NORTON, District of Columbia
DENNIS J. KUCINICH, Ohio
JOHN F. TIERNEY, Massachusetts
WM. LACY CLAY, Missouri
STEPHEN F. LYNCH, Massachusetts
JIM COOPER, Tennessee
GERALD E. CONNOLLY, Virginia
MIKE QUIGLEY, Illinois
DANNY K. DAVIS, Illinois
BRUCE L. BRALEY, Iowa
PETER WELCH, Vermont
JOHN A. YARMUTH, Kentucky
CHRISTOPHER S. MURPHY, Connecticut
JACKIE SPEIER, California

LAWRENCE J. BRADY, *Staff Director*
JOHN D. CUADERES, *Deputy Staff Director*
ROBERT BORDEN, *General Counsel*
LINDA A. GOOD, *Chief Clerk*
DAVID RAPALLO, *Minority Staff Director*

SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY, INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM

JAMES LANKFORD, Oklahoma, *Chairman*

MIKE KELLY, Pennsylvania, *Vice Chairman*
JASON CHAFFETZ, Utah
TIM WALBERG, Michigan
RAÚL R. LABRADOR, Idaho
PATRICK MEEHAN, Pennsylvania
BLAKE FARENTHOLD, Texas

GERALD E. CONNOLLY, Virginia, *Ranking Minority Member*
CHRISTOPHER S. MURPHY, Connecticut
STEPHEN F. LYNCH, Massachusetts
JACKIE SPEIER, California

CONTENTS

RHETORIC V. REALITY, PART II: ASSESSING THE IMPACT OF NEW FEDERAL RED TAPE ON HYDRAULIC FRACTURING AND AMERICAN ENERGY INDEPENDENCE

Thursday, May 31, 2012,

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY, INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, D.C.

The subcommittee met, pursuant to notice, at 1:30 p.m. in room 2154, Rayburn House Office Building, the Honorable James Lankford [chairman of the subcommittee], presiding.

Present: Representatives Lankford, Connolly, Kelly, Farenthold, Meehan and Labrador.

Staff Present: Alexia Ardolina, Majority Assistant Clerk; Molly Boyl, Majority Parliamentarian; Joseph A. Brazauskas, Majority Counsel; Adam P. Fromm, Majority Director of Member Services and Committee Operations; Linda Good, Majority Chief Clerk; Ryan M. Hambleton, Majority Professional Staff Member; Ryan Little, Majority Professional Staff Member; Mark D. Marin, Majority Director of Oversight; Kristina M. Moore, Majority Senior Counsel; Laura L. Rush, Majority Deputy Chief Clerk; Jaron Bourke, Minority Director of Administration; Ashley Etienne, Minority Director of Communications; Chris Knauer, Minority Senior Investigator; William Miles, Minority Professional Staff Member; Safiya Simmons, Minority Press Secretary; and Cecelia Thomas, Minority Counsel.

Mr. LANKFORD. The Committee will come to order.

This is a hearing on "Rhetoric v. Reality," the second part in a series today. We did an earlier one with the full committee this morning. This is "Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence."

This is part of the Oversight and Government Reform Committee. As a subcommittee, we exist to secure two fundamental principles. First, Americans have the right to know the money Washington takes from them is well spent and second, Americans deserve and efficient and effective government that works for them.

Our duty on the Oversight and Government Reform Committee is to protect these rights. Our solemn responsibility is to hold government accountable to taxpayers because taxpayers have a right to know what they get from their government.

We will work tirelessly in partnership with citizen watchdogs to bring the facts to the American people and bring them genuine reform to the Federal bureaucracy. This is our mission.

As we heard this morning, after years of worry about America's supply of oil and gas, the industry has located significant new areas to explore energy and the results have been quite remarkable. In the last quarter, 58 percent of the oil we used in America came from America; 79 percent of the oil we used came from North America. The United States is currently in a tremendous American energy renaissance.

Through hydraulic fracturing and horizontal drilling, domestic oil and gas reserves have the potential to create millions of new jobs and to finally make the United States energy independent.

Increased energy exploration and production is one of the keys to turning our economy around and putting Americans back to work. It is no coincidence that States with low unemployment rates are high in energy production. While technology has greatly increased the ability to find new oil and gas, this morning we learned and heard testimony in the full committee about the many ways the Administration has stood in the way of American energy independence by slowing down additional production of coal, oil and natural gas. Under the Obama Administration, the red tape and endless government studies have discouraged new Federal permitting.

The energy renaissance we heard of today is taking place almost exclusively on private lands. We have a chart to note how 96 percent of the new production is occurring on private lands rather than on public land. That is a loss of royalties and a loss of leases to the American taxpayers.

Based on new regulations issued just last month by the Environmental Protection Agency and the Bureau of Land Management, it appears this trend of under utilization of Federal lands will continue and may also be pushed and spread into private lands as well.

The Department of the Interior through the Bureau of Land Management just proposed sweeping regulations of hydraulic fracturing on Federal and Indian lands that duplicate State regulations and threaten the decades old primacy relationship of State regulations.

In proposing the rules, the BLM did not assert the Federal Government is in any better position to regulate fracturing than the States and BLM did not claim the States are not doing a good job. The BLM merely asserts that they are proposing the regulation on the basis of public concern. Ironically, this public concern has arguably been fostered by the EPA.

In a multi-pronged attack on the industry, the EPA has publicly lambasted specific energy producers in fracturing locations for alleged problems but later, the EPA has only whispered corrections when science proved the initial EPA assertion invalid. This all happened while continuing to issue a stream of regulations affecting hydraulic fracturing before the current Federally-mandated study had even been completed.

EPA Administrator Jackson stated under oath before this committee, "There is not a single documented case where hydraulic

fracturing has demonstrably contaminated groundwater." That has not stopped EPA and BLM from creating a series of new Federal regulations.

This positive report and this record was due in part to the physics. There is another chart I want to put up just to show and we will put into the record as well. Fracking activity takes place a mile and sometimes well more than a mile below the aquifer line and through several layers of rock, I might add.

It also leads to an effective and comprehensive State regulatory regime. Regulators and energy resource States like Oklahoma and my State, Pennsylvania, Utah, North Dakota and Texas work closely with all interested parties, industry and environmental alike, to develop a regulatory regime that is responsive to advancements in industry while protecting the environment at the same time.

No one—I repeat, no one cares more about the water resources of Oklahoma than Oklahomans and the people who live there. The assumption that Federal regulators from other States understand the geologic strata and energy process better than State enforcement is beyond credible.

I also do not accept the assumption that local regulators cannot be trusted because they have political pressures that would discourage enforcement but Federal regulators have only pure motives and no political agenda. Look no further than the former EPA Region VI Administrator who stepped down in my region after it was revealed that he pursued and trained his staff in a strategy of crucifixion against oil and gas companies to keep the industry in line. This astonishing statement reveals that some in the EPA, see people in my district as the enemy and they assume their job is to control them instead of serving the public.

State regulators work closely with the Groundwater Protection Council to develop a website known as "Frack Focus" which enables disclosure of fracking fluids while protecting trade secret information. State regulators also work with STRONGER, the State Review of Oil and Natural Gas Environmental Regulations, which is funded in part by the EPA and the U.S. Department of Energy.

STRONGER is comprised of all interested parties, conducts exhaustive reviews of State regulation of hydraulic fracturing, and comparing the existing regulations to a set of hydraulic fracturing guidelines unanimously adopted in 2010. If the State falls short, they work with STRONGER to get them back up to code.

Even so, EPA is moving forward with the confusing Diesel Fuels Guidance which turns the Safe Drinking Water Act on its head. In 2005, Congress specifically exempted hydraulic fracturing from regulations under the Safe Drinking Water Act because it is an ill-fitted regulatory framework. Congress granted EPA the authority to regulate hydraulic fracturing in a very narrow circumstance when diesel fuels were used.

That simple statement seems very narrow and clear but the EPA appears to be attempting an end run around the statute by brazenly redefining diesel fuels to include virtually any petroleum product. This new regulatory overreach now threatens the entire system of State regulatory primacy and the Safe Drinking Water Act.

We can have safe energy exploration and production overseen by States and local authorities. There is a role for the EPA but I am very skeptical that thousands of wells and many different types of rock and soil conditions across the country can be overseen from Washington better than by State leaders who know the people and the land.

We are so close to energy independence. This is the moment when we will finally solve a decades old problem or the Federal Government will get in the way and slow or halt our economic future. Today is the pursuit of answers and clarity of the direction of the EPA and the Bureau of Land Management to determine the goal of an Administration who has stated they are for all of the above energy.

With that, I recognize the distinguished Ranking Member, Mr. Connolly, for his opening statement.

Mr. CONNOLLY. Thank you so much, Mr. Chairman.

I note that votes are occurring now, so I assume right after my statement we will probably go vote.

Mr. LANKFORD. Yes.

Mr. CONNOLLY. I thank the Chair.

I respect the Chair and I thank him for holding this hearing. Our philosophies could not be more different. I disagree with almost everything the Chairman has just said.

Frankly, the Republican rhetoric in this body has been that the hob nail boot of government regulation that has stifled the ability for the United States to achieve anything like energy independence, despite the fact that with EPA regulation and other regulation, our production of oil, gas and fossil fuels is going up, not down.

We are on a trajectory to match Saudi production, the number one producer in the world. We are on a trajectory to come close to eliminating our dependence on foreign oil entirely. Somehow that happened in a robust regulatory environment. Somehow that happened with this President and his support for having everything on the table, including fracturing.

That does not mean there aren't legitimate questions to be answered so that we can move forward with fracturing in an environmentally safe and humanly safe and healthy way. Those questions are not to be dismissed.

The idea that we are going to pit State regulators against Federal regulators, and one is good and one is bad, is to me to invite serious regression in America. The truth of the matter is Federal regulation seemed to be required by Republicans and Democrats not so long ago precisely because of the failure at the local level—lack of resources, lack of will, sometimes political interference.

Yes, gas and oil producing States sometimes skirted serious regulations in the name of economic advancement—understandable but not always in the public interest or a competing public interest.

I say we need reasonable regulation. We can all debate what reasonable is but the idea that we don't need any regulation at the Federal level at all, especially on something as potentially serious to environmental safety and human health as fracturing, is a notion I reject. I believe most Americans will reject it.

We have evidence of toxic chemicals that are involved in the fracturing process; we have evidence of seismic events that may have been triggered by some of that process. That is not a reason to say absolutely no to fracturing. It is a reason to try to be able to ensure the public that its interests are also being protected as we try to accelerate U.S. independence when it comes to fossil fuels.

I look forward to hearing the testimony but I want to make very clear my sharp difference with the statements made by the Chairman here today. There couldn't be a more profound philosophical difference in our approach in this Congress to the subject.

With that, I thank the Chair.

Mr. LANKFORD. Thank you.

All the members will have seven days to submit opening statements and extraneous materials for the record.

When you mentioned evidence of contamination of water sources, Mr. Connolly, I would like to have any evidence you have to back that up because the EPA Administrator actually told us that she was not aware of any contamination of groundwater at this point. Any evidence you may know of on that point would help the record as well.

Mr. CONNOLLY. Certainly. I would remind the Chairman, the Energy and Commerce staff conducted a study of chemicals used in fracturing and found at least 29 toxins including carcinogens such as benzene, napolene and acrylomide. The study found that at least 10.2 million of gallons of fracturing fluid contained at least one known carcinogen. I would be glad to submit the study for the record.

Mr. LANKFORD. Would not have a problem with the carcinogens being there in that. I understand that is used. The issue is, is it getting into the drinking water.

I would like to recognize my colleague from Utah, Mr. Bishop, to introduce one of his constituents who will sit on our panel today. We will introduce the panel but actually get into your testimony as soon as we come back from votes.

Mr. BISHOP. I thank you, Mr. Chairman.

Apparently you have had one speech for and one against. Do I get to do the tie breaking vote here?

Mr. LANKFORD. Let us do an introduction. How about that?

Mr. BISHOP. That is okay. You win anyway, Mr. Chairman.

I do wish to introduce Mr. McKee, who is going to be testifying today probably in a half hour or so. He is the Uintah County Chairman in my State of Utah. He has been the Chairman since 2002. He is the Chairman of the Commission at this time—close enough.

The importance of Uintah County is very simple—50 percent of all the jobs in that particular county are tied up with the extraction industry; 65 percent of all of the natural gas that is produced in Utah comes from this particular county. This is somebody who can give you expert testimony as somebody who lives it and knows who is on there.

He can testify that even though regulations are established to solve problems, sometimes when you actually establish regulation when there is no problem, the usual result is some kind of overreach in coming up with an abstract that does not fit the reality that happens to be there at the time.

I am appreciative of you giving close attention to his testimony because he can tell you about this particular issue of fracking from somebody who does not have to take a four hour airplane flight through three time zones to see the situation but someone who actually lives it every day with his constituency.

With that, I welcome him here and I appreciate this committee taking on this important topic because fracking is a significant issue for the State and it is a significant issue for the future of the Federal Government. I appreciate your bringing expert witnesses like Commissioner McKee here as well.

Mr. LANKFORD. Thank you, Mr. Bishop.

Let me introduce the other three panelists. Ms. Lori Wrotenbery is Director, Oil and Gas Conservation Division, Oklahoma Corporation Commission, also someone he knows well. We have done hydraulic fracking in Oklahoma since the 1940s, so this is not new, though I assume Ms. Wrotenbery has not overseen it since the 1940s. We are very, very familiar with over 100,000 fracks in Oklahoma alone. It is something we are very, very familiar with.

Next we have Robert Howarth, PhD, Director, Agriculture, Energy and Environment Program, Cornell University. Thank you for being here as well. We also have Mr. Michael Krancer, is on a return engagement. He was on the panel at the full hearing this morning. Thank you for staying over. He is Secretary of the Pennsylvania Department of Environmental Protection.

Obviously there is a lot going on and this is a new thing in Pennsylvania compared to where we are in Oklahoma where we have done fracking since the 1940s. He will bring a lot of insight on how Pennsylvania is continuing to handle the State regulatory environment.

With that introduction, we will start with Ms. Wrotenbery's testimony as soon as we get back. We have three votes in this series. We will get them done as quickly as we can. We will be back and reconvene at that time.

With that, we stand in recess.

[Recess.]

Mr. LANKFORD. We had to pause as we did votes. I think the next series of votes is around 5:30 p.m., so we will be halfway done at that point, right?

Pursuant to committee rules, all witnesses do need to be sworn before they testify. Please stand and raise your right hands.

Do you solemnly swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

[Witnesses respond in the affirmative.]

Mr. LANKFORD. May the record reflect that all witnesses answered in the affirmative. You may be seated.

In order to allow time for discussion, I would like you to limit your testimony to five minutes. I think most of you have been around this before, Mr. Krancer obviously just a few hours ago on this. You will see a clock in front of you to give you a quick countdown. Just be as close to that as you possibly can.

Ms. Wrotenbery, you may begin.

STATEMENTS OF WITNESSES

STATEMENT OF LORI WROTENBERY

Ms. WROTENBERY. Thank you, Mr. Chairman, Ranking Member Connolly and members of the committee. I appreciate the opportunity to be here today to talk to you about State regulatory programs for hydraulic fracturing.

I am the Oil and Gas Director in the State of Oklahoma. I am the Director of the Oil and Gas Conservation Division of the Oklahoma Corporation Commission. We are the agency that regulates oil and gas drilling and production operations in the State of Oklahoma. I am also here talking today as a member of the board of STRONGER. I am currently serving as Chairman of that board and a member of the Board of the Groundwater Protection Council as well.

I am going to talk a bit about a couple of the programs those organizations have underway that are addressing hydraulic fracturing issues. I do want to emphasize though how important it is for everyone to understand that States do regulate hydraulic fracturing. Just how they go about regulating hydraulic fracturing is documented in the STRONGER report that I will describe in a little more detail.

These programs the States administer have been around for many years. They are comprehensive, are continually improving and I think you can summarize them by saying they are strong, they are responsive, they are flexible and they are adaptive. For all those reasons, I believe they are effective in ensuring hydraulic fracturing operations are conducted safely.

The States do face challenges. Many of those challenges are associated with the development of new technologies, the use of hydraulic fracturing in different places and in different ways than it has been used in the past. There is no doubt that there are issues associated with hydraulic fracturing in today's environment. I will say the nature of those challenges varies from State to State. I can also say States are acting to address those issues in a way that is fitting to their specific circumstances.

I will give you an example. In Oklahoma, the ramp up in horizontal drilling and hydraulic fracturing activity within the last decade occurred during a period of severe drought. We did face some serious issues about the sources of water for hydraulic fracturing operations. We also needed to do what we could to encourage recycling of the flowback waters from hydraulic fracturing operations to minimize the demand on our freshwater resources.

For that reason, we had to take another look at our regulations for the management of produced waters in oil and gas operations. For many years, we had prohibited basically pits that we used to store produced waters. Those had been phased out decades ago. Now we were in a situation where we needed to accommodate the temporary storage of flowback waters in pits so that water could be used in future hydraulic fracturing operations and we could save our freshwater resources.

To address the issue, the Corporation Commission worked with the industry and other interested parties to develop new rules for

the large pits that were used to store flowback waters on a temporary basis so they could be reused and recycled.

There are more examples from other States about what issues they face and how they have addressed those issues in the STRONGER reports. I will just refer you to those. STRONGER, as the Chairman said, is a stakeholder process. The board of STRONGER, all of the guideline development workgroups, all of the review teams that STRONGER puts together are stakeholder bodies that include representatives of State regulatory programs, industry and environmental organizations.

In the last few years, STRONGER has developed guidelines for State hydraulic fracturing regulations and has conducted reviews of State hydraulic fracturing programs. We have done these reviews in Pennsylvania, Ohio, Oklahoma, Louisiana, Colorado and Arkansas. We are open to doing reviews in other States as they volunteer.

What the guidelines and reviews do is help the States benchmark their regulatory programs and identify areas for improvement. The process works. If you look back over the history of STRONGER, it does do follow up reviews to see how States have responded to the recommendations they make and over time, when STRONGER has done follow up reviews, we have seen that fully 75 percent of the recommendations have already been met at the time of the follow up reviews and others were in process. The States do take these reviews seriously.

In Oklahoma, for instance, received some recommendations which were welcome to us about how we could strengthen our program under the hydraulic fracturing guidelines that STRONGER put together. We amended a couple of our rules, we have also worked with our legislature and our governor to address some of the funding and staffing issues that arose in recent years, especially during the budget crisis we have all been struggling through. We have taken those recommendations from the STRONGER review seriously and have acted to address those recommendations.

We also recently adopted a chemical disclosure rule. I wanted to talk about FracFocus. FracFocus is another example of what the States are accomplishing by working together and with the stakeholders to address the issues that have arisen. FracFocus was put together in a very short time frame by the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission, two organizations that represent the oil and gas producing States. The Groundwater Protection Council includes the Drinking Water Program administrators as well.

Since that system went into effect in April 2011, over 18,000 wells have been posted to that site with full information about the chemical constituents of the frack fluids. The new rule in Oklahoma is similar to rules that have been adopted in six or seven other States. The rule will require the posting of chemical information on hydraulic fracturing operations in Oklahoma to the FracFocus website. We are trying to make sure that information is available to the public.

Thank you very much.

[Prepared statement of Ms. Wrotenbery follows:]

TESTIMONY OF
LORI WROTENBERY
DIRECTOR, OIL AND GAS CONSERVATION DIVISION
OKLAHOMA CORPORATION COMMISSION
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY,
INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM OF THE
HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

Hearing Entitled, "Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence"

Thursday, May 31, 2012

Thank you for the opportunity to testify today. I very much appreciate your interest in hearing the perspective of a state regulator on how states are working with oil and gas operators, local communities, environmental organizations, and other stakeholders to realize the economic potential of our oil and gas resources while ensuring public safety and protecting the environment.

Recent technological developments have given us access to oil and gas resources held tightly in shale and other deep geologic formations. We welcome this new opportunity. We also recognize the challenges it presents, particularly to those of us who work on a daily basis to manage and protect our precious water resources. To address these challenges, states across the nation are actively reviewing and updating their regulatory standards and procedures to ensure that oil and gas drilling and production operations are conducted safely. States are also continually testing, evaluating, and strengthening the mechanisms they have in place to develop, implement, and enforce sound regulations.

To give you a sense of the breadth and vitality of these state efforts, I would like to briefly summarize activities in three areas: (1) recent regulatory developments in the State of Oklahoma, which are in many ways specific to the particular circumstances there, but also have much in common with efforts underway in other oil and gas producing states; (2) the work being done through the stakeholder process called "STRONGER" to assist the states in benchmarking and improving their environmental regulations for oil and gas drilling and production operations; and (3) the development by the Ground Water Protection Council (GWPC) and the Interstate Oil and Gas Compact Commission (IOGCC) of the website called FracFocus and the chemical registry and other information available to the public on that website.

Regulatory responses by the State of Oklahoma to developments in horizontal drilling and hydraulic fracturing technology

Oklahoma has a long history of oil and gas exploration and production. The first commercial oil well was completed in 1897. Subsequently over half of a million oil and gas wells are estimated to have been drilled in the state.

I have attached a fact sheet to this testimony to give you an idea of the nature and extent of oil and gas operations in the State of Oklahoma. We presently have about 190,500 active wells in Oklahoma—roughly 115,000 oil wells, 65,000 gas wells, and 10,500 injection wells. They are widely distributed throughout most of the 77 counties in the state. In recent years, assisted by advances in horizontal drilling and hydraulic fracturing technology, oil and gas operators in Oklahoma have been actively developing sources of natural gas like the Woodford Shale as well as sources of crude oil like the Mississippi Lime.

The Oklahoma Corporation Commission (OCC) was established at statehood in 1907 and was first given responsibility for regulating oil and gas production in Oklahoma in 1914. OCC regulates public utilities, trucking, pipelines, petroleum storage tanks, and various other activities as well as oil and gas drilling and production.

The OCC is headed by three statewide-elected officials who serve staggered six-year terms. The Commission sets policy by adopting rules. The Commission also meets in public on a daily basis to issue orders based on the record created through formal, evidentiary hearings in various permitting, ratemaking, and enforcement proceedings.

My division, the Oil and Gas Conservation Division, is responsible for implementing and enforcing the rules and orders of the Commission for oil and gas exploration and production operations. Regulating the drilling, completion, and production of the multitude of oil and gas wells in the state requires a full complement of specialists: engineers, geologists, hydrologists, attorneys, technicians, and inspectors. These are the professionals I work with every day to ensure oil and gas operations in Oklahoma are conducted in compliance with the Commission's rules and orders.

All of these individuals, from the Commissioners on down, play key roles in our organization, and I don't wish to slight any of them, but I wish to emphasize the importance of our field staff. Our most fundamental regulatory operations occur in the field, not in an office. I believe our field inspectors are the single greatest strength of our regulatory program.

Our 58 field inspector positions cover the state. Field inspectors are required by statute to live within 37.5 miles of their territories. They work out of trucks that are fully equipped as mobile offices with computers, GPS units, field sampling kits and other equipment they require on a daily basis. They are the first point of contact for most of the people we serve—oil and gas operators, landowners, local government officials, and others. Our field inspectors are truly members of the communities they serve—indeed

many of them grew up in the same or nearby communities. They are required to have prior experience working in the oil and gas field, so they understand the operations they are inspecting. And they spend most of their working hours traveling the area lease roads, so they know their territories like few others. In case of an emergency, they can be on location within an hour in all but the most remote parts of the state.

Our field inspectors must meet high standards of conduct and performance—they are expected to inspect the operations and enforce the rules fairly, consistently, and appropriately. And they strive to meet these standards. They have earned our trust and respect, and the trust and respect of their communities, time and again. They don't always get the recognition and respect they deserve, so I'm pleased to have the opportunity to highlight their contribution here today.

Our field inspectors are our greatest strength, but they are not our only strength. Other strengths I would like to emphasize today relate to: (1) the complementary nature of our regulatory functions; (2) the way we have adjusted rapidly to new technologies and other emerging issues; and (3) our ability to tailor our rules to address unique areas and special circumstances.

Complementary regulatory functions

OCC regulates oil and gas exploration and production to conserve oil and gas resources, protect the rights of mineral interest owners, and protect public health and the environment. In the early days, our regulations no doubt focused on protecting the oil and gas resources. In fact, some of the earliest requirements to case wells with steel pipe were designed to keep water from damaging the oil and gas zones rather than to protect the water zones. Regardless, the requirement to separate the water zones from the oil and gas zones served to protect both.

The complementary nature of these requirements has become increasingly apparent over the decades as we have worked to ensure that our precious water resources are protected from oil and gas and associated saline waters. The same casing and cementing requirements that isolate the gas in its formation until it can be produced up through tubing and casing and into pipelines for transportation to market don't just prevent waste of oil and gas and protect mineral rights, they also protect our fresh water resources.

As another example, the spacing requirements that are designed to ensure the orderly development of our oil and gas resources play a role in controlling the surface impacts of oil and gas development. In its 2011 Regular Session, the Oklahoma Legislature established new mechanisms for the creation of special units and the drilling of multiunit wells to allow the drilling of horizontal shale gas wells across section boundaries. These new mechanisms will facilitate the drilling of longer laterals, which will also reduce the surface footprint of shale gas development in the state.

Evolution of regulation

The example of the new legislation for shale gas drilling illustrates how the State of Oklahoma has rapidly adapted to new technologies and addressed emerging issues. In recent years the OCC has engaged in an annual review of its oil and gas regulations and adopted changes to address new technologies, emerging issues, and other developments. Through this process of continuing assessment and adjustment, the OCC ensures that its rules remain current and effective.

For example, perhaps the biggest environmental issue associated with development of the Woodford Shale in Oklahoma has been how to accommodate the recycling of flowback water. We encourage recycling of flowback water as a way to reduce the demand on our freshwater resources. Recycling on a large scale, however, has required the use of pits for temporary storage of flowback water. Oklahoma rules did not allow for storage of produced waters in pits. In 2009 the OCC initiated a rulemaking process to develop standards and procedures for the permitting, construction, operation, and closure of pits for the recycling of flowback waters. The new rules went into effect in July 2010. And we continue to evaluate how they are working. Based on our initial experience with the new rules, the OCC has already made some amendments that went into effect in July 2011.

Special area rules

Most communities in the State of Oklahoma are well acquainted with the nature of oil and gas drilling and production operations. The City of Oklahoma City, where I live, is the location of one of the state's largest oil fields and dealt early on with the challenges of drilling and production in an urban environment. Oklahoma City is also recognized nationally for the quality of its tap water. Oklahoma City draws its drinking water from surface water supplies of exceptionally high quality and works effectively with the OCC and others to ensure that oil and gas operations do not adversely affect those supplies.

The OCC has procedures for special area rules to protect municipal water supplies. Any municipality or other governmental subdivision may apply for a Commission order establishing special area rules to protect and preserve fresh water. The Commission has issued hundreds of these special orders over the years.

For example, the OCC recently reviewed, updated, and strengthened the special area rules for oil and gas operations in the watersheds of Lake Atoka and McGee Creek Reservoirs. These truly pristine lakes in southeast Oklahoma supply water to Oklahoma City about 100 miles away. Special area rules had been initially adopted in 1985, but the recent upswing in drilling activity in the area raised issues that need to be studied and addressed.

> As is typical of our rulemaking proceedings, a rather large workgroup of stakeholders, including the City of Oklahoma City, rural water districts, counties, tribes, oil and gas operators, and others, assisted OCC staff in identifying the issues, considering options, and developing recommendations for consideration by the Commission. On the basis of those recommendations, the Commission proposed rule amendments that were ultimately adopted with the support of the stakeholders.
>
> The amended rules, which became effective in July 2009, established new setback requirements from the shores of the lakes, required containment structures around drilling locations, and included other provisions to prevent runoff of soil, salt, and other pollutants into the lakes. They also gave oil and gas operators some additional flexibility in meeting pit liner requirements in those locations far enough from the lakes that the use of pits is allowed. These special area rules illustrate the kinds of accommodations that can be reached when the stakeholders work together to figure out how to develop our oil and gas resources while protecting our water resources.

I have given you examples of the work we are doing in Oklahoma to ensure that development of our oil and gas resources is conducted safely. Similar efforts are well underway in other oil and gas producing states. For seven states already, including Oklahoma, these efforts are reflected in reports issued by the STRONGER stakeholder organization on its review of their hydraulic fracturing regulations.

STRONGER reviews of state oil and gas regulations

STRONGER has completed hydraulic fracturing reviews in six states now: Pennsylvania, Ohio, Oklahoma, Louisiana, Colorado, and Arkansas. I participated as a team member in each of the reviews, except of course in Oklahoma where I sat on the other side of the table. I wish to share with you what I've learned as a participant in the STRONGER hydraulic fracturing reviews, but first, please allow me to give you a little background on STRONGER.

The name, STRONGER, is short for State Review of Oil and Natural Gas Environmental Regulations, Inc. STRONGER is a multi-stakeholder collaborative effort to: benchmark state regulatory programs; develop guidelines for effective state regulatory programs; and conduct reviews of state regulatory programs against those guidelines. Attached to this testimony is a copy of a presentation describing the structure, history, and operations of STRONGER and the state review process, along with the current roster of members of the STRONGER Board.

The STRONGER Board includes three representatives from each of three stakeholder groups: state regulators, environmental organizations, and oil and gas producers. Likewise, all STRONGER efforts, such as guidelines development workgroups and

state review teams, involve the same balanced representation of the stakeholder groups.

When STRONGER reviews a state's hydraulic fracturing regulations, the STRONGER stakeholder review team takes the time to review the materials provided by the state describing its hydraulic fracturing regulations, listen to a presentation by the state on its standards and procedures, and discuss with the state how the state addresses the key program elements laid out in the STRONGER hydraulic fracturing guidelines. The review team then prepares a report that discusses the state program and makes findings and recommendations based on the STRONGER guidelines. In the report, the review team highlights the program strengths and accomplishments, as well as identifying areas for improvement. All of the STRONGER hydraulic fracturing reports are posted on the STRONGER website (www.strongerinc.org).

The reports prepared by the stakeholder review teams speak for themselves, and the observations I am about to share with you are my own, not those of STRONGER or of any particular review team. Having participated in each of the hydraulic fracturing reviews completed to date, however, I believe the reports document the fundamental strengths of the state programs as well as the decisive actions states are taking to meet the challenges of recent developments in horizontal drilling and hydraulic fracturing technology. The findings of the Oklahoma hydraulic fracturing review and similar stakeholder reviews conducted in other states show that the states are well equipped to regulate hydraulic fracturing. These reports also document that each state has experienced challenges in regulating hydraulic fracturing in today's environment, that the specific nature of the challenges varies from state to state, and that each state has taken actions in a manner appropriate to its particular circumstances to ensure that hydraulic fracturing operations are conducted safely.

Most importantly, the reports contain specific recommendations for improvement. The STRONGER stakeholder organization looks forward to returning to the states to learn how they have responded to the STRONGER recommendations. At this point, I can tell you that Oklahoma has already made several rule amendments recommended by the STRONGER review team and provided funding for additional field and technical staff based in part on another STRONGER recommendation. So, I can attest that the process is working to help the states in their ongoing efforts to maintain strong, effective regulatory programs.

Please note that the hydraulic fracturing reviews have been the principal focus of STRONGER's effort for the last couple of years, but STRONGER has a broader mission. STRONGER's hydraulic fracturing guidelines are but one chapter in its guidelines for state oil and gas environmental regulations. The state review process was originally established by the Interstate Oil and Gas Compact Commission (IOGCC) and the U.S. Environmental Protection Agency to address the management of wastes associated with the exploration and production of oil and gas. Over the years the process has addressed other significant issues, including abandoned sites, naturally occurring radioactive material (NORM), stormwater management, spill risk

management, and program planning and evaluation. And STRONGER continues to review and update the guidelines as needed to address emerging issues. In addition to reviewing the hydraulic fracturing guidelines to make adjustments based on the experience gained through the hydraulic fracturing reviews, STRONGER is now exploring the possibility of developing guidelines or other mechanisms to address air issues that have arisen in oil and gas producing regions.

To date, 22 states have been reviewed under the full set of STRONGER guidelines. The attached map of the United States shows the status of reviews in the various states. The states that have been reviewed account for over 90% of onshore production in the United States.

North Carolina recently became the 22nd state to undergo a full review. North Carolina's request for a STRONGER review is one of several steps the state is taking to prepare for future development of the Marcellus Shale. STRONGER published the report on North Carolina's oil and gas regulations in February of this year. Just last week, Governor Beverly Perdue issued an executive order establishing a regulatory workgroup to recommend a regulatory framework and interagency protocols for oil and gas development in North Carolina. Among the guiding principles to be considered by this workgroup, the executive order provides that the recommendations of the STRONGER review team must be adopted as a baseline in establishing environmental standards for an effective oil and gas regulatory framework.

STRONGER also conducts follow-up reviews to determine how the states have responded to review team recommendations. Ten of the 22 states that have been reviewed have had at least one follow-up review. Through the follow-up reviews, the review teams have found that fully three-quarters of the recommendations from prior reviews have been met. The review teams also found that work on other recommendations was in progress though not yet complete. For an entirely voluntary process, I find that record of accomplishment most impressive.

FracFocus

In addition to working with stakeholders to evaluate and improve their programs, the states are working collectively to provide information to the public on hydraulic fracturing operations. Two state organizations have led this effort: the Ground Water Protection Council (GWPC), an organization of state ground water protection agencies, including oil and gas regulatory agencies like mine; and the Interstate Oil and Gas Compact Commission (IOGCC), a compact of the Governor's of the oil and gas producing states.

In September 2010, the GWPC Board of Directors passed a resolution expressing GWPC's intent to develop, in concert with other state organizations, a web-based system to enhance the public's access to information concerning chemicals used in hydraulic fracturing. The GWPC then partnered with IOGCC to develop the chemical registry and website called FracFocus.

Over the next six months a system was developed that allows oil and gas companies to upload information about the chemicals used in each hydraulic fracturing job. This system was augmented by a website that provides a way for the public to locate and review records of hydraulic fracturing conducted on wells after January 1, 2011. The website also contains information about the process of hydraulic fracturing, groundwater protection, chemical use, state regulations, and relevant publications. It provides links to federal agencies, technical resources, and each participating company.

The FracFocus website, www.fracfocus.org, was launched on April 11, 2011. Since then, 277 companies have agreed to participate in the effort, more than 18,000 wells have been loaded into the system by 149 of these companies, and the website has been visited more than 250,000 times by more than 179,000 unique visitors. To give you an idea of the kind of information being reported to FracFocus, attached is an example of a report on the hydraulic fracturing fluid composition for a well in Oklahoma.

The states are informing their oil and gas producers about the FracFocus chemical registry and encouraging them to use it. In addition, a number of states have now adopted or are considering chemical reporting requirements that incorporate the FracFocus chemical registry. A copy of the chemical disclosure rule recently adopted by the Oklahoma Corporation Commission is attached to this testimony. This rule provides for the publication on the FracFocus website of the chemical constituents of fluids used in the hydraulic fracturing of oil and gas wells in Oklahoma.

As useful and informative as the FracFocus website already is, GWPC, IOGCC, and their member states are committed to making it even better. A recent enhancement to the site is a Geographic Information System interface that assists the public in locating well records. Future enhancements to the site will include expanded search capabilities and links to more publications, state agencies, and other resources.

Mr. LANKFORD. Thank you.
Mr. McKee.

STATEMENT OF MICHAEL MCKEE

Mr. MCKEE. Thank you, Mr. Chairman and members of the committee.

I appreciate the opportunity to take a couple of minutes on this.

My name is Michael McKee. I am County Commissioner in Uintah County, Utah. My primary focus over the year as a County Commissioner related to public lands issues, natural resources, specifically the extractive industry and our natural resource development.

In Uintah County today, we have approximately 6,000 active oil and gas wells. Approximately 65 percent of the natural gas produced in the State of Utah comes from the area where I live in Uintah County. The industry has provided many families with very good jobs with above average paying salaries. It is a way of life because 50 percent of the jobs and 60 percent of the economy in our area does come from the extractive industry.

I am concerned about over regulation, I am concerned about the stifling effect that over reach has on investment in our economy. In regards to the new fracking proposals rules, I am concerned that the Federal Government is trying to fix something that is not broke. It isn't even limping.

In my ten years as a county commissioner, I have never heard of one valid violation or concern with hydraulic fracturing. This includes the fluids used, the depth, the method of injection or any other concern being associated with fracturing. We just do not have that problem.

Hydraulic fracturing is not a new technology but a process that has been responsibly used for over 60 years. Hydraulic fracturing is a safe, well tested technology that has enabled the U.S. to develop unconventional natural gas and increase reserves to an over 100 year supply. Fracturing has been performed in over 1 million wells with an exemplary safety record—90 percent of the wells utilize hydraulic fracturing.

Hydraulic drilling and fracturing allows operators to produce ten times the amount of energy by drilling fewer than one-tenth the number of wells. We are delivering cleaner burning domestic energy and more of it while drilling fewer holes to get to it.

Regulatory decisions such as hydraulic fracturing are best made at the State level and not regulated by a Federal bureaucracy far removed from the issue. This is why individual States can better tailor their specific needs since they have the experience and understanding of the geology/hydrology infrastructure and other factors unique to each producing basin.

State regulators understand the needs of the communities they regulate much better than a far, removed Federal government and also have the specific technical expertise, resources and experience.

On March 14, 2012, now former BLM Director Bob Abbey testified in the Senate that there has been a shift in oil and gas production to private lands to the east and the south where there is lesser amount of Federal mineral estate. We have seen investment from

public lands to other areas. Part of the concern we have is the shift in investment that can happen from this.

Only 15 percent of my county is privately owned. These decisions can have a tremendous effect on the entire west where we have vast holdings of public lands. Adding additional burdens to development on Federal lands could have an adverse effect, forcing operators to shift investment away from my State and public land areas thus depriving our citizens of needed jobs and income.

The natural gas industry employs over 600,000 people in the United States. According to API, it accounts for nearly 4 million jobs and that is more than $385 billion to the national economy. Oil and gas royalties on public lands are a significant revenue source for the Federal Government, the State of Utah and to the counties from where it comes. In 2008, there were over $200 million in mineral lease money collected from my county alone.

Shale gas and hydraulic fracturing has single handedly turned the United States from a nation of declining gas production to one of rising production.

I was approached by tribal attorneys, this is an issue they have as well. The oil and gas producing Indian tribes are very much against the BLM's proposed rule. As some members of this subcommittee may be aware, a large portion of the UN&RA Reservation of the Ute Indian Tribe rests within the boundaries of Uintah County, Utah.

The Ute Indian Tribe is one of the Nation's largest oil and natural gas producing Indian tribes. The BLM's proposed rule would severely impact the development of tribal minerals in Uintah County. Yet despite this fact, the BLM has failed to comply with its legal obligation and duty to consult with impacted Indian tribes. BLM's proposed rule will kill tribal jobs in the oil and gas industry. The BLM has failed to work with the Ute Indian Tribe regarding the proposed rule.

In summary, local governments, many mineral producing States and affected Indian tribes are all very concerned with this ill-advised, unneeded and redundant rule.

I would be happy to answer questions. Thank you.

[Prepared statement of Mr. McKee follows:]

UINTAH COUNTY
STATE OF UTAH
152 EAST 100 NORTH
VERNAL, UTAH 84078
435-781-0770

COMMISSIONERS:
Darlene Burns
Mike McKee
Mark Raymond
ASSESSOR - Rolene Rasmussen
ATTORNEY - G. Mark Thomas
CLERK-AUDITOR - Mike Wilkins
RECORDER - Randy J. Simmons
TREASURER - Wendi Long
SHERIFF - Jeff Merrell
SURVEYOR - John Slaugh

Michael J. McKee
Uintah County Commissioner

Testimony before the
Committee on Oversight and Government Reform's Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform

Oversight hearing on
Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence

May 31, 2012

Mr. Chairman and Members of the Committee:

My name is Michael J. McKee, and I am a Commissioner in Uintah County, Utah. For ten years as a County Commissioner I have focused on issues related to public lands and natural resources, specifically in an effort to encourage a robust and healthy energy industry in Uintah County. In Uintah County, Utah we have approximately 6,000 oil and gas wells. 65% of the natural gas produced in the State of Utah comes from Uintah County. 60% of the economy and 50% of the jobs in Utah's Uintah Basin is tied to the extractive industry.

Oil and gas extraction has been the major source of employment in Uintah County since the 1940's. This industry has provided many families with good jobs, higher than average income, and the opportunity to work on the land we all love and respect. Oil and gas exploration has provided employment from one generation on down to the next. In Uintah County I have witnessed Jobs and economic revitalization occurring in shale territories.

The subject of today's hearing is dealing with possible new regulations on hydraulic fracturing, and I will say that I have never heard of one valid violation or concern with hydraulic fracturing. This includes the fluids used, the depth, the method of injection, or any concern being associated with fracturing.

Hydraulic fracturing is not a new technology, but a process that has been responsibly used for over 60 years. Hydraulic fracturing is a safe, well-tested technology that has enabled the U.S. to develop

unconventional natural gas and increase reserves to over a one hundred year supply. Fracing has been performed in over one million wells with an exemplary safety record. 90% of oil and gas wells now require the use of hydraulic fracturing, according to the Independent Petroleum Association of America. Horizontal drilling and fracturing allow operators to produce 10 times the amount of energy by drilling fewer than $1/10^{th}$ the number of wells. We are delivering cleaner-burning domestic energy, and more of it, while drilling fewer holes to get it.

With fracing of low-permeable rock such as shale, gas production will increase 24% over the US Energy Information Administration's forecast last year. An American Petroleum Institute study performed by HIS Global Insight found that in five years, if fracturing were eliminated, the number of wells completed in the US would drop by 79% and gas production would fall 57% by 2018.

States have successfully regulated hydraulic fracturing for over sixty years. Given the states' exemplary safety record, new federal mandates are not necessary. The proposed rule would add a redundant, burdensome and costly layer of federal approval for routine oil and gas operations on federal public lands, and threatens to usurp state authority in a field already well-managed by state regulators.

These decisions are best made at the State level and not regulated by a Federal bureaucracy far removed from the issue. This is why individual states can better tailor to their specific needs since they have the experience and understanding of the geology, hydrology, infrastructure, and other factors unique to each producing basin. State regulators understand the needs of the communities that they regulate much better than a far-removed federal government and also have the specific technical expertise, resources and experience.

The EPA has affirmed during the Clinton Administration, the Bush administration, and now during the Obama Administration that there have been no documented cases of contamination of drinking water from fracing. EPA found no evidence that water quality degradation has resulted from fracing in a 2004 study. (*Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs,* Final Report, US Environmental Protection Agency, June 2004, pages ES-13) Despite that, EPA is conducting yet another study on fracing. A one size shoe fits all approach doesn't make for the best management.

We are concerned when there is an overreach of federal regulation to try to fix something that isn't broken. Fracing is already heavily regulated at the state level, but new regulations will seriously disadvantage western states compared to other regions of the country. In contrast to other states, public lands states face a number of challenges relating to the management of Federal land and minerals within their borders. Those looking to access gas on our nation's public lands must comply not only with state law, but also with Federal law. Federal law and regulations often delay investment and job creation for years. As a consequence, Federal law and regulations often push investment out of public land states into other states where there is greater regulatory certainty. On March 14, 2012, now former BLM Director, Bob Abbey, testified in the Senate that there has been a "shift (in oil and gas production) to private lands to the east and to the south where there is a lesser amount of Federal mineral estate."

Implementation of new rules would be redundant with state regulations, cause excessive delays in oil and natural gas development, further disadvantage development on public and tribal lands, and divert jobs, revenue, and economic activity away from western states and local communities. Such layering of federal rules on top of existing state rules is unnecessary, burdensome, and unreasonable. Such redundancy will add cost and delay to a process that is already efficiently and effectively regulated by the State of Utah. In fact, we are very concerned when we see a duplication of regulation, red tape, additional processes, and unneeded scrutiny. This will have a chilling effect on investment to drill in our area.

In the 2012 General Session of the State of Utah, a Concurrent Resolution urging Congress to Clearly Delegate Responsibility for Regulating Hydraulic Fracturing to the States was passed. It states that ...hydraulic fracturing ... has greatly enhanced oil and gas production in Utah and that oil and gas production increases have led to growth in employment and economic development, as well as promotion of energy independence for the United States. It goes on to emphasize that the State of Utah, through the Division of Oil, Gas and Mining and the Department of Environmental Quality, have proven more than capable of regulating oil and gas recovery processes and ensuring the safety of workers while protecting the environment. It concludes that the state is best situated to closely monitor oil and gas drilling and fracturing operations to ensure that they are conducted in an environmentally sound manner.

Oil and gas royalties on public lands are a significant revenue source for federal government, the State of Utah and Uintah County. Adding additional burdens for development on Federal County, thus depriving our citizens of needed jobs and income. The natural gas industry lands could have an adverse effect of forcing operators to shift investment away from Uintah employees over 600,000 people in the United States. According to API it supports nearly 4,000,000 jobs and adds more than $385 billion to the national economy. Trucks that haul fracturing water, waste and multi-ton loads of equipment provide additional jobs just to the fracing part of the oil and gas industry. Shale gas extracted via horizontal drilling and hydraulic fracturing has singlehandedly turned the United States from a nation of declining gas production to one of rising production. Additional Federal oversight could have significant potential impacts to oil and gas development. Please see the attached April 2012 Executive Summary from the "Economic Impacts of Oil and Gas Development on the Public Lands in the West" prepared for Western Energy Alliance.

In the absence of hydraulic fracturing, the commercial viability of current and future oil and gas development could be significantly compromised. While no energy source is entirely risk free, the greater risk to the American public is posed by those who would shut down domestic development of natural gas which keeps us warm in the winter, generates electricity with greatly reduced air emissions, and powers our economy and way of life. I ask that BLM not duplicate state regulations in public land states. President Obama made remarks in the 2012 State of the Union address promising a commitment to "take every possible action to safely develop" domestic natural gas. These regulations are a solution that is working for the people of our nation's public lands states. Remember that hydraulic fracturing is a safe, well-tested technology that has enabled the U.S. to develop oil and natural gas resources. We ask the Administration to fully support leaving oversight and regulations in the hands of the state.

Mr. LANKFORD. Thank you

I would like to enter into the record, with unanimous consent, a letter from the National Congress of American Indians outlining some of the things you just said.

Mr. CONNOLLY. Mr. Chairman?

Mr. LANKFORD. Yes, sir.

Mr. CONNOLLY. Without objecting, I would ask for similar courtesy. I ask at this time a response to Mr. Krancer's testimony this morning from our colleague, Mr. Waxman, be entered into the record. I also ask that a similar response rebutting Mr. Krancer's characterization of Dr. Howarth's research from the Sierra Club that Mr. Krancer cited this morning also be entered into the record at this time.

Mr. LANKFORD. Without objection.

Mr. CONNOLLY. I thank the Chair.

Mr. LANKFORD. Mr. Howarth.

STATEMENT OF ROBERT HOWARTH

Mr. HOWARTH. Thank you, Mr. Chairman.

My name is Robert Howarth. I have been a tenured member of the faculty at Cornell University since 1985.

I am here today as an individual. I do not represent the University. As are the opinions I express are informed by my research conducted at Cornell.

I have worked on the environmental risk assessment and consequences of environmental pollution, including the effects of oil and gas development since the mid-1970s. I was invited today to present information on the environmental and public health consequences of hydraulic fracturing. I will try to very briefly do so.

Hydraulic fracturing is not new as we just heard. The process has existed for decades but it has existed on a small scale, using very small volumes of water. What is new is the combination of high precision directional drilling with high volume hydraulic fracturing. The new combination uses 50 to 100 times more water than was ever used in fracturing until a decade or so ago, five million gallons or so per well.

This new technology has indeed opened up new resources, shale gas and other unconventional gas. The technology is very, very new. I want to stress that. As a result, the science or understanding the consequences is also very, very new. For context, half of all the shale gas that has ever been developed in the world has been produced in the last three years, so a new technology and the science is new.

In terms of peer review literature on what the environmental consequences are, it almost all in the last year. The very first papers were published 14 months ago. The science is new. It is very rapidly changing. I will try to give you a sense of that today.

One issue is surface water pollution. Very briefly, I want to say there is good evidence that hydraulic fracturing in this new form has contaminated surface waters. One of the major ways is through improper waste disposal through sewage treatment plants. The City of Pittsburgh had a serious water quality problem from that with bromides entering their system. It is now outlawed in Pennsylvania but not outlawed in some other States. We still don't real-

ly have good alternatives for disposing of the hydraulic waste in much of the country.

Groundwater contamination appears to be a big issue. The science behind that is very iffy at the moment. A lot of the information is not publicly available making the science difficult. The U.S. Environmental Protection Agency is undertaking a long, detailed study on that and I think most scientists would say we should hold off and see what they come up with but there is certainly anecdotal evidence of this problem. I could talk more about that in questions if you like.

There is excellent evidence of methane contamination from hydraulic fracturing in wells. It is well documented in Pennsylvania. Local air pollution is an issue and there are two I will point to. One is benzene which is admitted to the atmosphere routinely from hydraulic fracturing. The State of Texas routinely reports values that are hazardous, sometimes at near acutely lethal doses. Pennsylvania reports much lower concentrations so far but they are concentrations which, in my opinion, pose a significant cancer risk from chronic exposure.

We have a big problem from the ozone pollution from hydraulic fracturing. The methane and other hydrocarbons that are released to the atmosphere make ground level ozone pollution. We are seeing large amounts of ozone pollution in the western States where it has almost never been seen as a problem before. In the winter in Wyoming, Utah and Colorado, ozone concentrations are now higher than they are in Los Angeles or New York City. This is undoubtedly a direct relation to hydraulic fracturing.

My own research has been on the role of methane released from shale gas and how that affects the greenhouse gas footprint. We published the very, very first analysis of that 13 and a half months ago. Our conclusion was that because methane is 105 fold more powerful as a greenhouse gas over the time period 20 years after emission, methane leakage even at small rates is a serious greenhouse gas concern, giving shale gas a larger greenhouse gas footprint than other fossil fuels. I will come back to that in just a minute.

I want to briefly mention one other issue and that is radon in gas supplies. Radon is a gas that is carcinogenic, the major exposure of ionizing radiation to the public in the United States currently. Natural gas is already a major root of exposure to getting radon into the homes and shale gas, at least from the Marcellus shale is far, far richer in radon than conventional natural gas has been. This is something I think deserves a lot more attention and scrutiny and a lot more study. In my opinion, it poses a significant public health risk that has gone under appreciated so far.

I believe the Federal agencies have a central role in regulating oil and gas development generally but also particularly with development of this unconventional oil and gas by high volume hydraulic fracturing. The issues involved are complex, they are new, the technologies are new and are continually evolving.

The scientific issues are difficult. From my experience interacting with agencies, scientists and managers in many States and many Federal agencies in the last 35 years, I believe most States lack the technical expertise to deal with these complex issues.

Finally, I note that the pollution from unconventional oil and gas in water, in air and in pipelines moves across State lines, so there is clearly a role for Federal involvement.

I would like to take a final minute to briefly respond to the written testimony of my fellow witness, Mr. Krancer. The written testimony I heard is very critical of our work on greenhouse gas so I would like to set the record straight on that. I have written an addendum to my testimony to do so.

I would also ask the committee to make a formal part of this paper, "Methane Emissions from Natural Gas Systems," which I and many other co-authors wrote for the U.S. National Climate Assessment at the request of the Office of Science and Technology Policy Assessment in February in which our work is explicitly compared with all other studies ever done on this topic.

Mr. LANKFORD. Without objection, we accept that into the record.

Mr. HOWARTH. The bottom line is that our estimates of methane emissions were the first, there have been many estimates since then and one of the things we called for was further direct study. Most of the information is available only from industry sources and it is poorly documented. We called for direct, independent studies and they are starting to happen. The first is now being published by NOAA and University of Colorado scientists.

It shows that we are conservative and low—the methane emissions are worse than we said. I would be happy to go into more detail on that work if the committee is interested.

My time is over. Thank you very much for the opportunity to talk with you today.

[Prepared statement of Mr. Howarth follows:]

Statement of Robert W. Howarth, Ph.D.

before the Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform,
Committee on Oversight and Government Reform,
Congress of the United States, House of Representatives

May 31, 2012

My name is Robert Howarth. I have been a tenured faculty member at Cornell University in Ithaca, NY, since 1985, and have held an endowed faculty position, the "*David R. Atkinson Professor of Ecology & Environmental Biology,*" since 1993. I am also the Founding Editor of the journal *Biogeochemistry* and an adjunct senior research scientist at the Marine Biological Laboratory in Woods Hole, MA. I have performed research and published scientific papers on environmental risk assessment and the consequences of pollution, including the effects of oil and gas development, since the mid 1970s.

I was invited to present information in this hearing on the environmental and public health consequences of hydraulic fracturing. Hydraulic fracturing is not new. The process has existed for many decades, using relatively small volumes of water, to stimulate gas and oil wells to increase production. What is new is the combination of high-precision, directional drilling with high-volume hydraulic fracturing. This new combination uses many times more water and chemical additives for the fracturing, often 5 million gallons or more per well. This is 50 to 100 times more fracturing fluid than used to stimulate conventional gas wells. The high-volume hydraulic fracturing combined with directional drilling has allowed the exploitation of gas resources not previously available, such as shale gas. This combination of technologies to obtain shale gas is very new, first used in Texas just over a decade ago. And over half of all the shale gas that has ever been developed in the world has been produced in the last 3 years.

Because the development of shale gas is so new, the science on this process and its environmental consequences is also very new. Almost all peer-reviewed scientific publications on the environmental and public health consequences of shale gas have been published in the past 14 months, since April 2011. A list of these papers and their abstracts can be found on the web site of Physicians, Scientists, and Engineers for Healthy Energy (http://www.psehealthyenergy.org/site/show_list/id/35). Today, I will briefly summarize the findings of this new, developing science.

Surface water pollution: Shale gas development has already caused significant surface water pollution. The additives used in hydraulic fracturing include toxic and carcinogenic substances, such as formaldehyde, benzene, xylene, and monoethanolamine. As importantly, frac fluids extract chemical substances from shales, including toxic and carcinogenic aromatic hydrocarbons, toxic metals, and radioactive materials such as uranium, thorium, and radium. Some of these materials are released to the environment when blowouts and other accidents occur. A greater route of release and exposure comes from disposal of frac-return fluids. Approximately 20%, or 1 million gallons or so, of the material used in hydraulic fracturing flows back to the surface in the first few weeks after fracturing, with all of the added and extracted chemical substances. In Texas, where most high-volume hydraulic fracturing has occurred so far, these wastes are disposed of by injection into old, abandoned conventional gas wells. In the Marcellus formation in Pennsylvania, some waste has been injected in such disposal wells, but suitable disposal wells are rare in the northeast, and much more has been disposed of in municipal sewage treatment plants. Such treatment plants simply are not designed to handle these toxic wastes. A significant amount of the wastes flow through the plants and are released into rivers. Public drinking water supplies in the Pittsburg area have already been affected, with elevated bromides from the waste interacting with chlorination in public drinking water systems to produce highly dangerous brominated organic compounds. As a result, the PA DEP and US EPA have put a stop to using sewage plants to dispose of frac wastes, as of the summer of 2011. But suitable alternative disposal methods have yet to be developed.

Groundwater contamination: There are several reports of contamination of drinking water wells and surface aquifers by fracking fluids, particularly in Pennsylvania and in Colorado. The extent of such contamination, and the mechanisms which might lead to such contamination, remain poorly studied. Most scientists familiar with the existing, public data (note that a lot of information is not publicly available) believe the contamination is likely caused by well and cementing failures. A recently published model suggests there may also be a threat of migration of contaminated fracking fluids from depth to surface drinking water aquifers over time through fissures and cracks. The US EPA is currently pursuing a comprehensive study of groundwater contamination from hydraulic fracturing, and intends to release a preliminary report later this year and a final report in 2014.

Shale gas development also leads to contamination of drinking water wells, as indicated by a May 2011 study published by Duke University scientists in the *Proceedings of the National Academy of Sciences*. Methane concentrations were frequently elevated in drinking water wells within 1 km of shale gas operations, sometimes at levels great enough to pose a significant risk of explosion.

Local air pollution: The development of shale gas and other unconventional forms of natural gas (from coal-bed seams and tight-sand formations) results in significant local air pollution. One concern is the release of benzene and other aromatic hydrocarbons

to the atmosphere from routine operations. State officials in Texas have reported benzene concentrations in the air near gas operations that sometimes exceed acute toxicity standards. In Pennsylvania, reported benzene concentrations are so far lower, quite likely because the rate of gas development has been much lower. Nonetheless, reported atmospheric benzene levels near some drilling operations in Pennsylvania are high enough to pose risk of cancer from chronic exposure.

Ozone pollution is also of great concern. Ozone is created in the atmosphere when nitrogen pollution and organic compounds react under strong sunlight. Current ozone pollution in the US is estimated to cause 30,000 premature deaths each year, almost the same death rate as from automobile accidents. Unconventional natural gas development from hydraulic fracturing increases ozone pollution due to leakage of organic compounds to the air. The problem has been particularly acute in Wyoming, Utah, and Colorado in recent years, with ozone concentrations in the winter due to natural gas development being higher than observed in New York City.

Methane and global warming: Methane is released to the atmosphere during development, transport, storage, and use of natural gas. Methane is an incredibly powerful greenhouse gas, and as a result of methane emissions, both shale gas and conventional natural gas have larger greenhouse gas footprints than other fossil fuels such as oil and coal (when viewed over an integrated 20-year time frame after emission). Recent climate models point to the urgency in reducing methane emissions: without immediate global reductions in methane pollution, these models indicate that the Earth will warm to 1.5 degrees C above the long-term average within 15 years or so, and to 2 degrees C within 35 to 40 years. This is a dangerous level of warming, a level that greatly increases the likelihood of positive feedbacks in the climate system, leading to an acceleration of further warming. Reducing emissions of methane and other short-lived radiatively active materials such as black carbon is the best way to reduce this dangerous warming. Currently, almost 40% of all atmospheric methane released by human activity in the US comes from the natural gas industry. Most studies indicate that shale gas development releases 40% to 60% more methane than does conventional natural gas. To address the huge threat posed by global warming, I believe it is essential to move as quickly as possible away from natural gas towards renewable energy resources, and to not further develop shale gas unless major (and expensive) steps are taken to greatly reduce methane emissions.

Radon in natural gas supplies: Radon gas is a carcinogen, and exposure to radon is the largest source of public exposure to ionizing radiation in the US. Currently, radon in homes in the US results in an estimated 20,000 deaths per year. Natural gas contains radon, and using natural gas for home cooking is one route of home exposure. Shale gas from the Marcellus formation, and perhaps from other formations as well, has much greater levels of radon than does conventional natural gas. This is because the Marcellus shale is particularly rich in uranium and thorium, and radon is formed from the decay of these radioactive materials. Radon has a half life of 3.8 days, so with

sufficiently long storage, the radon decays away and poses less public health risk. However, the rapid movement of natural gas from the Marcellus shale to northeastern cities would seem to pose a major public health risk, one that certainly deserves much greater study and scrutiny.

The role of federal regulation: I believe federal agencies should have a central role in regulating oil and gas development, and particularly with the development of unconventional oil and gas by high-volume hydraulic fracturing. The issues involved are complex, the technologies are new and continually evolving, the scientific issues are difficult. From my experience with interacting with both federal and state regulatory agencies over the past 35 years, I believe most states lack the science capacity to adequately develop and enforce regulations for unconventional oil and gas.

Finally, I note that the pollution from unconventional oil and gas development moves across state lines in surface waters, in the air, and in gas pipelines (in the case of radon). This inter-state pollution clearly calls for federal oversight of environmental and public health regulation.

I thank the committee for the opportunity to testify today, and I would be pleased to answer any questions you may have.

Mr. LANKFORD. Thank you.
Mr. Krancer.

STATEMENT OF MICHAEL KRANCER

Mr. KRANCER. Thank you and thank you for the opportunity to be here.

I am not sure the last time Washington, D.C. saw a duel out in front of the congressional offices but me and my good colleague, Bob Howarth, might have to have one after this.

In all seriousness, we in Pennsylvania have a comprehensive program to regulate what is not a new activity in Pennsylvania, oil and gas exploration and hydraulic fracturing. We have been doing it for about 60 years. Each State is different. That is the key. Pennsylvania is not the same as Oklahoma, not the same as Texas, not even the same as New York necessarily.

We have regulations regarding well casing and cement for the drilling process. We have regulations for water handling and surface water. We have regulations for air impact. We are doing short term air impact studies; we are going to do long term impact studies. One of the things just mentioned by Professor Howarth, the sewage treatment plants in Pittsburgh, he did say it is now outlawed in Pennsylvania. That is proof in the pudding that the States are very capable, agile and know enough about what is going on in their backyard to take the appropriate steps.

My colleague, Ms. Wrotenbery, testified about STRONGER, STRONGER did review Pennsylvania regulations in 2010. Those regulations were reviewed very well by STRONGER. Just recently, SUNY Buffalo in May issued a report that in essence followed up on that and brought it current. That report concluded there was a compelling case that Pennsylvania's oversight of oil and gas regulation has been effective.

We have a brand new statute in Pennsylvania, again proving the agility of the State to act and our knowledge of our own State at 13 which brought on some new requirements regarding setbacks, regarding disclosure and we have one of the most forward thinking advance disclosure provisions of any State in the Union, for the first time ever requiring disclosure to medical professionals.

I heard what Professor Howarth said about the methane study and his criticism of my criticism of it. I just have to note that I will have to take a number and get in line for the folks critiquing Professor Howarth's report. That is part of the academic process and that is all fair. That is what we should be doing.

I do have to take some exception to some of the points. Atmosphere benzene levels near "some drilling sites"—what drilling sites? They are not mentioned in his testimony. I am not sure what he is talking about with respect to chronic exposure and so forth. That is a toxicologist and epidemiologist purview.

The report that there have been several reported contaminations of drinking water wells and surface aquifers by frac fluids in Pennsylvania is just not true. That is simply not true. Not even Duke, which I have also had issues with the study from Duke, even the Duke study drew any connection between any frac fluid being in the water in Pennsylvania.

Let me remind everyone, methane migration has been a creature in Pennsylvania for generations and probably been a creature in other States as well. Any drilling, if it is not done right, can cause contamination or can cause methane migration. That is why in Pennsylvania we have our well casing and cementing regulations we put into place because we knew what our geology was like and we knew what was necessary on the floor.

I would agree with what Professor Howarth says, that this area is complex, it is evolving, it is difficult, but that is actually a reason the States should be on top of regulating. The States know how to react to these things. It is a proven record in Pennsylvania. We know the science in the States. We are not idiots in the States compared to the Federal Government, for example, who knows everything. That is not the way it works.

I would take a little bit of discussion point with the Ranking Member. The way environmental regulation works in this country is primarily based on State delegation, States running with the ball to regulate environmental matters. In terms of hydraulic fracturing, I talk about it in my testimony, the history is clear. The Federal Government has never indicated an interest, any Administration, any Congress, any EPA, in regulating hydraulic fracturing until all of a sudden now there is a huge interest to get into it from various different aspects.

That is all borne out in the history of the Safe Drinking Water Act, in the bipartisan 2005 Energy Policy Act which did nothing more than restate what the longstanding policy had been with respect to the Safe Drinking Water Act's non-regulation of fracking.

With that, I will conclude and look forward to questions and some more discussion.

[Prepared statement of Mr. Krancer follows:]

Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence

Testimony of
Michael L. Krancer
Secretary
Commonwealth of Pennsylvania
Department of Environmental Protection
Before the United States House of Representatives
Committee on Oversight and Government Reform,
Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform
Thursday, May 31, 2012

Members of the Committee, thank you for the opportunity to provide testimony on behalf of the Commonwealth of Pennsylvania, Department of Environmental Protection.

I have been asked to address how Pennsylvania's environmental protection programs oversee and regulate the exploration and extraction of natural gas to ensure that the activity is done in an environmentally sensitive way. Suffice it to say that Pennsylvania's programs are comprehensive and robust and they are working. The outside experts agree on that.

I have also been asked to say a few words about the newest federal forays into regulation of hydraulic fracturing, namely the draft EPA Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels and the Department of the Interior's Bureau of Land Management's (DOI BLM) draft regulations for fracking on federally managed or Indian lands.

There is no question that states can do and are doing a better job regulating the oil and gas extraction technique of hydraulic fracturing within their borders than the federal government could do. No "one size fits all" is applicable in this field. Each state is different and has different geography, topography, geology, hydrogeology and meteorology. In fact, the states in which hydraulic fracturing has and is taking place have been regulating that activity for many years already. The states are light-years ahead of the federal government in terms of experience and know how about their own individual states and about the science and technique of hydraulic fracturing.

Pennsylvania's natural gas extraction has dramatically increased over the past few years and we are delivering huge amounts of cheap clean fuel to Americans because of our ability to know our state and regulate and oversee the safe conduct of this activity within our state better than anyone. The Energy Information Administration reported on May 23, 2012 that natural gas production in Pennsylvania has quadrupled since 2009 averaging now nearly 3.5 billion cubic feet per day in 2011. See

http://www.eia.gov/todayinenergy/detail.cfm?id=6390. A copy of the dramatic chart from the EIA is attached as an Exhibit.

This has, in turn, resulted in what PJM, the largest competitive electric power grid operator covering 13 states and the District of Columbia from New Jersey to Illinois and over 51,000,000 consumers, has called a massive increase in future gas powered electricity generation. In fact, the PJM capacity auction of May 2012 cleared nearly 5 gigawatts (GW) of new gas fired generation capacity. Low gas and electric utility rates for consumers is only one side of the story. The promise for the future is even brighter as this and other domestic energy sources can unlock an economic renaissance that America can lead.

I can tell you unequivocally that the federal government could not have implemented and executed what we have done, and done very well, right here in Pennsylvania.

I was encouraged to hear that EPA Administrator Lisa Jackson said to an audience at Richard Stockton College of New Jersey in February 2012 that states are right to take the lead on the issue of regulating hydraulic fracturing and that regulation of hydraulic fracturing does not need to be federalized. However, it seems that EPA's actions and attitude recently have not been consistent with its Administrators words. Also, other parts of the federal administration have sought to interpose on the state's role as primary regulator of natural gas exploration and extraction via hydraulic fracturing.

This perceived need to layer federal regulation on top of an already comprehensive state regulatory program is completely unfounded. I say unfounded because both the federal government and independent, impartial organizations have concluded that states, and Pennsylvania in particular, are appropriately and professionally managing this important industry.

Indeed, the head of EPA's Drinking Water Program said publicly in 2010 that "I have no information that states aren't doing a good job already [regulating fracking]." That is certainly the case for Pennsylvania. Also, our regulatory program was recently evaluated by the independent, non-profit, multi-stakeholder State Review of Oil and Natural Gas Environmental Regulations organization (STRONGER) and received positive marks. STRONGER was recently recognized by the United States Department of Energy Shale Gas Subcommittee's August 2011 draft report on Shale Gas development as an "exceptionally meritorious" mechanism for improving the availability and usefulness of shale gas information among constituencies. According to STRONGER, "the Pennsylvania program is, over all, well-managed, professional and meeting its program objectives." I would go beyond that and say that Pennsylvania has done an exceptional job managing the new challenges that shale gas development presents while allowing our citizens to enjoy the enormous benefits created by this industry.

On May 15, 2012, the State University of New York at Buffalo's Shale Resources and Society Institute released a comprehensive study which found that Pennsylvania's

program and regulations have been quite effective at reducing the impacts per well drilled and that there is a compelling case that Pennsylvania state oversight of oil and gas regulation has been effective. The SUNY Buffalo study was extremely comprehensive and considered the period of 2008, when unconventional gas exploration was in its early stages in Pennsylvania, through mid-2011. The study found, among other things, that environmental incidences declined 60 percent between 2008 and August 2011. This, says the report, is "a rather notable indicator of improvement by the industry and oversight by the regulators." A copy of the SUNY Buffalo Study is attached hereto as an Exhibit. This, of course, reinforces, confirms and brings forward in time the conclusions of the 2010 STRONGER report which, as mentioned before, concluded that the Pennsylvania program is well-managed, professional and meeting its program objectives.

One of the primary areas of concern which has been raised about state regulation is in the area of groundwater and drinking water protection. There has been a misconception that the hydraulic fracturing of wells can or has caused contamination of water wells. This is false. First, hydraulic fracturing is only a temporary feature of natural gas development which lasts a few days. Hydraulic fracturing of wells is not new in Pennsylvania; it has been going on here since about the 1950s and has been standard practice since about the 1980s. Tens of thousands of wells have been hydraulically fractured in Pennsylvania without any indication that groundwater quality has been impacted.

Our decades of successful state experience is backed up by federal claims as well. In 2010, the head of EPA's drinking water program, Steve Heare, said that despite claims by environmental organizations, he had not seen any documented cases that the hydro-fracking process was contaminating water supplies. EPA Administrator Lisa Jackson said the exact same thing in her May 24, 2011 testimony before the U.S. House Committee on Oversight and Government Reform. In a January 2010 article in Platts Gas Daily, Energy Secretary Steven Chu said that hydraulic fracturing is safe and lawmakers should be cautious in their efforts to restrict it. My predecessor, former DEP Secretary John Hanger, told Reuters in October 2010 that "Pennsylvania has not had one case in which the fluids used to break off the gas from 5,000 to 8,000 feet underground have returned to contaminate groundwater."

Dimock, Pennsylvania has become somewhat of a center of attention with respect to natural gas exploration and state/federal relations. Even the original May 2011 limited Duke Study of Dimock, Susquehanna County, water sample reports confirmed there was no evidence of fracking fluids in any sample from any of the 68 wells they tested. The study states, "[w]e found no evidence for contamination of drinking-water samples with deep brines or fracturing fluids." And, more recently, from about January 2012 to May 2012, the federal EPA has conducted its own testing of private water supply wells in Dimock. EPA has conducted four rounds of sampling covering 61 homes. Each sampling result showed no levels of contaminants which would pose a health threat or as EPA put it, "the results gave no cause for either 'immediate' or 'further action.'"

Our ability to unlock the huge clean burning energy source contained in unconventional shale formations has transformed Pennsylvania into an energy exporter and will

ultimately move our nation toward energy self-sufficiency. In addition, we are looking at an economic and energy transformation. We have already seen tens of thousands of new jobs here in Pennsylvania from the industry itself as well as from new industries spawned to support it. These are good paying career jobs in many fields. And that is just the start. There will be hundreds of thousands more good paying skilled and unskilled jobs in a variety of sectors.

Oil and natural gas exploration and extraction have already provided huge economic benefits to Pennsylvania and the promise for the future is immense. Not only the promise of cheap clean fuel but also a key to the renaissance of the American petrochemical industry as well. Shell Chemicals in June announced that it is developing plans to possibly build a world-scale ethylene cracker with integrated derivative units in the Marcellus Shale region of Pennsylvania in Monaca, Beaver County. The cracker processes ethane from natural gas into ethylene, one of the primary inputs for a host of everyday products. It is no coincidence that Shell is looking right here in Pennsylvania to possibly build that cracker plant. As Shell said, "US natural gas is abundant and affordable."

This story is not limited to southwestern Pennsylvania. In the Philadelphia area we are also seeing that Pennsylvania's and our nation's oil and natural gas resources may hold the key to reinvigorating one or more of our southeastern Pennsylvania refineries and/or the petrochemical industry. The crude oil from the Bakken Shale formation in the Midwest may provide the game-changer which turns the Philadelphia refinery's economics around saving thousands of jobs. Also, Energy Transfer Partners' recent acquisition of Sunoco – coupled with a strong statement on its commitment to Marcellus Shale-related activity – is another tangible example of this opportunity benefiting southeastern Pennsylvania.

While interest in the economic and energy possibilities of the Marcellus is high, my job is to protect public safety and the environment and to do so based on sound science and not fiction or fear. Unfortunately, we have seen some examples of very suspect science lately in this area. There are many examples but let me point out four prominent ones: (1) the May 2011 Duke University Paper regarding methane in Pennsylvania water wells in Dimock; (2) the April 2011 Robert Howarth Paper regarding Greenhouse Gases and Marcellus Shale; (3) the April 16, 2011 United States House of Representatives Democrats Report, "Chemicals Used In Hydraulic Fracturing" and; (4) EPA's *Greenhouse Gas Emissions Reporting From The Petroleum and Natural Gas Industry: Background Technical Support Document*, 2010.

Our experts as well as other experts are studying all these materials, and I will not belabor all the deficiencies with these various reports here but I will highlight a few.

The Duke paper seems to be based on only a few selected samples in a specific area with previously documented problems, i.e., Dimock Township in Susquehanna County, Pennsylvania. This would indicate that the study itself is statistically and technically biased. Also, the fact is that the methane in the area being seen is the product of the

shallower, Upper Devonian formation which is about 1,000 to 3,000 feet deep, not the deeper shale formations which are about 7,000 feet deep. Yet the Paper improperly attempts to link the source to the deeper Marcellus Shale. The authors of the study have inexplicably declined DEP's reasonable request that they share with us their data and their sample locations. Moreover, the authors of the Study have indicated their personal bias. They have gone on record in the *Philadelphia Inquirer* as being personally ideologically opposed to domestic natural gas drilling saying "we would like to see shale gas drilling become largely unnecessary". These factors especially raise credibility questions. DEP is always willing to partner with disinterested scientists or institutions whose goals are to obtain facts but we are justifiably wary of those who admit that they are personally committed to showing "what we would like to see."

In October 2011 the Center for Rural Pennsylvania issued its comprehensive study entitled "The Impact of Marcellus Gas Drilling on Rural Drinking Water Supplies". The Center is a bipartisan bicameral legislative agency of the Pennsylvania Legislature. The study was conducted by the Penn State University's College of Agricultural Science. Major findings of the Study include the following:

- Statistical analyses of post-drilling versus pre-drilling water chemistry did not suggest major influences from gas well drilling or fracking on nearby water wells.

- Analyses of the data from both phases of this study generally showed a lack of statistically significant changes in water quality parameters due to Marcellus drilling or fracking when comparing pre- to post-drilling elements of water quality.

- In contrast to the Duke study's findings, here dissolved methane did increase at one drilled site but this site also had a moderate level of methane before drilling occurred. Dissolved methane did not increase at fracked sites and was not correlated to the distance to the nearest Marcellus well site.

- Regarding methane, the research found no statistically significant increases in methane levels after drilling and no significant correlation to distance from drilling.

- Statistical analyses did not suggest major influences of gas well drilling on the water quality of nearby water wells, as evidenced by a lack of statistically significant increases in pollutants that are most prominent in drilling water fluids, such as total dissolved solids (TDS), chloride, sodium, sulfate, barium and strontium.

- Results of the water quality parameters measured in the study did not indicate any obvious influence from fracking in gas wells nearby private water well quality. Data from a limited number of wells also did not suggest a negative influence of fracking on dissolved methane in water wells.

Also, the EPA announced in January 2012 that it had decided to step in and take water samples in Dimock. EPA released on or about May 11, 2012 the results of its fourth and final round of water testing. EPA said that the results of its fourth were the same as the results of the first three rounds and that is all rounds of samples show no health concerns.

The United States House of Representatives Democrats' April 16, 2011 paper fails to state what it is not. It is not a toxicological review of chemicals used in fracking and it does not provide a sound scientific assessment of exposures, exposure pathways or risks to human health that might be associated with such theoretical exposure. The paper also fails to note that the fluid that is its subject is over 98% water and sand with only small amounts of the chemicals it attempts to characterize. The paper creates misimpressions by focusing on total liquid volumes and not the amounts or volumes of any additives in the liquid. The paper also is very loose with respect to its use, or misuse, of the label "carcinogen."

Robert Howarth is a Cornell University scientist who published a "study" regarding the greenhouse gas impacts of shale gas development. Howarth's supposed study has been rejected by almost every legitimate source in the scientific community. Even Howarth himself admits that the data in his study is, his words, "limited", "unpublished", "really low quality", "lousy" and from "weird PowerPoints." Joe Nocera of the New York Times points out that even the Environmental Defense Fund has estimates of methane gas emissions that are 75% lower than Howarth's.

In August 2011, Carnegie Mellon University (CMU) published a study, partially funded by the Sierra Club, which demonstrates conclusively that Howarth's conclusions are false, irresponsible and unscientific. The CMU study is a comprehensive life cycle analysis which concludes, among other things, that "natural gas from the Marcellus Shale has generally lower life cycle greenhouse gas (GHG) emissions than coal for production of electricity" and that "natural gas provides lower greenhouse emission for all cases studied whether the gas is derived from Marcellus shale or the average 2008 domestic natural gas system" Also, interesting is that the CMU study concludes that although "green completions" and capturing gas for market that would otherwise be flared or vented could reduce emissions associated with the completion process, "these preproduction emissions, however, are not substantial contributors to the life cycle [emissions] estimates." As lead CMU researcher Paulina Jaramillo said, "we don't think [Howarth] is using credible data and some of the assumptions [Howarth] makes are biased. And the comparison [Howarth] makes at the end, my biggest problem, is wrong."

The fundamental deficiencies of EPA's *Greenhouse Gas Emissions Reporting Technical Document* were recently very well documented in an August 2011 report released by the very well respected energy consulting firm IHS CERA entitled, aptly, "*Mismeasuring Methane: Estimating Greenhouse Gas Emissions From Upstream Natural Gas Development*. The EPA's 2010 *Technical Guidance* inexplicably revised upward by an order of magnitude the prior emissions estimates for GHGs from this industry from studies on this topic from just a few years ago. IHS CERA explains the magnitude of the flaws in EPA's approach. As IHS CERA points out, EPA's methodology behind its

2010 study lacks rigor and should not be used as a basis for analysis or decision making. EPA, strangely, based its estimates on methane emissions from well completions from data samples of methane captured (i.e., not emitted) during well completions. Also, EPA based its conclusions on just a couple of slide presentations. Aside from the fundamental deficiency of using incomplete and unreliable data, IHS CERA points out that EPA did not even do the math correctly with the data it did choose to use and that EPA's assumptions in doing the math were unsupportable in the real world. As a result, "the overall amount of methane that EPA assumes is emitted during well completion activities does not pass a basic test of reasonableness."

This Report would seem to confirm that life cycle GHG emissions from unconventional shale operations are similar to current domestic gas operations and that natural gas, as a fuel, presents tremendous opportunities to achieve cleaner air since it emits virtually no particulate matter and much lower amounts of other parameters.

The IHS CERA Report also discusses the Howarth Report. IHS CERA shows, to the extent any further showing on this were necessary, that the Howarth Report is not technically or factually supportable. Indeed, appended to the IHS CERA report is a piece by an IHS CERA principal, Pete Stark, that specifically takes Howarth to task for "misusing and seriously distorting" a previous IHS CERA article published by Mr. Stark. The release of the CMU Study and the IHS CERA Study in such close proximity in time prompted a colorful remark by my immediate predecessor as DEP Secretary, John Hanger, who had this to say, "bit by bit the Howarth Study is being consigned to the junk heap."

The Myths About the So-Called "Halliburton Loophole" and the FRAC Act

Since an overarching topic here today is state versus federal regulation of hydraulic fracturing, let me take a few minutes to discuss some context and history. Much of the discussion about the state/federal relation in the area of regulation of hydraulic fracturing has as its focus the so-called, but misnamed, Halliburton "loophole". While some say that the so-called Halliburton Loophole is behind what they perceive as a sinister plot to exempt fracking from the Safe Drinking Water Act (SDWA) and allow the pollution of drinking water, the facts are different.

First the context. Fracking is a temporary process of pumping fluids underground for the purpose of extraction of natural gas or oil from deep formations. Indeed, the initial fracking process lasts a only few days and while the well may have to be periodically re-fractured, the life span of a producing well can be a century. In addition, the fracking process is separate and apart from the drilling process. In fact, the fracking process, by definition, occurs after the drilling of the well is complete. Also, fracking happens very deep below the surface. For Marcellus formations, this occurs at about 5,000 to 8,000 feet below the surface or more. Fresh groundwater, on the other hand, is located from about less than 600 feet below the surface.

Now the history. Hydraulic fracturing has never been regulated by the federal government. It has always been a matter of state regulation. EPA has never intended or thought that fracking is or should be subject to the SDWA's Underground Injection Control (UIC) program. It has never before even expressed an interest in regulating the generations-old practice of energy extraction *via* hydraulic fracturing under the SDWA UIC program. Instead, EPA, before now, has always been of the mind that the practice was well regulated by the various states in which it was taking place.

In 1997, a court case from the federal appeals court for the Eleventh Circuit issued an opinion involving the state of Alabama, while not finding that fracking was any threat whatsoever, for the first time ever, said that underground emplacement of fluids for the purpose of extraction of gas from coal beds, which are quite shallow compared to Marcellus and other unconventional gas bearing formations, was subject to the federal UIC program. The aberrational case was not binding nationwide; only in the territory governed by that federal court. In response to this court decision, EPA studied the fracking process and it issued a report in 2004 which concluded that fracking poses little or no threat to drinking water. EPA also concluded then that no further study of this process was scientifically justified.

Just like EPA, the United States Congress has never intended that hydraulic fracturing should be subject to the SDWA's UIC program. So, in 2005, in the face of the aberrational court decision from the Eleventh Circuit, Congress sought to reassert and reaffirm, through the bipartisan Energy Policy Act of 2005, what had always been its policy, *i.e.*, fracking for energy extraction was not regulated federally by the SDWA's UIC program.

It is myth to assert that this was pushed solely by Vice President Dick Cheney. In fact, this provision of the Energy Policy Act of 2005 garnered bipartisan support. It won 74 yea votes in the Senate. Included among its supporters there was Ken Salazar, the current Secretary of the Interior who was then a Senator from Colorado and the current President of the United States, Barack Obama, then the junior Senator from Illinois. In the House, 249 members on a bipartisan basis voted for the Bill including the top Democrat members of both the Energy and Commerce and Natural Resources Committees.

Now for the facts about drinking water and surface water protection. The Energy Policy Act of 2005 has no impact whatsoever on the state and federal laws that prohibit oil and gas extraction operations from causing surface water or ground water pollution. The whole of oil and gas operations are subject to the federal Water Pollution Control Act and is prohibited from causing pollution to the waters of the United States. In Pennsylvania, all aspects of oil and gas exploration and extraction, including drilling and fracking operations, are regulated by the state's Oil and Gas Act, the Clean Streams Law, Air Pollution Control Act, Solid Waste Management Act, and the Dam Safety and Encroachment Act and our water protection regulations. Pursuant to these laws, pollution of groundwater and surface water resources by well drilling and completion is completely prohibited, The fact is that the so-called and misnamed "Halliburton

Loophole" in no way diminishes the statutory and regulatory coverage of our laws as applied to gas extraction.

Hazardous chemicals are not being injected into the drinking water as some say. As mentioned, hydraulic fracking occurs at great depth; about 5,000 to 8,000 feet in Pennsylvania. Fresh groundwater is located a few hundred feet below the surface. So the activity occurs thousands of feet of solid bedrock below where water aquifers are located. Also, fracking fluid is comprised of on average 99.51% water and sand. The rest are components in common everyday uses such as food additives and cosmetics. As a Harrisburg newspaper story succinctly described this false paradigm recently,

> Industry representatives say the chemicals are the same as you'd find under your kitchen sink, but Surra said "You don't want to take the stuff from under your kitchen sink and mix it in a glass of water you're going to drink, and that's basically what's going on." But it's not.

'*Citizens Shale Commission' Weighs In On Marcellus Policy*, Harrisburg Patriot News, Monday October 24, 2011 (emphasis added).

In conclusion, the case for the FRAC Act or federal regulation of hydraulic fracturing has not been made. In fact its proponents neglect, forget or misrepresent the history behind the relationship between fracking and the SDWA UIC program. They fail to mention or account for the fact that the current President of the United States and current Interior Secretary supported the Energy Policy Act of 2005 and that never before the appeals court case did either the Executive or the Legislative Branch intend or assert that fracking for energy extraction was within the SDWA UIC program. Also, the FRAC Act has nothing to do with potential contamination of drinking water supplies. The FRAC Act does not deal with well construction, cementing and cementing practices. Pennsylvania's state regulations do that.

Before I talk about Pennsylvania's programs, let me briefly address the topics of the draft EPA Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels and the Department of the Interior's Bureau of Land Management's draft regulations for fracking on federally managed or Indian lands.

EPA's Draft Diesel Fracking Guidance Raises Serious Questions About States' Primacy—Mission Creep and Redundancy For No Environmental Benefit

This is really a story of regulatory mission creep, redundancy of regulation, adding regulatory uncertainty and, substantively, trying to fit a square peg into a round hole all for no environmental protection benefit that will detrimentally impact our nation's ability to obtain domestic sources of energy at a time in which we need those resources more than ever. The draft Guidance is very broad and covers topics such as public notice processes, monitoring, pressure testing and well casing and cementing requirements.

It is important to note at the outset that the SDWA UIC program was developed and is operated with respect to underground injection of fluids for storage and disposal. It was not designed to cover natural gas or oil production well activities. Pennsylvania has very little underground injection for storage or disposal. Primarily for this reason Pennsylvania has not sought primacy for the UIC program and EPA issues the permits, to the extent there are any, for the UIC storage and disposal activities.[1] Also, we do not believe that operators are commonly using diesel fuel for hydraulic fracturing for production in Pennsylvania. So, the Draft Diesel Fracking Permitting Guidance may not have a very large impact on Pennsylvania. However, the guidance does pose a back-door challenge and threat to the states' regulation on hydraulic fracturing and could lead to very detrimental results.

The federal government does retain the legal authority to regulate hydraulic fracturing for natural gas and oil production if diesel fuel is used in that process. That was the one entry point spelled out in the 2005 Energy Policy Act which, as I have discussed, affirmed the longstanding law and policy that the federal Safe Drinking Water Act and the federal government did not intend to regulate hydraulic fracturing for natural gas or oil production.

The entire enterprise the EPA has undertaken here leads to some well-placed suspicion about its motives. One has to ask why the federal government would want to interpose itself here as the states in which hydraulic fracturing is happening are doing a good job doing so and are light-years ahead of the federal EPA on this in terms of time, experience and know-how. Also, what information does EPA have which shows that industry is routinely using diesel fuel for fracking? This leads to some serious questions why the federal government would be spending its limited time and resources going down this path and where this "draft" Guidance will end up as a final one.

During the drafting process there were reports that some EPA staffers were vocal that the definition of "diesel fuel" should be very broad. Their theory was since diesel contains "BTEX" compounds (i.e., benzene, toluene, ethyl benzene, and xylenes) that any hydraulic fracturing activity which contains any amount of any of these materials should be defined as diesel fuel. Thus, the Energy Policy Act's limited exception for fracking with diesel fuel would be swallowed entirely by EPA regulatory fiat and virtually all production fracking would be covered by federal regulation. This would be of doubtful legality and would certainly be challenged in court, the draft guidance does not go that far. However this is just a draft guidance and one of the topics EPA is seeking comment on is how to define "diesel fuel."

On a more basic level, as mentioned earlier, the SWDA UIC program is a storage and disposal well program. It is not and never has been a natural gas or oil production well program. So you have the anomaly of transposing storage and disposal well requirements onto a production well overlay. This is trying to fit a square peg into a round hole. This is already proving problematic. For example, the draft guidance recommends that the area

[1] Other states in which EPA has primacy over the UIC program and EPA issues the permits for such activities are New York, Kentucky and Tennessee.

of review (AOR), which is basically the area governed by the permit, be radically expanded from the one-quarter mile generally used in the UIC program to a radius that covers the entire length of a horizontal fracture which could be several miles. That makes little sense based on the science of hydraulic fracturing.

Then there is the more subtle but very pernicious specter of federal pre-emption which threatens states that do have primacy over their UIC storage and disposal programs such as North Dakota, Texas, Wyoming, Colorado, Montana, New Mexico and Oklahoma. These states have very robust state regulation of oil and gas exploration and extraction activities. There is the prospect that EPA could in the future threaten those states' primacy if it were to find that the states' programs were not exactly like EPA's program for diesel fuel fracking. In addition, in those states, there is the prospect that EPA's "square peg" storage and disposal UIC standards would creep over into the "round hole" of production well standards regulation. There is not a good fit and safe and environmentally sensitive domestic energy production in those states could be choked off by regulatory overkill and uncertainty.

DOI's BLM Proposed Rules On Fracking—Mission Creep and Duplication Again

Pennsylvania will not be directly impacted by these rules as we have no BLM managed lands or Indian lands. However, as with the draft permitting guidance discussed already, the larger question is the federal attempted overlay on what the states are already doing. Much of the attention on the BLM proposed rule deals with chemical disclosure. We already have in Pennsylvania one of the most aggressive chemical disclosure laws in the nation which I will talk about in more detail later. I would imagine that many states in which fracking takes place and there is BLM or Indian lands would say the same. In fact, the Governor of Colorado, John Hickenlooper, himself a geologist, noted that "Bureau of Land Management modeled its disclosure requirements for fracturing fluids after the Colorado rule". Governor Matt Mead has observed that Wyoming's is "well ahead" of the BLM on regulation of hydraulic fracturing. He noted that Wyoming has had chemical disclosure rules in place since 2010 and that the Wyoming law is more rigorous than what BLM has proposed. Governor Mead went on to say that we want the states to be in a position to be proactive and agile on these and it is a disincentive to do so when the federal government steps in and says we are going to have a cookie-cutter approach. We agree with both Governor Hickenlooper and Governor Mead on this.

Indian tribes reacted quite skeptically. Fred Fox, the energy administrator for three Indian nations in North Dakota (the Mandan, the Hidatsa and the Arikara nations) observed that the BLM proposal is downright unwelcome on a number of levels. Mr. Fox sees the shale play as a newfound source of possibility for his economically challenged North Dakota community. The new BLM proposed rules, though, would be a hurdle and an unnecessary intrusion into that. He said that the proposed regulations are redundant as "the regulations try to come in and put a layer of control over what the tribes are trying to do." On a broader level, Mr. Fox's view is that the federal intrusion is a step backwards from American Indian sovereignty and a breach of the policy that the federal government should consult with the Nations on decisions that affect them.

Interestingly, those views parallel the view of many states with respect to the federal government's intrusion into the states' arena with respect to regulation of hydraulic fracturing.

The other topics covered in the BLM proposed rule, well construction standards and water management plans, are also already being done in Pennsylvania. So Governor Mead's point about Wyoming is applicable here too; we are already well ahead of the federal government on regulation of hydraulic fracturing.

At the end of the day we have duplicative regulatory requirements that add nothing to environmental protection and serve only to increase regulatory uncertainty and burden. That will only serve to hinder oil and natural gas exploration and for no environmental protection reason. This seems like regulation for the sake of regulation.

Pennsylvania's Regulatory Program

Simply put, because of our long history of oil and gas development and comprehensive regulatory structure, Pennsylvania does not need federal intervention or a federal overlay to ensure that this activity is being done in an appropriately protective manner. In fact, as I have mentioned, only the state could have implemented the programs we have in place now and only the state can be responsive, flexible, agile and knowledgeable enough about conditions and circumstances on the ground here in Pennsylvania to adjust programs when adjustment is called for.

Pennsylvania regulates oil and gas well operations under several statutes including the Oil and Gas Act of 2012, the Clean Streams Law, the Air Pollution Control Act, the Dam Safety and Encroachments Act and the Solid Waste Management Act. As described in more detail to follow, this network of laws and their associated regulations provides the Department of Environmental Protection (DEP) with the tools it needs to comprehensively regulate everything associated with oil and gas development - from locating the well site, site preparation, drilling the well, fresh water withdrawals and water storage, wastewater management, and site restoration.

I will talk about our program in much more detail later. However, an overview is helpful at this point. We have regulations governing well construction, i.e., cementing and casing rules. Those are our so-called Chapter 78 regulations. We have regulations governing surface aspects of natural gas exploration and development as well. That would include water disposal rules which prevent untreated flowback water from being released into our surface waters. Those are our Total Dissolved Solids regulations which are codified in Chapter 95. We have rules and regulations governing site development to control erosion and sedimentation. There are rules regarding surface storage and impoundment as well as centralized flowback impoundments. We have undertaken an initiative at DEP to encourage the use of non-freshwater for fracking including the use of Abandoned Mine Drainage water. We also have a long history of air regulation in Pennsylvania and we have regulated air emissions aspects of oil and gas development for a long time.

With respect to surface and drinking water protection, Pennsylvania has shown it is ready, willing and able to act in other important, agile and decisive ways. On April 19, 2011, at the direction of Governor Tom Corbett, I called on all Marcellus Shale natural gas drilling operators to cease by May 19 delivering wastewater from shale gas extraction to 15 facilities that then accepted it under an exemption from being covered by the 2010 Total Dissolved Solids (TDS) regulations. The next day the industry publicly stated its commitment to compliance. From what we can see today a dramatic sea change has occurred in Pennsylvania on this as we have virtually overnight gone from millions of gallons being delivered to those facilities and discharged to virtually none. Our latest data is a dramatic demonstration of success. For the first six months of 2011, 1.977 million gallons (or 47,087 barrels) were reported as having been sent to municipal treatment plants. For the second half of 2011, that total was reduced to a mere 17,136 gallons or 408 barrels, a reduction of more than ten-thousand fold.

Of course we are still in the process of verifying both from the supply side and the demand side and we will continue to do so as we are seeing full cooperation all of the time. In that regard we sent a letter in July 2011 to approximately 88 drilling operators seeking their certification that they are no longer using any of the "grandfathered" facilities for wastewater from deep gas production. On the demand side, several NPDES permits are in-house for renewal and those renewed permits, if appropriate, will contain specific numerical limits for total dissolved solids.

Some Monday morning quarterbacks questioned DEP's method, saying that it should have "ordered" compliance back in April. But any orders would have likely resulted in protracted litigation. We obtained compliance in 28 hours instead of 28 months and the data is proving it.

In November 2011, DEP produced a White Paper on the potential use of Abandoned Mine Drainage water for fracking. This White Paper generated national attention and the Pennsylvania Legislature is in the process now of moving a bill which would aid the process of moving that initiative forward.

In March 2012, DEP published a revised general permit for the processing and beneficial reuse of liquid waste from oil and gas operations. This is part of our constant emphasis on recycling of flowback water. The general permit, GP-123, encourages using closed-loop processes which reuse liquid waste after it has been treated or processed. The General Permit also establishes water quality criteria that, if met, allow processed water to be managed, stored and transported as freshwater if it will be reused to fracture additional wells. There are currently ten facilities operating under this general permit and ten more have applied. Clearly, the industry is embracing recycling.

The Pennsylvania Marcellus Shale Advisory Commission Report

Pennsylvania Governor Corbett early on in his Administration created the Marcellus Shale Advisory Commission. I was honored to be a member of the Governor's Marcellus Shale Advisory Commission and co-chair of its Public Health, Safety & Environmental

Protection Subcommittee. The commission assembled experts from within the environmental, conservation, state and local government, academic and natural gas industry communities and its charge was to identify, prioritize and craft a set of comprehensive strategic recommendations regarding the safe, efficient and environmentally responsible extraction and use of unconventional gas reserves in Pennsylvania.

I can testify personally that the process itself was remarkable. The commission's approach was grounded in sound science, data and facts, not fiction, emotion or profits. I witnessed an amazing consensus building exercise among representatives of different backgrounds, outlooks and opinions. The commission was transparent in its business. There were 5 full commission public meetings and 16 work group public meetings. There were 60 expert presentations and 100 citizen presentations. There were hundreds of communications to the commission from the public.

The final report of the commission is 137 pages long and contains 96 recommendations. About one-half of those recommendations were in the area of public health and safety. Those recommendations are implementable through three separate avenues: statute, DEP regulation, or DEP Policy/Guidance. Many of the commission's recommendations are already being implemented.

Passage of Act 13 of 2012

Much of the vision of the Marcellus Shale Advisory Commission's recommendations ws enacted into law by Act 13 of 2012, which Governor Corbett signed on February 14, 2012. The provisions of Act 13, together with several other statutory provisions[2], include, but are not limited to the following:

World Class Standards For Unconventional Drilling and Development

- Increase well bonding from $2,500 up to $10,000
- Increase blanket bonds from $25,000 up to $600,000
- Increase well setback distance from streams, rivers, ponds and other water bodies 100 feet from the edge of the pad and 300 feet from the well head
- Increase well setback distance from private water wells from 200 feet to 500 feet and to 1,000 feet from public drinking water systems
- Expand a gas operator's "presumed liability" for impairing water quality from 1,000 feet to 2,500 feet from a gas well, and extend the duration of presumed liability from 6 months after well drilling to 12 months after well completion
- Enable DEP to take action against bad actors in a more efficient manner
- Requires DEP to inspect after installation of erosion and sedimentation controls
- Requires real-time notice to DEP of critical stages of drilling operations

[2] Act 127 of 2011 and Act 9 of 2012.

Enhancing and Protecting Our Natural Resources

- Incent the utilization of non-freshwater sources for well development
- Water Management Plans must be submitted with well permit applications
- Condition a well permit based on its impact on public resources like parks, wildlife areas, natural landmarks, special plant and species habitat and other resources
- Limit drilling activities within floodplains and prohibit where appropriate
- Utilize state of the art management practices for well site construction and operation

Protecting Public Health and Safety

- Triple penalties for civil violations from $25,000 to $75,000
- Increase daily penalties from $1,000/day to $5,000/day
- Authorize DEP, rather than the Environmental Hearing Board, to assess civil penalties
- Provide education to health care providers and the public on potential health impacts associated with drilling activities
- Significantly expand the chemical disclosure requirements and specifically require even trade secret information to be provided immediately to health care professionals for the treatment of patients
- Expand the Public Utility Commission oversight of pipeline safety standards and inspections[3]
- Authorizes DEP to enter into contracts with well control specialists
- The Pennsylvania Emergency Management Agency (PEMA), under Act 13 of 2012, will be doing the following:
    - Creating regional safety task forces
    - Establishing specialized team of emergency responders
    - Providing comprehensive training for local responders
- Assign 911 addresses and GPS coordinates to well sites and facilities[4]

Pennsylvania's Act 13 Chemical Disclosure Law

Much of the attention and discussion lately have been about the nature of chemical disclosure. Pennsylvania's disclosure law, which is contained within Act 13, is one of the most forward thinking and expansive disclosure laws in the nation. Our law was modeled after the Colorado disclosure law that was embraced by a broad spectrum of stakeholders including environmental groups such as the Environmental Defense Fund. Our law provides for disclosure through a publicly accessible web-based database known as FracFocus.org. The law provides for mandatory disclosure--even of proprietary information--to health care professionals for the purpose of diagnosis or treatment and immediately in an emergency. These health care professionals can share the information

[3] Act 127 of 2011.
[4] Act 9 of 2012.

with their patients, as well as other health care professionals as needed to care for the patient. Previously, there were no such disclosure requirements in Pennsylvania regarding health care professionals.

The notion that some have spread that the law provides a "gag order" on health care professionals because there is a confidentiality provision which accompanies disclosure is untrue. The confidentiality provision requires only the health care professionals' use the information for treatment of a patient. This issue is a red herring and my colleague Secretary of Health Dr. Eli Avila and the Pennsylvania Environmental Council (PEC) agree with me. Secretary Avila has written that "one of the strong benefits of Act 13's disclosure requirements is its proactive approach to ensuring that health care professionals have access to all information they may need to provide care for their patients." A copy of Secretary Avila's letter dated April 17, 2012 directed to Dr. Marilyn J. Heine of the Pennsylvania Medical Society is attached hereto as an Exhibit.

The Pennsylvania Environmental Council, one of our Commonwealth's longest standing and most respected environmental advocacy groups, has stated that Act 13's disclosure provisions "ensure that medical professionals can quickly get direct access to chemical information for which trade secret protections have been claimed in cases where it's needed for diagnosis or treatment of a patient. . . . [W]ithout such language, there's nothing to guarantee that a doctor will be able to compel companies to turn over trade secret information quickly or even at all." PEC also said that Act 13's provisions for confidentiality which call for the information to be used only for the purpose of medical care "replicates the same process that has been in place for the same purpose in other states and that has existed for decades in the federal Occupational Health and Safety Act (OSHA) and the federal Emergency Planning and Community Right to Know Act (EPCRA)."

Overview of Pennsylvania's Existing Regulatory Programs

Well Site Location

Act 13 outlines the governing law now with respect to well site location, including setbacks. The Dam Safety and Encroachments Act (32 P.S. §§ 693.1 *et. seq*) and the Clean Streams Law (35 P.S. §§ 691.1 *et seq*) also provide strictures where well sites may be located and how the site should be constructed.

25 Pa. Code Chapter 105 (the Dam Safety and Encroachment regulations) requires well operators to obtain an encroachment permit if a well site or other support facility (such as an access road or water withdrawal pad) is located within a FEMA designated floodway. If FEMA has not designated a floodway (as can be the case for small streams), the operator must obtain a permit if the facility will be within 50 feet of a stream. For Chapter 105 purposes, a stream is anything that has a defined bed and bank – this is much more inclusive than the Oil and Gas Act of 2012 provisions.

Site Development

Developing a well site outside the location restrictions of the Oil and Gas Act of 2012 and the Dam Safety and Encroachments Act is regulated under the Clean Streams Law through the Department's erosion and sediment control program.

Stormwater runoff is the leading cause of stream impairment in Pennsylvania. To address this problem, DEP has developed a comprehensive stormwater management program. Pursuant to 25 Pa. Code Chapter 102, all earth disturbance activities must employ "best management practices" like silt fences and road side culverts to control erosion and manage stormwater. Relative to building sites in floodplains, pits and impoundments used to store waste material may not be used if the bottom of the pit will be within 20 inches of the ground water table. 25 Pa. Code § 78.56. In floodplains, the ground water table will be close to the surface and therefore, drilling wastes would need to be contained in tanks if a pit could not be used.

If well site construction will disturb more than 5,000 square feet or has the potential to discharge sediment to High Quality or Exceptional Value waters (so classified pursuant to 25 Pa. Code Chapter 93), the operator must develop and implement an erosion and sediment control plan. This E&S plan must be kept on site for review by DEP. If development of the well site, access roads and other related facilities will disturb 5 or more acres, the operator must obtain an erosion and sediment control permit before the site can be developed.

Well Drilling

Drilling any well – even a water well – has the potential to impact fresh groundwater. While this potential may exist, such an impact is not acceptable. Protecting groundwater supplies is of utmost importance and the Oil and Gas Act of 2012, as amended by Act 13, is particularly strict in this regard. If a well operator impacts a water supply (by pollution or diminution), they *must* restore or replace it and pay for any increased costs of maintaining or operating the replacement supply.

As noted before, Act 13 increases the rebuttable presumption area and time. Act 13 provides that the gas operator's "presumed liability" for impairing water quality extends to 2,500 feet from a gas well and the duration of presumed liability is 12 months.

In fact, if an oil or gas well is drilled within 2,500 feet of a water supply and the water supply becomes polluted within 12 months of drilling, the operator is *presumed* to have caused the pollution unless they took a water sample that demonstrates the pollution was present before the oil or gas well was drilled. Needless to say, taking a pre-drilling water sample from all supplies within 2,500 feet of a gas well should be a standard business practice.

Of course, the goal is to avoid groundwater impacts in the first place. To that end, in 2010, DEP promulgated new regulations that significantly strengthen our well construction

standards. These are our Chapter 78 regulations. These new regulations accomplish five things.

First, the regulations will establish more stringent well construction standards for all new wells drilled in Pennsylvania. Second, the regulations impose new requirements on operators to inspect existing wells and report their findings to the Department. Third, the regulations codify existing case law on water supply replacement requirements and clearly describe an operator's responsibilities if they contaminate or diminish a water supply. Fourth, the regulations impose a duty on operators to investigate complaints of gas migration and to mitigate any hazards found in the course of the investigation. Finally, the regulations require reporting of chemicals used to hydraulically fracture wells.

Of course the Chapter 78 chemical disclosure regulations have been substantially enlarged by Act 13 that includes one of the most aggressive chemical disclosure laws in the nation.

Following is a brief description of the significant new requirements in 25 Pa. Code Chapter 78.

I. New Well Drilling

Properly cementing and casing a well is critical to preventing gas migration. Prior to drilling a well, operators will now be required to develop a casing and cementing plan that shows how the well will be drilled and completed. Use of centralizers (which keep the casing centered in the well bore) must be used at prescribed locations to insure that cement is evenly distributed between the casing and the well bore. Cement meeting ASTM criteria for oil and gas wells must be used. Documentation of the cement quality and cementing practices used at the well must be available for Department inspection.

When cementing a well, if cement is not returned to the surface, the operator must install a second string of casing for an added layer of protection. If cement is returned to the surface and the operator intends to only use surface casing (Marcellus operators typically use surface, intermediate and production casing), the operator must demonstrate that any gas, oil and produced fluids cannot leave the well bore.

Used or welded casing must be pressure tested. Casing strings attached to heavy duty blow-out preventers (such as Marcellus intermediate casing) must also be pressure tested.

II. Existing Wells

Operators must inspect all of their wells quarterly and report the findings of the inspections to the Department annually. If defective casing, evidence of leaks, or if excessive pressure within the well bore is discovered, the operator must immediately notify the Department and take corrective action.

III. Water Supply Replacement

A well operator who affects a public or private water supply by pollution or diminution must restore or replace the affected water supply with an alternate source of water adequate in quality and quantity for the purposes served by the supply. This replaced or restored water supply must meet the water quality standards established by the Pennsylvania Safe Drinking Water Act or the preexisting water quality if the water supply exceeded the Act's water quality standards.

Act 13 increased the presumption of liability for water supply contamination for unconventional wells. Unless rebutted, the Act presumes that an operator is responsible for pollution of a water supply if the affected water supply is 2,500 feet from an unconventional well and that pollution occurred within 12 months of the later of completion, drilling, stimulation or alteration of the unconventional well.

Operators found to have impacted water supplies within the time and distance provisions of the presumption of liability must provide temporary potable water until the supplies are restored or replaced.

IV. Gas Migration Response

The new regulations impose a duty on operators to immediately investigate a gas migration complaint and to notify the Department if they receive such a complaint. If natural gas is found at elevated levels (10% of the lower explosive limit) the operator must immediately notify emergency responders and initiate mitigation measures (including advisories and controlling access to the area).

V. Reporting Requirements

I have already discussed Act 13's bold new chemical disclosure requirements. DEP's existing regulations require operators to disclose the chemical additives and the hazardous constituents of those additives on a well by well basis. While DEP has never observed any evidence that hydraulic fracturing has directly contaminated fresh groundwater despite tens of thousands of wells being "fracked" over the past several decades, mandating public disclosure of the chemicals used in the process should end much of the controversy surrounding the subject.

Water Withdrawal

While the volume of water to hydraulically fracture a Marcellus well is greater than the amount required to stimulate traditional wells in Pennsylvania, the Marcellus industry's use of water is miniscule in comparison with other energy sources and other sources in general. Marcellus fracking is the smallest major user in Pennsylvania using only 0.2% of the daily water withdrawn which ranks it ninth of the top nine water users in the state. Marcellus drilling uses approximately 1.9 million gallons per day (MGD). This is in stark contrast to power plants which use 6.43 *billion* gallons per day (BGD). Other major

uses include public water suppliers (1.42 BGD); industrial users (770 MGD); aquaculture (524 MGD); private water wells (152 MGD); mining (95.7 MGD); livestock (61.8 MGD); and irrigation (24.3 MGD). Thus, shale gas drilling is a very efficient energy production source measured as a function of water usage.

I have attached a graphic, which was prepared by the PA Fish and Boat Commission, that dramatically illustrates this.

There are three entities charged with protecting water quality by managing water withdrawals in Pennsylvania: the DEP, the Susquehanna River Basin Commission (SRBC) and the Delaware River Basin Commission (DRBC).

Indeed, let me digress for a moment to demonstrate how even a multi-state effort to try to regulate hydraulic fracturing has been ineffectual. I think the following story about an interstate compact illustrates why the individual states are far superior and more capable of regulating natural gas exploration within their own borders than an multi-state entity.

DRBC has five members: New York, New Jersey, Pennsylvania, Delaware and the Army Corps of Engineers. By fiat, the DRBC has declared a "moratorium" on hydraulic fracturing while it purports to develop its own regulations covering that practice within the entire basin. Ignoring for the moment the questionable ground upon which a water withdrawal regulator can attempt to regulate land use and the practice of natural gas exploration, that "moratorium" covers several counties in Pennsylvania in which landowners want to proceed with extraction of their mineral property and where we have an effective regulatory program in place.

The "moratorium" also stands in place even though hydraulic fracturing has been done safely in the United States and in Pennsylvania for over 60 years. There are over 1.2 million fracked wells. The Pennsylvania DEP under my predecessor and me has shown that fracking can be done safely here. The sitting EPA Administrator and Secretaries of Interior and Energy have all said that fracking has been done, is being done and can continue to be done safely. None of them has called for a moratorium or endorsed that idea. All of that led a major New York City paper's editorial board to call for New York to "join the 21st century" and proceed with natural gas extraction in that state. And, as I mentioned earlier, just the other day the State University of New York (SUNY) at Buffalo released a report which found that Pennsylvania regulations have been quite effective at reducing the impacts per well drilled and that there is a compelling case that Pennsylvania state oversight of oil and gas regulation has been effective. And Pennsylvania Governor Corbett's initiative with the new Act 13 has added even more protections such as increased setbacks, bonding, disclosure and environmental enforcement tools. The SUNY Buffalo report further concludes that New York's proposed regulations are sufficient and protective.

The Susquehanna River Basin Commission imposed no moratorium there, nor did the Ohio River Sanitation Commission (ORSANCO) in the Ohio River basin. DRBC staff has indeed undertaken a very deliberative approach having taken several years to develop

draft regulations that were subject to many rounds of public comment. DRBC staff, who developed the regulations, felt they were protective. After the deliberative process, DRBC put those draft regulations on the agenda for a vote by the Commission on Monday November 21, 2011. On the eve of the meeting Delaware dispatched a letter dated November 17, positing supposed objections and there has been paralysis ever since. Mineral rights owners in Pennsylvania are frustrated and upset saying that their property is being taken with no factual or scientific justification and that one state has put a veto on the legitimate energy producing activities of a neighbor. So frustrated and upset that they have hired legal counsel and a takings lawsuit against DRBC is a real possibility.

As I have mentioned, oil and gas exploration and extraction have already provided huge economic benefits to Pennsylvania and the promise for the future is immense. This is so right in the heart of the Delaware Valley. The Philadelphia Inquirer reported on the huge savings already being realized in the Delaware Valley from reduced gas and electricity bills. The employment/supply chain already includes significant inputs from the Delaware Valley; just ask companies like West Chester based, employee owned Schramm and Berwyn based ModSpace. We have also seen that Pennsylvania's and our nation's oil and natural gas resources may hold the key to reinvigorating one or more of our southeastern Pennsylvania refineries and/or the petrochemical industry here. Energy Transfer Partners' recent acquisition of Sunoco – coupled with a strong statement on its commitment to Marcellus Shale-related activity – is another tangible example of this opportunity benefiting southeastern Pennsylvania.

We do want to engage with Delaware and all the partners of the DRBC to have the regulations approved by DRBC. In fact we have come a very long way since the letter of November 17 on the topics it raised. I have reached out to my counterpart in Delaware, Department of Natural Resources and Environmental Control (DNREC) Secretary Collin O'Mara, to offer to come visit him and his experts with my experts and to have all of us visit some natural gas development sites so that we can focus on showing how the points and questions raised in the letter of November 17, 2011 are addressed so that we can move forward.

DEP is on the forefront of protecting headwaters of the Commonwealth's streams in areas outside the Basin Commission jurisdiction by requiring operators to adhere to water management plans which governs their water withdrawal practices.

The water management plan is based on low flow conditions and describes where water will be withdrawn how much water will be needed and the amount of water that will be taken at any one time. Evaluation of the plan involves looking both upstream and downstream to assess cumulative impacts, taking into account all other withdrawals and discharges and their impact on the resource, particularly during low flow periods.

Generally speaking, if the water withdrawal is less than 10 percent of the natural or continuously augmented 7-day, 10-year low flow (Q7-10) of the stream or river, a passby (a restriction on the ability to take water during low flow conditions) will not be required. Q7-10 is the lowest average, consecutive 7-day flow that would occur with a frequency

or recurrence interval of one in ten years. A 10-year low flow event has a 10 percent chance of occurring in any one year. Accepted hydrologic practices must be used to determine the Q7-10 flow.[5]

Once approved, the plan is valid for each location for five years. Although the Commonwealth has ample water resources, operators will need to cooperate to make sure that access to water is available as more and more plans are submitted for headwater streams.

Water and Wastewater Storage

Once an operator gets the water needed to fracture a well, the question becomes where to put it? Even more important is figuring out where to put the wastewater that returns to the surface. A new development with Marcellus wells is the advent of centralized impoundments. Unlike pits located immediately adjacent to the well, centralized impoundments use dam like structures to hold enough water to service multiple wells over an extended period of time. These impoundments can store freshwater, and more increasingly, flowback from a hydraulic fracturing job.

Under DEP's dam safety regulations, small freshwater impoundments – similar to a farmer's pond - do not need a permit. However, Marcellus impoundments can hold over 15 million gallons and if they store wastewater, must be permitted and constructed according to DEP standards. Key standards include two impervious 40 mil liners with a leak detection zone and groundwater monitoring wells around the impoundment. Impoundments located where a breach could threaten public safety must undergo a much more stringent engineering review.

Wastewater Management

The most significant issue facing Marcellus operators today is wastewater treatment and disposal. Operators report that approximately 15% of the water used to stimulate a well is returned to the surface during the initial flowback period. The Department has seen an increase in reuse of this wastewater – industry-wide approximately 80% of the flowback is used on another hydraulic fracturing job. Thus, the total volume of wastewater that must be disposed is a small fraction of the volume needed to stimulate the well.

Still, flowback from Marcellus hydraulic fracturing jobs contain pollutants of concern – particularly high levels of dissolved salts. Indeed, flowback water is several times saltier than sea water. Thus, Total Dissolved Solids (TDS) represent a growing concern for the Commonwealth's waterways and the Department has developed a proactive strategy to address this concern before widespread impacts are felt.

[5] Policy No. 2003-01 Guidelines For Using and Determining Passby Flows and Conservation Releases For Surface-Water and Ground-Water Withdrawal Approvals, November 8, 2002.

The best solution for disposing of high TDS wastewater is deep well injection. Unfortunately, the best geology in Pennsylvania for this method of waste disposal is being used for gas storage. Exploration for new injection sites is ongoing but not commercially available yet.

Therefore, the current preference for flowback water disposal is through existing DEP approved wastewater treatment plants. These plants typically do not have the technology necessary to remove TDS from the effluent and instead rely on dilution. The DEP's recently promulgated Chapter 95 regulations completely address the cumulative impacts of oil and gas wastewater discharges.

This new rule is the first of its kind in the country and limits the discharge of TDS from new or expanded facilities that take oil and gas wastewater to drinking water standards. This means that new discharges cannot exceed 250 mg/l for chlorides and that drinking water supplies will never be impaired because of oil and gas drilling. The process of eliminating the TDS will also remove radium – which has been the subject of recent articles. Thus, in addition to reducing the contaminants discharged to our streams, the new Chapter 95 rule will increase the use or recycled water, promote the development of alternative forms of disposal and perhaps promote the use of alternative sources of fracking fluid.

Drinking Water Protection

I outlined in my April 6, 2011 letter to EPA Region III Administrator Garvin, which is attached as an exhibit, that over the past three years the Commonwealth has been very pro-active in protecting potential sources of drinking water. The April 6, 2011 letter is attached as an Exhibit. In addition to the Chapter 95 TDS regulations discussed above, there are other measures being implemented. DEP recently announced the results of our in-stream water quality monitoring for radioactive material in seven of the Commonwealth's rivers. All samples showed levels at or below the normal naturally occurring background levels of gross alpha and gross beta radiation. Those tests were conducted in November and December of 2010 at stations downstream of wastewater treatment plants that accept flowback and production water from Marcellus Shale drilling. These sampling stations were installed last fall specifically for the purpose of monitoring stream quality for potential impacts from unconventional gas drilling operations. The raw water river samples were collected above public water suppliers' intakes where the water receives further treatment.

The seven river testing stations are located at the Monongahela at Charleroi in Washington County; South Fork Ten Mile Creek in Greene County; Conemaugh in Indiana County; Allegheny at Kennerdell in Venango County; Beaver in Beaver County; Tioga in Tioga County; and the West Branch of the Susquehanna in Lycoming County. These stations were chosen because of their proximity to public water supply intakes and at the time, were located downstream of facilities permitted to or proposing to discharge oil and gas wastewater. Future monitoring will include monthly sampling at the Monongahela; South Fork Ten Mile; Allegheny; and Beaver sites and every other month

at the remaining three sites. Moreover, gross alpha and gross beta testing was added to a second water quality network station on the Monongahela, in March 2011. This site is further downstream in Allegheny County. All of the results will be frequently evaluated and available to the public via EPA's Modernized STORET database.

There is more. Pennsylvania DEP has taken measures to have additional monitoring of finished water at 14 public water supplies with surface water intakes downstream from wastewater treatment facilities that accept Marcellus wastewater. On March 11, 2011, under Pennsylvania regulation 25 Pa. Code §109.302, we directed a letter to public water suppliers that have surface water intakes located downstream of one or more facilities that are accepting Marcellus wastewater to immediately conduct testing of radionuclides (i.e., radioactivity) and other parameters including TDS, pH, alkalinity, chloride, sulfate and bromide. A copy of that letter and the list of recipients is attached hereto as an Exhibit.

In addition, Pennsylvania DEP, on March 18, 2011, under Pennsylvania regulation 25 Pa. Code §92a.61(g), sent letters to 25 Publicly Owned Treatment Works and Centralized Waste Treatment facilities that currently accept this wastewater calling for immediate twice monthly effluent monitoring for radionuclides and other parameters including TDS, pH, alkalinity, chloride, sulfate, bromide, gross alpha, radium 226 & 228, and uranium.

I have already discussed earlier the DEP's April 19, 2011 call to all Marcellus Shale natural gas drilling operators to cease by May 19 delivering wastewater from shale gas extraction to 15 facilities that then accepted it under an exemption from being covered by the 2010 Total Dissolved Solids (TDS) regulations and the dramatic response to that initiative. Also, I have already discussed the Abandoned Mine Drainage White Paper and our new General Permit 123.

Air Quality Impacts

Of course, it has been recognized that combustion of natural gas as either a fuel for generating electricity or a transportation fuel can have very beneficial impacts on air quality. With that being said, Pennsylvania is proactive in minimizing any potential adverse air impacts from extracting this resource.

Through the leadership of state-implemented air programs like Pennsylvania's, the air in the United States and in Pennsylvania has steadily become cleaner over the past few decades which is borne out by EPA air trend data and DEP air monitoring data. In February 2010, the EPA released the report Our Nation's Air, Status and Trends through 2008. EPA's report notes that improving nationwide air quality trends have been observed. Significant reductions were seen for six common air pollutants, including: ground-level ozone, particulates, lead, nitrogen dioxide (NO2), carbon monoxide (CO) and sulfur dioxide (SO2). Toxic air pollutants have seen a 40% total reduction from 1990 to 2005. EPA states that the NOx SIP Call and the Acid Rain Program have contributed to significant decreases in atmospheric deposition improving visibility and water quality of lakes and streams.

Pennsylvania has a very comprehensive and robust set of air quality regulations and we have administered that program with great success for over 25 years. Actual extraction operations are subject to a host of existing permitting requirements. Those permit requirements, whether a general permit or an individual permit, require the use of technologies which control air emissions.

DEP took the proactive step of launching a short-term ambient air quality sampling initiative in the southwest, northeast and north-central regions of Pennsylvania in April 2010. This initiative focused on natural gas extraction stages including drilling operations, fracking operations where wastewater was being produced, the flaring of gas for production and gas compression facilities.

Although concentrations of certain natural gas constituents were detected, DEP did not identify concentrations of any compound that would likely trigger air-related health issues associated with Marcellus Shale drilling activities. DEP also tested for carbon monoxide, nitrogen dioxide, sulfur dioxide and ozone, but did not detect concentrations above National Ambient Air Quality Standards at any of the sampling sites. DEP is currently developing a protocol for a long-term sampling effort. Additionally, DEP has the authority to develop a comprehensive emissions inventory. Such data will allow the Department to develop an accurate inventory to support air quality planning activities including state implementation plans to achieve and maintain the health-based federal standards such as ozone, fine particulate matter and the recently promulgated short term nitrogen dioxide and sulfur dioxide standards.

DEP is now implementing several studies of what, if any, longer term air impacts there might be from oil and natural gas exploration and extraction activities.

Enforcement

I have already outlined how Act 13 increased penalties for violators and given DEP new tools for enforcement. Pennsylvania DEP has been very strong on enforcement of rules and regulations in this industry. DEP has shown its agility and decisiveness on the enforcement front in issuing two cease and desist orders as a team within hours when it was appropriate to do so. In one case we issued a "cease drilling order" for non-Marcellus well drilling and in the other case we ordered a stop to pre-drilling well pad preparatory activities which were resulting in sediment being released into a nearby stream upstream of one of the various water intakes of a local water authority. In the latter case we received a letter of thanks from the local water authority for DEP's "immediate" and "prompt response" in doing so. The water authority went on to write "[t]his situation has reinforced our belief that the interest and importance of our water source is of utmost importance to all and that Pennsylvania Department of Environmental Protection works hard to sustain this valuable resource".

In response to the April 20, 2011 well equipment failure and resultant loss of control of a well in Leroy Township, Bradford County, DEP issued a notice of violation (NOV) just two days later dated April 22, 2011 in which it required the operator to answer many

questions about the incident itself and its root cause and insisting that the company remain on stand-down from well development activities until it could provide DEP technical personnel sufficient assurances that there would be no repeat of the event there or elsewhere. DEP also asked the following important question: why it took nearly 12 hours to address the uncontrolled release of fluids from the well. After three weeks in which the company was in stand-down mode, our technical staff did report to me that they had been provided adequate assurances and the company then did restart well development operations. However, we have more. We now have a commitment by the operator that it will from now on engage and use local well control professionals in the very unlikely event that a future well control incident at one of its wells would occur in Pennsylvania. DEP had not asked for that particular measure in its April 22, 2011 NOV but we insisted on this during subsequent discussions and we achieved it.

DEP announced in 2011 more than $1 million in penalties against an operator to address violations in Bradford and Washington Counties. Through two Consent Orders and Agreement (COA) with Chesapeake, DEP collected $900,000 for contaminating private water supplies in Bradford County, $200,000 of which must be donated to the department's well plugging fund; and another $188,000 for the February 23, 2011 tank fire at a drilling site in Avella, Washington County. The Bradford County matter was the highest single penalty ever assessed against any oil and gas operator in the history of the program. In the Washington County matter, the fines assessed were the highest allowed by the Oil and Gas Act.

The United States Department of Energy (DOE) Shale Gas Production Subcommittee August 2011 Ninety-Day Report

Before I close I would like to take a minute to discuss the DOE Subcommittee Report on Shale Gas Production. In August 2011 the Shale Gas Subcommittee of the United States Secretary of Energy Advisory Board issued its "Ninety-Day Report." The board was charged "with identifying measures that can be taken to reduce the environmental impact and improve the safety of shale gas production." It is no coincidence that the sitting Pennsylvania DEP Secretary and my immediate past two predecessors were asked to participate in that process. The report contains many conclusions and observations that show Pennsylvania is out in front.

The DOE report recognizes the significant contribution domestic natural gas is and will play in the future in domestic energy supply. It recognizes that real jobs have been created in the sector.

The DOE report touts the adoption of best practices for well construction, especially casing and cementing. Pennsylvania's Chapter 78 regulations cover that topic and the industry and the department have been in ongoing discussions on that topic for some time.

The DOE report recognizes what I discussed at the beginning of this testimony, *i.e.*, the gap between real science and experience and perception regarding drilling and production

of domestic natural gas. In that regard the DOE report acknowledges the small or minimal risk that fracking itself poses to groundwater. At the same time it notes the need to protect groundwater resources. I have discussed the lengths that Pennsylvania is already going in that regard.

The DOE Report recognizes the need to maintain collaborative relationships among industry, regulators and the public. The Report suggests there be collaboration among industry and government and the public to educate and gather real data regarding experience as we move forward. This is an effort that we have been undertaking in Pennsylvania for a long time.

The DOE Report, as did our Shale Advisory Commission, notes that local impacts should be considered and accounted for.

The DOE Report pointed out the useful role that STRONGER plays. Pennsylvania's Deputy Secretary for Oil and Gas is now on the Board of Directors of STRONGER.

The DOE Report also notes as an important issue the potential air related issues associated with this resource and recommends that data be developed to get a handle on that topic and that it be dealt with so as to avoid negative air pollution impacts from the extraction of this resource. I have already discussed Pennsylvania's multi-faceted approach in that area.

Conclusion

Thank you for the opportunity to provide testimony here today. Pennsylvania's program is multi-faceted, transparent and very protective. As you can see, the states are the right regulators of hydraulic fracturing, not the federal government. The law, the history and the facts bear that out.

Mr. LANKFORD. Thank you.

With that, I yield to myself for just a moment.

I want to bring in a quick prop. This is shale rock. For those of you who are State regulators, you are very aware of it but sometimes we lose track of the fact, when we talk about pulling out oil and natural gas from the ground, many people are used to conventional wells where there is a pocket of oil or a pocket of gas.

The gas or oil is not around this, it is inside of this. How it gets pulled out in this process is technology that is impressive in the way it is done, to drill down to put a well a mile deep, sometimes two miles long then underground through this rock, just like this, solid rock, to frac it with water and then pull out of this oil or gas is revolutionary. This is why we have such a tremendous supply that is coming online, because we are now actually pulling energy out of rocks, not out of a pool, not around this, from this.

It is somewhat revolutionary, I understand that, but it is not new in just the past couple of years. Mr. Krancer mentioned as well, in 2005, Congress was very specific on this, that EPA had regulatory oversight only if it had diesel fuels in the fracking fluid but to leave that back up to the States as well.

My question is why has this become such an issue, dealing with fracking, right now? In the last couple of years, why has there been such a rise in so many areas about fracking? I know this is just an opinion guess for you. Mr. Howarth? We have to make responses short because we are short on time.

Mr. HOWARTH. As I stressed in my testimony, the ability to get that fantastic resource out of the shale, you are right, it is incredible technology, but it is new technology. It was developed first in Texas, somewhat in Oklahoma, in the south areas which are very different.

Mr. LANKFORD. I understand. Right now there has been an incredible shift on it. This has been known for several years, as I mentioned, the 2005 legislation. Why right now has there been such a rush to it? Has there been some new break through because the EPA Administrator has told us repeatedly that they have not found from EPA a single site of groundwater contamination from hydraulic fracking.

Mr. HOWARTH. I believe what EPA probably told you was that they are not aware of a single case where the action of the fracking itself led to water contamination. There are multiple, publicly known cases where there was water contamination associated with the development of shale gas or other types.

Mr. LANKFORD. You are talking about from the surface?

Mr. HOWARTH. No, including from wells. There is a documented incidence of at least 1 percent, perhaps up to 6 percent.

Mr. LANKFORD. Here is what I know typically. There have been some very, very public cases of this from EPA in the past year and a half where EPA comes out and says we have a major problem, we have to take over this area. They begin testing all of those wells and it comes back, oh, that was just methane, it is naturally occurring and migrating into an area. That is a chemical already present there.

Most recently on May 11, 2012, in Dimock, Pennsylvania, EPA quietly released what was initially a panic to say that frac fluids

caused all that, they have come back now and said, we were wrong. That was not a source of that. There has been quite a shift that has occurred. Let me move on to a couple of other areas as well.

Mr. HORWARTH. The methane contamination is clearly a result of the hydraulic fracturing of the shale. The study from Duke University published in the proceedings of the National Academy of Sciences is unambiguous.

Mr. LANKFORD. If you can pull some of that for us, we would be glad to receive that as well, but EPA has disagreed on several of those. Methane obviously is a natural occurring substance that does move in the ground and does release.

Is the geology the same in Utah as in Pennsylvania and Oklahoma, the same rock, same depth of water, same soils? Are things the same under ground in all three of your States?

Mr. KRANCER. No, absolutely not. They are not the same geologically, topographically, meteorologically, weather, or on the surface.

On the Duke study, I would take issue with Professor Howarth again. The Duke study was very limited and other studies have come out, including one from the Center for Rural Pennsylvania which seems to lead to another conclusion.

In your more fundamental question of why all this attention, there is a great article about this called Everything You Have Heard About Fossil Fuels May Be Wrong, by Michael Lind it's in the New America Foundation. It is all about what he thinks why all this attention has grown. It is because natural gas, which used to be viewed as maybe a bridge fuel, a fossil fuel that the people who don't like fossil fuel could hold their nose and get through, it now could be the fuel of the century. That has caused some cognitive dissidence among some significant interest groups ergo the push back.

Mr. LANKFORD. Mr. McKee, you mentioned in your testimony that you have seen and there is a perception there is a shift of investment out of the west to the east. I assume you mean out of BLM lands and you have a fear that you are about to lose the potential of getting energy. Is it because you are running out of energy underground in your area? What would be the reason for the sense that investment is moving away from your area?

Mr. MCKEE. First of all, there is a tremendous resource of energy in our area. As I mentioned, there is 111 trillion cubic feet of natural gas, there is an immense amount of oil shale, all these different resources, so it is not because of lack of opportunity to help us with great energy independence.

Public policy definitely makes these changes and we have seen investment shift just because of public policy.

Mr. LANKFORD. When you say public policy, what do you mean?

Mr. MCKEE. BLM policy, having to do with leases, different types of policies that come out of the Bureau of Land Management. When it becomes much easier to invest on private lands compared to public lands, as I mentioned, in my county only 15 percent of my county is privately held. In the west, much of our land is public land. If we take that opportunity off the table, what are we doing to the national security and the opportunity of energy independence when we have unneeded, redundant policies.

More to the specific question, at least in our area, most of our wells are at least a mile deep. Some of them will go a couple miles deep. We are not dealing with shale gas. That is why I think it is valuable that these decisions are made at the State level because when you have a one size fits all type of regulation—I have visited with consultants and some of the proposed rules make absolutely no sense. The States best handle these kinds of policies.

Mr. LANKFORD. Thank you.

Let me recognize the Ranking Member. I will also recognize him for an additional two minutes beyond the normal questioning time.

Mr. CONNOLLY. You are very gracious and I thank the Chair.

Welcome to our panel.

Mr. Krancer, I unfortunately had to be at a funeral for a close friend this morning and I did not hear your testimony, but had it described to me. If I understood correctly, your testimony in essence says, based on your experience in Pennsylvania, you believe the other 49 States can also live with pure State regulation, that we don't need Federal regulation in this particular enterprise. Is that an accurate characterization of your testimony?

Mr. KRANCER. Based on my experience in Pennsylvania, Pennsylvania is very well able to regulate fracking. Based on my experience with the Environmental Council of the States, my experience with other colleagues of mine in other States that do this work, I am convinced they can do it in their States.

It is not done in every State and based on the experience of STRONGER, that is why we have groups like STRONGER that help us do this.

Mr. CONNOLLY. Based on what I just heard you testify, it sounds like Pennsylvania has a robust regulatory framework. You cited, for example, chemical disclosure laws which you have to enforce and you feel it works very well in Pennsylvania, is that correct?

Mr. KRANCER. That is correct. I invite you to come visit Pennsylvania and I can show you firsthand how it works. I can take you to a well site.

Mr. CONNOLLY. I would be glad to do it. I went to high school in Pennsylvania, got married in Pennsylvania. I have a lot of ties to Pennsylvania. I would be glad to do it.

Does your expertise extend to the other 49 States? Surely, you are not in a position or are you to testify that you are satisfied based on empirical evidence that the other 49 States are as robust and as diligent as Pennsylvania?

Mr. KRANCER. That question, I don't know how to respond because it is not a other 49 State issue. Many other States do not do fracking at all. The ones that do do it have a track record that indicates they can do it—Oklahoma, Texas, West Virginia, Ohio—but even if they don't have an existing program now, as States, and I can say this in my experience as a State regulator—are in the best position to know their States, know what to do and get the regulatory plan that they need in their State.

Mr. CONNOLLY. You would concede, at least as an intellectual, that there could be a State where fracturing is occurring that is not as robust and diligent as Pennsylvania.

Mr. KRANCER. I could concede also that Sasquatch is in the woods but that doesn't get us anywhere.

Mr. CONNOLLY. This is my time. The point is you don't have expertise with respect to the other States. You do with Pennsylvania.

Mr. KRANCER. That is a red herring because you don't either.

Mr. CONNOLLY. Mr. Krancer, the issue here is whether or not the Federal Government has a role. You testified you think it should not have a role.

Mr. KRANCER. No, I don't think the issue is whether the Federal Government necessarily has a role. The issue is whether the Federal Government should have a preemptive role or why shouldn't it have a preemptive role. I am here to say it should not have a preemptive role. It certainly should have a role in which we discuss things together. I often communicate with my counterpart at Region 3 and I am sure my other counterparts do that as well.

The question on the table is the fundamental one, Ranking Member. Who is in the better place? Are you in the better place in Washington to tell Oklahoma what to do? Are you in the better place in Washington to tell us in Pennsylvania what to do? The bottom line answer is no.

Mr. CONNOLLY. Thank you, Mr. Krancer. I would simply say those are the same kinds of arguments that have been used for generations against Federal involvement. If we were talking 40 or 50 years ago about, for example Jim Crow laws and the civil rights movement, we would have heard testimony right here at this table.

Mr. Chairman, I insist that the committee rules be adhered to. This is my time. Mr. Krancer, I gave you the benefit of the doubt and allowed you to answer as you wished. It is now my time and I believe that philosophy is an error. I don't share it.

Mr. KRANCER. That philosophy was enacted in 2005.

Mr. CONNOLLY. Mr. Chairman, I insist on regular order.

Mr. LANKFORD. Mr. Krancer, allow the member to speak.

Mr. CONNOLLY. Thank you, Mr. Chairman.

I believe the philosophy that there is no role for the Federal Government or there should never be any preemptive role for the Federal Government has been proven false by history. That is clearly what this hearing is designed to do, as was the hearing this morning. I don't share the philosophy.

The fact that you have had a good experience in Pennsylvania I don't believe can necessarily be extrapolated to the rest of the country. As you have indicated, you don't have the expertise actually to say here at this table under oath that you are satisfied based on empirical evidence that all of the other States that are involved have similar, robust regulatory regimes.

Mr. Howarth, you talked about methane. What is wrong with methane?

Mr. HOWARTH. Methane comes from lots of sources but the single largest source of methane to the atmosphere of the United States is the natural gas industry. At least 39–40 percent or more of methane pollution comes from there.

Mr. CONNOLLY. So what?

Mr. HOWARTH. Why do we care? It is an incredibly powerful greenhouse gas. It is low hanging fruit in terms of trying to start to address global warming. If we get methane under control, we are far better along than CO2. I can go into more detail on that. It also is a major contributor ground level ozone. I mentioned that briefly

in my statement. I should point out that ground level ozone already causes 30,000 premature deaths in the United States every year.

Mr. CONNOLLY. So methane, in and of itself, is not a danger except for the global warming part of it?

Mr. HOWARTH. Methane is not toxic.

Mr. CONNOLLY. It helps create increased levels of ozone?

Mr. HOWARTH. It definitely leads to increased levels.

Mr. CONNOLLY. Ozone is a danger to human health?

Mr. HOWARTH. It releases other things such as benzene which is also a contributor.

Mr. CONNOLLY. Is ozone regulated by the EPA?

Mr. HOWARTH. Ozone definitely is regulated.

Mr. CONNOLLY. Ground level ozone, for example?

Mr. HOWARTH. Ground level ozone is regulated by the EPA.

Mr. CONNOLLY. Right here in the National Capital Region, I seem to recall that we are subject because we are a non-attainment area, serious EPA regulation with respect to ground level ozone, correct?

Mr. HOWARTH. That is correct.

Mr. CONNOLLY. That might be a concern.

I am running out of time but one of the other concerns that has come up and help us understand the science of it a little bit, what about reports of seismic events associated with the return I guess of fracking effluent.

Mr. HOWARTH. There has been an increase in earthquakes, relatively small earthquakes but still a large number of small earthquakes in several places—Ohio, Oklahoma and elsewhere. The U.S. Geological Survey, after a thorough study, has attributed this to disposal of frac return waste into ground disposal wells that has changed the geology in such a way as to increase that. They have seen the increase.

I should point out that the industry is moving more towards getting oil rather than gas out of shale because of the market considerations at the moment, the relative prices of the two. The largest oil reserves in shale in the United States are in the central valley of California and in the Los Angeles Basin. There the earthquake concerns with disposal of frac waste should give everyone pause.

Mr. CONNOLLY. I thank you.

Thank you, Mr. Chairman, for your graciousness.

Mr. LANKFORD. Thank you.

Mr. Kelly?

Mr. KELLY. Thank you, Chairman.

I thank all of you on the panel today.

We do have great differences of opinion as to where we are going with this. When I am back home in western Pennsylvania, there is a great deal of concern about the Federal Government getting involved in areas where those people in those States don't think they should. Why now? What is going on that all of a sudden the EPA has to get involved in fracking. This isn't new. It is 60 years old and has been going on for a long time. We are talking about eight times the Empire State Building, one on top of the other, on top of the other, it is that far below the surface, so this isn't right at the surface.

I get a little bit concerned about that because we hear about this new technology. I know there is great innovation and the horizontal drilling but if you could, Mr. Krancer, you are from Pennsylvania and we talked before, why now? What is going on that there is this public concern and what brought it about?

Mr. KRANCER. I think it harkens back to the article I just mentioned that I would be happy to provide to the committee. I think Madison wrote about this in the Federalist papers, there is a tendency to want more power, so that may be part of what is going on here as well.

Ms. WROTENBERY. First of all, you have to keep in mind some people are labeling all kinds of issues associated with oil and gas, drilling and production as hydraulic fracturing. There are certainly some issues associated with the rapid development of oil and gas in areas where it has not occurred before. We have seen that happen in various parts of the country. It has happened in certain areas of Oklahoma.

Mr. KELLY. This has been around for 60 some years. We have never had this degree of concern before. There is a large swath of Marcellus shale through Pennsylvania, so why Dimock, PA, why this little town and why not some of the other areas?

Mr. KRANCER. If you are asking me, I could talk for an hour about Dimock and I won't. The State had been taking care of issues in Dimock for both an enforcement and technical standpoint for a long time. All of a sudden, the EPA, for reasons of which I have no idea, decided in January they have to come in, I suppose as a big brother, or as white knight or whatever, and do water testing and start supplying water to four families.

As Representative Lankford correctly pointed out, it was interesting because the reports of no health impact would always come out on a Friday afternoon at about 4 p.m. and then they, of course, would die in the press. There have been four rounds of sampling and four nothings. Actually, Representative Marina was very interested in that because even at midcourse, they had spent $1 million out of the Superfund Response Fund which certainly could have gone a long way in northeastern Pennsylvania on a lot of Superfund Response projects.

Mr. KELLY. In that case, they tested 59 wells and found nothing that indicated fracturing was causing a problem.

Mr. KRANCER. More than that, they found no health impacts whatsoever. Remember, when they came to Dimock in the first place, they never made a connection between hydraulic fracturing and what it is they were looking for. I asked them specifically and they said, no, we don't have an enforcement connection here.

Mr. KELLY. So if Gasland doesn't come out, the movie doesn't come out, I won't call it a documentary, Dimock, PA probably doesn't get on anybody's radar?

Mr. KRANCER. Dimock was put on the radar, if I have my movie history correctly, by that film.

Mr. KELLY. I think all of us are concerned. Sound science, I am totally in favor of. Political science, I wonder because a lot of this is the result of if you don't succeed at first, try it again. I am wondering where we are going with this and at what point does the EPA walk away from this and say we don't need this.

I know in Pennsylvania you have done a great job, I know in Oklahoma, you have done a great job. I think the question does come down, and always in this town we talk about it, when is it that the Federal Government gets out of the way and lets the States take care of themselves.

Mr. KRANCER. That is a great question. I have never been compared to Jim Crow or in favor of Jim Crow for my views on Federal/State relationships, but let us remember the history is the Federal Government has never shown an interest, whatever Administration, whatever Congress, whatever EPA. That was what the Safe Drinking Water Act was about. That was what the 2005 Energy Policy Act was about. That was a bipartisan Act which Ken Salazar and the current President of the United States voted for.

Mr. KELLY. I would think that right now, this great abundance, the accessibility and the affordability of natural gas really had a great influence on a green agenda because this is supposed to be the bridge to get us there. Now we are finding out that instead of being the bridge, it is actually the bedrock of energy in this country.

You and I talked earlier about this. I don't want to be in a fair fight with the rest of the world when we have natural resources right here provided by God and we are not taking advantage of them to put ourselves in the best position in the world economically. Why in the world would we continue to keep the government's boot on the throat of success and the great opportunities and jobs for this country and the revenue that could be produced?

I know I am out of time. I want to thank you all for being here. I know it is frustrating but we will keep working on it and try to get to the bottom of it.

Thank you.

Mr. LANKFORD. Thank you.

Mr. Farenthold.

Mr. FARENTHOLD. Thank you very much.

I would like to thank the panel for being here.

I would like to start with Ms. Wrotenbery since she is my neighbor to the north in Oklahoma and I am from Texas.

Exxon Mobil put together a little graphic that I wanted to share with you. This basically shows a drilling. About 100 feet under, you typically will hit the groundwater. I realize you might have a little difficulty seeing that. Then to protect the groundwater, there are multiple layers of concrete and steel casing. This is true in both conventional wells that go down and hit a pool of oil or gas or a reservoir of oil and gas as well as in hydraulic fracking. Is that an accurate statement?

Ms. WROTENBERY. Yes, the way the freshwater resources are protected.

Mr. FARENTHOLD. So in a case where there is hydraulic fracking as opposed to traditional, it is basically protected the same way, so similar risks of groundwater contamination exist from how we have been producing oil and gas since the Civil War, basically?

Ms. WROTENBERY. We have had casing implementing requirements for oil and gas wells for many decades. They have actually evolved and improved over the years but a basic principle through-

out the history of regulation has been we case the well through the freshwater zone to isolate that.

Mr. FARENTHOLD. When you frack a well, you are quite a bit below the water table. The water table is a couple hundred feet in Oklahoma?

Ms. WROTENBERY. The geology varies.

Mr. FARENTHOLD. You are talking hundreds of feet, not thousands of feet?

Ms. WROTENBERY. In a few isolated areas, it can be very deep. Typically though, you are right. We actually have that mapped. We have on our Internet the maps that show the base of fresh water throughout the State of Oklahoma.

Mr. FARENTHOLD. When you are fracking, you are traditionally much, much, much deeper. We are talking miles. Certainly in most Texas cases, it is at least a mile, sometimes two miles below the water table. The chance of something migrating up through the rock up two miles defies commonsense if that is an issue.

Let me go on and visit with Mr. McKee. Most of your land, you have to get BLM permits and all sorts of permits. In Texas, we kind of fly through it in weeks and months but certainly not years in getting something permitted on private land. I assume there is a cost associated with this, not just with jobs, is that correct?

Mr. MCKEE. Yes, that is correct. There is a study that was just released that shows the investment on every well is about $6 million in Utah. There is the mineral lease royalties and there are the jobs.

Mr. FARENTHOLD. When land is leased from the Federal Government, you pay a bonus to get the lease, buy the lease?

Mr. MCKEE. Yes, that is correct.

Mr. FARENTHOLD. Then from everything that is produced, the Federal Government gets a royalty, so we get a percentage from the money the oil and gas is sold for that we can use to pay for roads and highways, we can bring into the Federal budget to help balance the budget. It is a source of income we are losing as a Federal Government.

Mr. MCKEE. Absolutely. Let me give one example. Recently, six leases were reinstated. I believe it was about 6,000 acres. The right to lease on those lands cost the bidders $48.6 million just for those 6,000 acres, the right to drill and then there is a 12.5 percent royalty that comes in to the Federal Government. There is a sharing formula with the States. That is a tremendous source of revenue. I indicated there was over $200 million of Federal mineral lease royalties coming out of my county.

Mr. FARENTHOLD. I also sit on the Transportation and Infrastructure Committee. One of the ways we are looking to pay for maintaining our deteriorating infrastructure of roads, bridges and the interstate highway system is using that royalty money. Those delays are costing the American people not just in dollars and cents but in much needed repairs and even the safety of our highway system.

Mr. MCKEE. Absolutely.

Mr. FARENTHOLD. Let me go on to Mr. Krancer. Are you familiar with the statement of the former Region 6 EPA Director, Al

Armendariz, when he wanted to crucify the oil and gas industry? Do you see that as actually happening?

Mr. KRANCER. You don't really want to lead me into that discussion, do you?

Mr. FARENTHOLD. I am from Texas. He was our EPA guy.

Mr. KRANCER. Actually I met Al once and I only know what I have read in the papers.

Mr. FARENTHOLD. Do you get a feeling the EPA is targeting the oil and gas industry unfairly?

Mr. KRANCER. I try to keep my eye on my own court and what we are doing. I do see permit delays and permit lags. I talked this morning about the rocket docket for regulations, historic regulations in air and so forth compared to the snail docket for getting permits done.

Mr. FARENTHOLD. I see I am out of time.

Thank you very much, Mr. Chairman. Thank you, panel.

Mr. LANKFORD. Thank you.

We are going to do a couple minutes of questioning here to do some follow up.

I just need some clarification on this and this is just a process question. A new guidance has been released by EPA dealing with the diesel fuels issue and EPA involvement. Obviously there has been traditional primacy in the oversight process for fracking in States.

I am interested in how you are interpreting that, how that is working through the process of that guidance dealing with diesel fuels and fracking and expanding the definition of diesel fuels? Does that make sense? How is that going and what are you doing with that?

Ms. WROTENBERY. It is in process. We are reviewing the document. I will say it does not directly apply to the State of Oklahoma because we administer the UIC Program for oil and gas operations under Section 1425 of the Safe Drinking Water Act, so we have a little bit different framework but we are looking at it closely because there is no doubt that EPA will be coming to visit with us about how we address the various elements that are in that guidance.

There are some key issues in there that concern us. We are putting our comments together and we will be submitting those.

Mr. LANKFORD. Is it your assumption that the guidance will become a rule or is it your assumption this is just an opinion piece that will probably affect BLM areas but won't affect private areas?

Ms. WROTENBERY. We are concerned that EPA will implement it as if it were a rule.

Mr. LANKFORD. That they apply the same?

Ms. WROTENBERY. Yes.

Mr. LANKFORD. Mr. Krancer?

Mr. KRANCER. I am sorry, were you talking about the BLM rule or the diesel fracking permitting guidance?

Mr. LANKFORD. The diesel fracking permitting guidance.

Mr. KRANCER. Let me say first, I don't believe that is going to be an issue in Pennsylvania. There is no information that we have that diesel fuel is being used for fracking. I don't know whether that is going to be an issue in other States.

EPA does have primacy of the UIC Program in Pennsylvania. That is because we don't do a lot of UIC disposal but I think you hit the nail on the head, we have to keep an eye on what the country does on—

Mr. LANKFORD. The EPA is currently in the process of trying to redefine what is a diesel fuel. That was my question to you. That conversation is ongoing. How are you processing that with EPA at this point?

Mr. KRANCER. We are watching it very carefully because it is the proverbial nose in the camel's tent, to use a cliche. The 2005 Energy Policy Act did exclude fracking with diesel fuel. We all know that. If you define diesel fuel to be everything, then you have probably gone beyond what the law intended and you probably acted illegally to boot.

Mr. LANKFORD. One quick last question, Ms. Wrotenbery, a comment was made earlier about earthquakes in Oklahoma based on fracking and a direct tie on that. Are you aware of earthquakes in Oklahoma based on the fracking itself?

Ms. WROTENBERY. We are working with seismologists at the University of Oklahoma and the Oklahoma Geological Survey to study the possible connection between earthquakes and various types of oil and gas operations. Any statements that have been made that there has been some kind of conclusive link are premature.

Mr. LANKFORD. Are earthquakes in Oklahoma common, small earthquakes?

Ms. WROTENBERY. Yes. We live in a seismically active area. The records show that.

Mr. LANKFORD. Thank you.

I yield to the Ranking Member for three minutes.

Mr. CONNOLLY. Thank you, Mr. Chair.

Mr. McKee, like you, I come from local government. I was the chairman of my county before I came here, so I appreciate your service. I think local government is very important.

Did I understand your testimony to mean that you felt excessive Federal regulation, BLM regulation, inter alia, had served as an impediment to job creation in your community?

Mr. MCKEE. That is correct.

Mr. CONNOLLY. What is the unemployment rate in Uintah?

Mr. MCKEE. Today, it is only about 4.1 percent. However, when the downturn in the economy happened, because we are an extractive community, we didn't know there was even a recession going on as far as what we were feeling until we had new policies that came in and almost overnight, we lost a number of jobs because of new policies.

Mr. CONNOLLY. At 4.1 percent which is pretty low.

Mr. MCKEE. Today, it is 4 percent.

Mr. CONNOLLY. Four percent. How does that rank with other counties in Utah?

Mr. MCKEE. We are among the best.

Mr. CONNOLLY. Might it be the lowest rate in Utah?

Mr. MCKEE. I would have to double check that. I am not sure but we are pretty good because of our oil and gas economy.

Mr. CONNOLLY. What percentage of your county is Federally-owned or controlled land?

Mr. MCKEE. I know we are only 15 percent privately held. I believe it is about 59 percent that is BLM, there is some forest and 17.5 percent with the tribe and a little bit of State institutional trust lands.

Mr. CONNOLLY. Do you have any idea on that Federal land how many leases have, in fact, or permits have been granted but not utilized?

Mr. MCKEE. I know there is a fairly strong backlog on the permitting process today. I believe I was told there were over 1,000 permits that are backlogged, that they have not been able to issue because of the backlog issue.

Mr. CONNOLLY. In some cases, it is also a utilization issue, isn't it, that some have been granted and not used?

Mr. MCKEE. What I am told is many times it is very difficult because sometimes these permits show up in a category as though they have been issued but they are still waiting for the government to finalize what they are doing so they get held up.

Mr. CONNOLLY. Obviously one of the things we have talked about today is air pollution, whether attributed to fracking or whatever. Your county is largely a rural county, is it not?

Mr. MCKEE. It is.

Mr. CONNOLLY. One would normally expect in a rural county relatively clean air. How does Uintah County stack up in that regard?

Mr. MCKEE. Overall, our air quality is good with the exception of winter ozone. We do have a winter ozone issue, if I could touch on that quickly. If I could disagree a bit with my colleague to the left, it indicated the use of hydraulic fracturing was causing the winter ozone issue. I have personally been very involved with this issue, meeting with State and even the EPA offices in Denver. We have had roundtable discussions and extensive studies going on. I have never yet heard to this date of any tie to hydraulic fracturing.

Mr. CONNOLLY. I know my time is running out. I was stunned to learn that you actually topped Los Angeles on a number of occasions at 149 ppb with respect to ozone. In fact, the EPA called it unearthly at some point. What is the cause of such high ozone levels in Uintah County?

Mr. MCKEE. There appears to be a number of factors the scientists are still trying to learn about. One of the things they recognize is it is tied with sunlight and snow. This past winter, we did not have very much snow on the ground, we did not have any exceedances. In fact, we were well below the number. A year ago, we had deep snow and the numbers were fairly high. The jury is still out and that is what they are trying to find out.

Mr. CONNOLLY. Thank you very much.

Thank you, Mr. Chairman.

Mr. LANKFORD. Thank you.

We will now take a short recess to prepare for the second panel. Thank you very much for being here and staying for two rounds of questioning. I appreciate the time very much.

[Recess.]

Mr. LANKFORD. We will now welcome our second panel of witnesses. Thank you both for being here.

Nancy Stoner is Acting Assistant Administrator for Water, U.S. Environmental Protection Agency and Mike Pool is Acting Deputy

Director of the Bureau of Land Management as of tomorrow. We are breaking you in officially. We will try to be done before you are actually placed as Acting Administrator.

As I mentioned to everyone, we do have votes that will be called shortly, so we will try to get in both your testimonies.

Ms. Stoner, we would be glad to receive your testimony.

STATEMENT OF NANCY STONER

Ms. STONER. Thank you, Mr. Chairman.

Good afternoon, Chairman Lankford, Ranking Member Connolly and members of the subcommittee.

I am Nancy Stoner, Acting Assistant Administrator for Water at USEPA. Thank you for inviting me to testify before you today.

Mr. LANKFORD. Ms. Stoner, I apologize for this. I did not swear in everyone. Every hearing has to have some swearing in it.

If I could ask you both to stand so I can swear you in. Please rise and raise your right hands.

Do you solemnly swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

[Witnesses respond in the affirmative.]

Mr. LANKFORD. May the record reflect that all witnesses answered in the affirmative. I apologize for having to stall you in the moment. You may start over or pick up where you left off.

Ms. STONER. I think I will pick up right where I stopped.

The EPA and this Administration recognize that natural gas represents an important energy resource for our country. Increased on reliance on gas has the potential to create jobs, promote energy, security, lower energy prices and reduce harmful emissions to air and water.

At the same time, the Administration is committed to ensuring that production proceeds in a safe and responsible manner. We firmly believe we can protect the health of American families and communities while enjoying the benefits of expanded national energy reserves.

While States are the primary regulators of onshore oil and gas activity, the Federal Government has an important role to play by regulating oil and gas activities on public and Indian trust lands, research and development aimed at innovation to improve the safety of natural gas development and transportation activities and setting sensible, cost effective, public health and environmental standards to implement Federal laws and complement State safeguards.

As the senior policy manager for EPA's National Water Program, I would like to highlight a few of the EPA's recent actions under the Safe Drinking Water Act and the Clean Water Act intended to ensure that natural gas production can remain protective of human health and the environment.

The Safe Drinking Water Act governs the construction, operation, permitting and closure of underground injection wells for the protection of underground sources of drinking water. Underground injection control or UIC programs administered by EPA or the States are responsible for overseeing these injection activities. However, the Energy Policy Act of 2005 excludes hydraulic frac-

turing from regulation under EPA's UIC Program, except when diesel fuels are used in fluids or propping agents.

The EPA has heard from both industry and the public that we should clarify the applicability of the permitting requirement for diesel fuels, hydraulic fracturing as well as how those permits should be written.

In response and in light of the significant increase in natural gas production in the United States, we have developed draft guidance to clarify requirements under the Safe Drinking Water Act and to help prevent the endangerment of underground sources of drinking water from hydraulic fracturing using diesel fuels.

The EPA developed this draft guidance with input from industry, States, tribes and other Federal departments and agencies, environmental organizations and the public. I would like to emphasize that as is the case with all guidance, the draft document does not impose any new requirements. The draft clarifies existing statutory and regulatory requirements and provides technical recommendations for applying UIC Class II requirements to the diesel fuels hydraulic fracturing process.

The guidance is intended for use by EPA permit writers under the UIC Program and will be applicable where EPA is directly responsible for the UIC Class II Program. We are taking public comments on the draft through July 9 and welcome comments from all affected parties and the public.

The agency has also initiated efforts under the Clean Water Act to provide regulatory clarity and protection against risks to water quality. In October 2011, EPA announced a schedule to develop pretreatment standards for waste water discharges produced by natural gas extraction from underground, coal bed and shale formations.

In addition, EPA is assisting State and Federal permitting authorities in the Marcellus Shale Region by answering technical questions concerning the treatment and disposal of wastewater from shale gas extraction. The EPA has also been conducting research to better understand the potential impacts of hydraulic fracturing on drinking water resources. That is through our Office of Research and Development.

In conclusion, EPA's activities related to hydraulic fracturing help assure that public health and water quality remain protected as natural gas helps to promote our Nation's economic recovery and security.

Thank you for the opportunity to testify before you today and I am happy to take any questions you may have.

[Prepared statement of Ms. Stoner follows:]

TESTIMONY OF
NANCY K. STONER
ACTING ASSISTANT ADMINISTRATOR,
OFFICE OF WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY, INFORMATION POLICY,
INTERGOVERNMENTAL RELATIONS AND PROCUREMENT REFORM
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES

May 31, 2012

Good Afternoon, Chairman Lankford, Ranking Member Connolly, and Members of the Subcommittee. I am Nancy Stoner, Acting Assistant Administrator for Water at the U.S. Environmental Protection Agency. Thank you for inviting me to testify before you today. I would like to share with you the ways in which the EPA is helping to ensure that oil and natural gas extraction and production activities can continue to be conducted in ways that contribute effectively to the Nation's energy economic recovery and security while protecting public health and water quality.

The EPA and this Administration recognize that natural gas represents an important energy resource for our country. Increased reliance on gas has the potential to create jobs, promote energy security, lower energy prices, and reduce harmful emissions to air and water. At the same time, the Administration is committed to ensuring that production proceeds in a safe and responsible manner. We firmly believe that we can protect the health of American families and communities while enjoying the benefits of expanded national energy reserves.

While States are the primary regulators of onshore oil and gas activities, the Federal Government has an important role to play by regulating oil and gas activities on public and Indian trust lands, research and development aimed at improving the safety of natural gas development and transportation activities, and setting sensible, cost-effective public health and environmental standards to implement Federal law and augment State safeguards.

Part of EPA's role is oversight responsibilities when states and tribes are implementing federal laws and, in some cases, direct implementation responsibility under federal statutes such as the Safe Drinking Water Act (SDWA), the Clean Water Act (CWA), and the Clean Air Act (CAA). As the senior policy manager for the EPA's national water program, I would like to highlight a few of the EPA's recent actions under SDWA and the CWA intended to assure that natural gas production can occur in ways that protect human health and the environment while sustaining the benefits that natural gas production activities provide.

Hydraulic Fracturing and SDWA's Underground Injection Control Program

The Safe Drinking Water Act provides a role for the EPA in regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage and disposal. The EPA's Underground Injection Control program and state programs with primary enforcement responsibility (primacy) are responsible for overseeing these injection activities. However, the Energy Policy Act of 2005 excludes hydraulic fracturing from regulation under the EPA's Underground Injection Control (UIC) program except when diesel fuels are used in fluids or propping agents.

Diesel fuels in hydraulic fracturing fluids are a concern because they often contain benzene, toluene, ethylbenzene, and xylene compounds (BTEX). BTEX compounds are highly mobile in ground water and are regulated under national primary drinking water regulations because of the risks they pose to human health. People who consume drinking water containing any of these compounds in excess of the EPA's drinking water standard over many years may experience health complications such as increased cancer risk, anemia, and problems with the nervous system, kidneys, or liver.

In the last several years, publicly available data and Congressional reports have made the Agency aware that diesel fuels are being used as components of fracturing fluids.

In light of this information, and in light of the increasing pace of natural gas production nationwide, the Agency heard concerns from industry and the public that it has not been clear regarding the applicability of the permitting requirement for hydraulic fracturing activities using diesel fuels, or how such permits should be written. In response to this uncertainty and the significant increase in natural gas production activities in the United States, the EPA determined that guidance was appropriate to clarify requirements under the SDWA, as modified by the Energy Policy Act of 2005.

On May 4, 2012, the EPA released draft UIC Program guidance to provide greater regulatory clarity for permitting the underground injection of diesel fuels associated with hydraulic fracturing. While we recognize that any definitive determinations regarding the permit obligations for particular operations under existing law will be made by the permitting authority

on a case-by-case basis the draft guidance is intended to assist the regulated community, permitting authorities, and other interested members of the public, by providing EPA's current view on how the existing requirements of the SDWA and its implementing regulations apply to UIC permitting of oil and gas hydraulic fracturing operations using diesel fuels as a fracturing fluid or as a component of a fracturing fluid. Specifically, the draft guidance is intended to provide the public with a clear statement of EPA's present understanding of existing statutory and regulatory requirements for diesel fuels used in hydraulic fracturing wells, as well as technical recommendations for permitting those wells, tailoring UIC Class II permitting requirements to the unique characteristics of the hydraulic fracturing process. The goal of the recommendations in the guidance is to prevent migration of diesel fuels into USDWs and to protect human health. The EPA developed this draft guidance with input from a variety of groups, including industry, states and tribes, other federal departments and agencies, environmental organizations, and attendees of a public webinar. The EPA decided to seek public input on the draft guidance because of its importance to our Federal, state and tribal partners, to the regulated community, and to the public, and will fully consider those comments when developing the final guidance.

The guidance is directly intended for use by EPA permit writers under the UIC program. As described in the document, it is applicable where the EPA directly implements the UIC Class II program. The EPA is the permitting authority for UIC Class II programs in Arizona, Florida, Hawaii, Iowa, Kentucky, Michigan, Minnesota, New York, Pennsylvania, Tennessee, Virginia, Washington, DC, American Samoa, the Virgin Islands, and almost all parts of Indian country. The remaining states have primacy, which means they have received approval from the EPA to

implement their own UIC programs. Primacy programs are encouraged to review and consider the information and recommendations in the guidance.

As we developed the draft guidance, a key issue raised by stakeholders was how the Agency should describe "diesel fuels" for purposes of its guidance, because hydraulic fracturing wells that do not use diesel fuel are not subject to SDWA permitting requirements. The draft guidance provides a description of diesel fuels using six chemical abstract services registry numbers that contain the term "diesel fuel" in their primary descriptor or common synonyms, which we believe is a straightforward approach for companies to use when determining whether or not a particular hydraulic fracturing operation uses diesel fuels and is thus subject to SDWA permitting requirements. EPA welcomes public comments on this important issue to ensure that our guidance is as clear as possible and EPA will fully consider those comments in determining whether or not any changes to the draft guidance are warranted.

.

I would like to emphasize that, as guidance, the draft guidance does not impose any new requirements nor does it bind the regulated community, State permitting authorities, or EPA itself. Instead, it simply reflects the EPA's present understanding of existing requirements of SDWA and its implementing regulations, as they are applied to hydraulic fracturing operations using diesel fuels. The EPA's goal is to provide greater regulatory clarity, which will help EPA permit writers and well owners and operators more consistently comply with existing SDWA requirements while strengthening environmental protections under existing law.

Our draft guidance is currently open for public comment until July 9. We encourage comment on the draft guidance so that when final, the guidance provides maximum clarity and reflects the

best ideas for how to tailor the UIC Class II requirements to hydraulic fracturing activities using diesel fuels. We hope the guidance is useful to regulated industry, states, tribes, and the public regarding the existing legal requirements that apply to hydraulic fracturing activities using diesel fuels.

Additional EPA Activities for Protection of Water Quality

Additional activities being conducted by the EPA to ensure protection of surface water resources include actions by the Office of Water under the Clean Water Act to provide regulatory clarity and protection against known risks, and research being conducted by the EPA's Office of Research and Development to better understand the potential impacts of hydraulic fracturing on water resources:

Clean Water Act: Effluent Guidelines

In October 2011, as part of the CWA section 304(m) planning process, the Agency announced a schedule to develop standards for wastewater discharges produced by natural gas extraction from underground coalbed and shale formations. To ensure that these wastewaters receive proper treatment and can be properly handled by treatment plants, we will gather data, consult with industry and other stakeholders, and solicit public comment on a proposed rule for coalbed methane in 2013 and a proposed rule for shale gas in 2014.

Clean Water Act: Frequently Asked Questions (FAQs)

In March 2011, the EPA issued a Frequently Asked Questions (FAQ) document that provides state and federal permitting authorities in the Marcellus Shale region with guidance on permitting treatment and disposal of wastewater from shale gas extraction. The FAQs discuss the wastewater issues and pollutants associated with shale gas extraction and how they can be addressed under existing regulations. The EPA is currently developing additional, more detailed information on water quality permitting and pretreatment to supplement these FAQs. This information will provide assistance on how to permit Publicly Owned Treatment Works (POTWs) and Centralized Waste Treatment facilities by clarifying existing CWA authorities and obligations. Like the draft hydraulic fracturing guidance described above, we hope this information will help provide additional clarity to industry and the public regarding the existing legal requirements that apply to such operations.

Office of Research and Development: Study of Hydraulic Fracturing and Water Resources

The EPA is conducting a congressionally-directed study to better understand the potential impacts of hydraulic fracturing on drinking water and ground water. The scope of the research includes the full lifespan of water in hydraulic fracturing, from acquisition of the water, through the mixing of chemicals and actual fracturing, to the post-fracturing stage, including the management of flowback and produced water and its ultimate treatment and disposal.

Conclusion

The EPA's activities relating to hydraulic fracturing are intended to ensure that public health and water quality remain protected as natural gas helps to promote our Nation's economic recovery and security. Our work, along with that of our Federal and state partners, will help the nation promote the safe and responsible development of domestic energy resources while managing environmental impacts and addressing public concerns, thus ensuring that natural gas production can and will proceed in a safe and responsible manner. Thank you for the opportunity to testify before you today, and I am happy to take any questions you may have at this time.

Mr. LANKFORD. Thank you very much.
Mr. Pool.

STATEMENT OF MIKE POOL

Mr. POOL. Mr. Chairman Lankford and members of the subcommittee, thank you for the opportunity to discuss the Bureau of Land Management's development of hydraulic fracturing rules and their application on Federal and tribal trust lands.

The BLM administers over 245 million acres of surface estate and approximately 700 million acres of onshore Federal mineral estate throughout the Nation. Together with the Bureau of Indian Affairs, we also provide permitting and oversight services on approximately 56 million acres of Indian trust minerals.

Secretary of the Interior Ken Salazar has emphasized that as we move forward to the new energy frontier, the development of conventional energy resources from BLM-managed public lands will continue to play a crucial role in meeting the Nation's energy needs. Facilitating the safe, responsible and efficient development of these domestic oil and gas resources is the BLM's responsibility and part of the Administration's broad energy strategy to protect consumers and help reduce our dependence on foreign oil.

In fiscal year 2011, onshore Federal oil and gas royalties exceeded $2.7 billion, approximately half of which was paid directly to the States in which the development occurred. Tribal oil and gas royalties exceeded $400 million with 100 percent of those revenues paid to the tribes and individual Indians owning the land on which the development occurred.

Oil and gas production from shale formation scattered across the United States has grown considerably and is expected to continue in the coming decades. Factors contributing to this success include technological advances in hydraulic fracturing and horizontal drilling.

The BLM estimates that approximately 90 percent of the wells built on public lands and Indian lands are stimulated by hydraulic fracturing techniques. The increasing use of hydraulic fracturing has raised public concerns about the potential impact on water availability and quality, particularly with respect to the chemical composition of fracturing fluids and the methods used.

The BLM recognizes that some, but not all, States have recently taken action to address hydraulic fracturing in their own regulations. One of the BLM's key goals in updating its regulations on hydraulic fracturing is to complement these State efforts by providing consistent standards across all public and Indian lands.

The agency has a long history of working cooperatively with State regulators to coordinate State and Federal activities. The proposed rulemaking is not intended to duplicate various State or applicable Federal requirements. The BLM's intent is to encourage efficiency in the collection of data and the reporting of information.

The development of the hydraulic fracturing rule includes tribal consultation under the Department's consultation policy. This policy emphasizes trust, respect and shared responsibility by providing tribal governments an expanded role to inform Federal policy that impacts Indian lands.

In January 2012, the BLM conducted a series of meetings in the west where there is significant development of Indian oil and gas resources. Nearly 180 tribal leaders were invited to attend these meetings held in Tulsa, Oklahoma, Billings, Montana, Salt Lake City, Utah and Farmington, New Mexico. Eighty-four tribal members representing 24 tribes attended these meetings.

On May 11, 2012, the BLM sent over 180 invitations for continued government-to-government consultation, to exchange information on the development of hydraulic fracturing rules. As the agency continues to consult with tribal leaders throughout the rulemaking process, responses from these representatives will inform our actions and define the scope of acceptable hydraulic fracturing rule options.

The BLM's proposed rule is consistent with the American Petroleum Institute's guideline for well construction and integrity. On May 11, 2012, the BLM published the proposed rule in the Federal Register beginning a 60-day public comment period.

Straightforward measures outlined in the proposed rule include disclosure of chemicals used in hydraulic fracturing operations with appropriate protections for trade secrets; assurance of a well born integrity to minimize the risk of fracturing fluids leaking into the nearby aquifers and water management requirements to apply to the fluids that flow back to the surface after hydraulic fracturing has taken place.

The hydraulic fracturing proposed rule will strengthen the requirements for hydraulic fracturing performed on Federal and Indian trust lands in order to build public confidence and protect the health of American communities while ensuring continued access to important resources to our energy economy.

Mr. Chairman, thank you for the opportunity to testify. I would be happy to answer any questions.

[Prepared statement of Mr. Pool follows:]

Statement of
Mike Pool
Deputy Director
Bureau of Land Management, U.S. Department of the Interior

House Committee on Oversight and Government Reform,
Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform

"Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence"
May 31, 2012

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to discuss the Bureau of Land Management's (BLM) development of hydraulic fracturing rules and their application on Federal and Indian Trust lands.

The BLM, an agency of the U.S. Department of the Interior (Department), is responsible for protecting the resources and managing the uses of our nation's public lands, which are located primarily in 12 western states, including Alaska. The BLM administers more land – over 245 million surface acres – than any other Federal agency. The BLM manages approximately 700 million acres of onshore Federal mineral estate throughout the Nation, including the subsurface estate overlain by properties of other Federal agencies such as the Department of Defense and the U.S. Forest Service. The BLM, together with the Bureau of Indian Affairs (BIA), also provides permitting and oversight services under the Indian Mineral Leasing Act of 1938 on approximately 56 million acres of land held in trust by the Federal government on behalf of Tribes and individual Indian owners. The BLM works closely with surface management agencies, including the BIA and Tribal governments, in the management of the subsurface mineral estate. We are mindful of the agency's responsibility for stewardship of public land resources and the public and Indian trust oil and gas assets that generate substantial revenue for the U.S. Treasury, the states, and Tribal governments and individuals.

Background

The Obama administration is committed to promoting safe, responsible, and environmentally sustainable domestic oil and gas production as part of a broad energy strategy that will protect consumers, human health, and the environment, and reduce our dependence on foreign oil. Secretary Salazar has made clear that as we move toward the new energy frontier, the development of conventional energy resources from BLM-managed lands will continue to play a critical role in meeting the Nation's energy needs and fueling our Nation's economy. In Fiscal Year (FY) 2011, onshore Federal oil and gas royalties exceeded $2.7 billion, approximately half of which were paid directly to states in which the development occurred. In FY 2011, Tribal oil and gas royalties exceeded $400 million with 100% of those revenues paid to the tribes and individual Indians owners of the land on which the development occurred.

The BLM is working diligently to fulfill its part in securing America's energy future. Combined onshore oil production from public and Indian lands has increased every year since 2008. Production of oil from Indian lands has increased by more than 95% since 2008. Production of gas from public and Indian lands has remained nearly stable despite increasing industry interest in development of natural gas on private lands in the eastern United States. In 2011, conventional energy development from public and Indian lands produced 14 percent of the Nation's natural gas, and 6 percent of its domestically-produced oil.

Gas production from shale formations scattered across the United States has grown from a negligible amount just a few years ago to represent a significant share of the total U.S. natural gas production, and this share is expected to increase further in the coming decades. There has also been a significant and growing increase in oil production from shale formations. Significant factors contributing to these increases include technological advances in hydraulic fracturing and horizontal drilling.

One example of this rise in production and the advances in technology is dramatically evident on the Fort Berthold Indian Reservation which lies in the heart of the Bakken oil and gas region in North Dakota. At Fort Berthold, applications for permit to drill have increased from zero in 2007 to 175 in 2011. Royalty payments from production from trust minerals have increased from $4.5 million in 2009 to approximately $117 million last year. The BLM works closely with the BIA to help ensure that drilling and oil and gas production activities on Fort Berthold are permitted efficiently and conducted in a safe and responsible manner. BIA completes NEPA compliance, cultural and biological surveys, and development of surface mitigation measures.

Notably, on April 3, 2012, at Fort Berthold, Secretary Salazar unveiled initiatives to expedite safe and responsible leasing and development of domestic energy resources on U.S. public and Indian trust lands. As part of the BLM's ongoing efforts to ensure efficient processing of oil and gas permit applications on both Indian trust and public lands, the agency will implement a new automated tracking system across the Bureau that could reduce the review period for drilling permits by up to two-thirds. The new system will track permit applications through the entire review process, quickly flagging missing or incomplete information, and greatly reducing the back-and-forth between the BLM and industry applicants, which is currently needed to ensure that applications processed by the BLM are complete. This initiative comes as part of the Department's efforts to continually meet increased demands for oil and gas development on public and Indian lands across the country.

Hydraulic Fracturing Technology

Recent technology and operational improvements in extracting hydrocarbon resources, particularly shale gas, have increased oil and gas drilling activities nationally and led to significantly higher natural gas production estimates for the coming decades. Hydraulic fracturing, or "fracking," is a common technique that has been used in oil and gas production operations for decades. Fracking involves the injection of fluid under high pressure to create or enlarge fractures in the rocks containing oil and gas so that the fluids can flow more freely into the well bore and thus increase production. However, the increasing use of hydraulic fracturing has raised concerns about the potential impacts on water availability and quality, including concerns about the chemical composition of fluids used in fracturing.

The number of wells on BLM-managed public lands and on Indian lands, as well as on private lands, that are stimulated by hydraulic fracturing techniques has increased steadily in recent years as oil and gas producers are developing geologic formations that are less permeable than those drilled in the past. The BLM estimates that approximately 90 percent of the wells drilled on public and Indian lands are stimulated by hydraulic fracturing techniques.

Hydraulic Fracturing Rulemaking Considerations

Several laws guide the BLM's responsibilities with regard to hydraulic fracturing. The Federal Land Policy and Management Act (FLPMA) directs the BLM to manage the public lands to prevent unnecessary or undue degradation, and to manage lands using the principles of multiple use and sustained yield. FLPMA also requires that the public lands be managed in a manner that will protect the quality of their resources, including ecological, environmental, and water resources. The Mineral Leasing Act meanwhile, authorizes the Secretary to lease Federal oil and gas resources, and to regulate oil and gas operations on those leases, including surface-disturbing activities. Finally, the Indian Mineral Leasing Act assigns regulatory authority to the Secretary over Indian oil and gas leases on trust lands (except those excluded by statute). As stewards of the public lands, and as the Secretary's regulator for oil and gas leases on Indian lands, the BLM has evaluated the increased use of well stimulation practices over the last decade and determined that the existing rules for well stimulation require updating.

In November 2010, Secretary Salazar hosted a forum, including major stakeholders, on hydraulic fracturing on public and Indian lands to examine best practices to ensure that natural gas on public and Indian lands is developed in a safe and environmentally sustainable manner. Subsequently, the BLM hosted a series of regional public meetings in North Dakota, Arkansas, and Colorado – states that have experienced significant increases in oil and natural gas development on Federal and Indian lands – to discuss the use of hydraulic fracturing on the Nation's public lands.

During the Secretary's forum and the BLM's public meetings, members of the public expressed a strong interest in obtaining more information about hydraulic fracturing operations being conducted on public and Indian lands. Questions about the composition of the fluids that are being used were highlighted frequently as were concerns about these fluids potentially leaking into aquifers or causing spills on the surface. Additionally, the BLM recognized through review of its rules that existing regulations on well stimulation operations on public and Indian lands (last updated in 1982) needed to be updated to reflect significant technological advances in hydraulic fracturing in recent years and the tremendous increase in its use.

The BLM proposed these changes to existing well stimulation oversight partly in response to recommendations put forward in 2011 by the Secretary of Energy Advisory Board (SEAB). At the President's direction, the SEAB convened a Natural Gas Subcommittee (Subcommittee) to evaluate hydraulic fracturing issues. The Subcommittee met with industry, service providers, state and Federal regulators, academics, environmental groups, and many other stakeholders. On August 18, 2011, the Subcommittee issued an interim report with recommendations. Among other things, the report recommended that more information be provided to the public, including disclosure of the chemicals used in fracturing fluids. The Subcommittee also recommended the adoption of progressive standards for wellbore construction and testing. The interim report was

followed by a Final Report that was issued by the Subcommittee on November 18, 2011. The Final Report recommended, among other things, that operators engaging in hydraulic fracturing prepare cement bond logs and undertake pressure testing to ensure the integrity of all casings.

Coordination With State Hydraulic Fracturing Rules

The BLM recognizes that some, but not all, states have recently taken action to address hydraulic fracturing in their own regulations. Over the past few years, in response to strong public interest, several states—including Colorado, Wyoming, Arkansas, and Texas—have substantially revised their state regulations related to hydraulic fracturing. One of the BLM's key goals in updating its regulations on hydraulic fracturing is to complement these state efforts by providing a consistent standard across all public and Indian lands. The agency has a long history of working cooperatively with state regulators to coordinate state and Federal activities. The BLM routinely shares information on oil and gas operations with state regulatory authorities. The proposed rulemaking is not intended to duplicate various state or any applicable Federal requirements. The BLM will work closely with individual states on the implementation of the proposed regulation to ensure that duplication of efforts is avoided to the extent possible.

The BLM is actively working to make reported information consistent and easily accessible to the public. For instance, the BLM is working closely with the Ground Water Protection Council and the Interstate Oil and Gas Commission in an effort to integrate the disclosure called for in this rule with the existing website known as FracFocus. The FracFocus.org website is already well established and used by many states. This online database includes information from oil and gas wells in roughly 12 states and includes information from over 206 companies. The BLM's intent is to encourage efficiency in the collection of data and the reporting of information.

Tribal Outreach & Next Steps for the Consultation Process

The BLM proposes to apply the same rules and standards to Indian lands so that these lands and communities receive the same level of protection provided for public lands. In January 2012, the BLM hosted formal government-to-government consultation sessions – including the initial outreach, communication, and substantive discussions with Tribal communities on the proposed rule. The agency conducted a series of Tribal consultation meetings in the oil and gas producing regions of the West where there is significant development of Indian oil and gas resources. Nearly 180 Tribal leaders from all Tribes that are currently receiving oil and gas royalties and all Tribes that may have had ancestral surface use were invited to attend these meetings, which were held in Tulsa, Oklahoma; Billings, Montana; Salt Lake City, Utah; and Farmington, New Mexico. Eighty-four Tribal members representing 24 tribes attended the meetings. Attending for the BLM were both senior policy makers from the Washington Office as well as the local line officers who have built relationships with the Tribes in the field.

In these initial meetings Tribal representatives were given a draft of the hydraulic fracturing rule to serve as a basis for discussion and substantive dialogue about the hydraulic fracturing rulemaking process. The BLM asked the Tribal leaders for their views on how a hydraulic fracturing rule proposal might affect Indian activities, practices, or beliefs if it were to be applied to particular locations on Indian and public lands. A variety of issues were discussed, including applicability of Tribal laws, validating water sources, inspection and enforcement, wellbore integrity, and water management, among others.

At the request of various tribes, the BLM subsequently has met with several Tribal representatives, including the United South and Eastern Tribes, the Coalition of Large Tribes, and the Mandan, Hidatsa and Arikara Nation to discuss hydraulic fracturing and the impacts it may pose to their lands.

The development of this hydraulic fracturing rule will continue to include proactive Tribal consultation under the Department's newly-formalized Tribal Consultation Policy. This policy, announced on December 1, 2011, emphasizes trust, respect and shared responsibility in providing Tribal governments an expanded role in informing Federal policy that impacts Indian lands. Under this policy, consultation is an open, transparent, and deliberative process.

The agency will continue to consult with Tribal leaders throughout the rulemaking process and has offered continued government-to-government consultation on this proposal through follow-up meetings as part of the consultation process with any Tribe that desires to have an individual meeting. On May 11, 2012, the BLM sent over 180 invitations for continued government-to-government consultation to exchange information on the development of the hydraulic fracturing rule. Regional meetings are planned for early June in Salt Lake City, Utah; Farmington, New Mexico; Tulsa, Oklahoma; and Billings, Montana. The BLM has initiated follow–up calls with many of the Tribal leaders or their representatives and will continue to keep multiple lines of communication open during the Tribal consultation process. Responses from Tribal representatives will inform the agency's actions in defining the scope of acceptable hydraulic fracturing rule options.

Hydraulic Fracturing Proposed Rule

BLM has proposed measures to strengthen the requirements for hydraulic fracturing performed on Federal and Indian trust lands in order to build public confidence and protect the health of American communities, while ensuring continued access to the important resources that make up our energy economy. The BLM's proposed rule is consistent with the American Petroleum Institute's (API) guidelines for well construction and well integrity (see API Guidance Document HF 1, Hydraulic Fracturing Operations—Well Construction and Integrity Guidelines, First Edition, October 2009). On May 11, 2012, the BLM published the proposed rule in the *Federal Register*, beginning a 60-day public comment period, during which the public, industry and other stakeholders are encouraged to provide their input.

Straightforward measures outlined in the proposed rule include:

- Disclosure of the chemicals used in hydraulic fracturing operations, with appropriate protections for trade secrets. The agency is evaluating how best to provide this information to the public and has been in touch with organizations, including the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission, that run the website FracFocus.org.
- Assurance of wellbore integrity. The BLM is looking at wellbore integrity as a means to minimize the risk of fracturing fluids or other contaminants leaking into nearby aquifers.
- Water management requirements that would apply to the fluids that flow back to the surface after hydraulic fracturing has taken place. This is frequently referred to as "flowback."

The BLM has developed the draft with an eye toward improving public awareness and oversight without introducing complicated new procedures or delays in the process of developing oil and gas resources on public and Indian lands. Some states have started requiring similar disclosures and oversight for oil and gas drilling operations under their own jurisdiction. The BLM's proposal seeks to create a consistent oversight and disclosure model that will work in concert with other regulators' requirements while protecting Federal and Tribal interests and resources.

Conclusion

The BLM will continue to encourage responsible energy development on public and Indian trust lands and ensure a fair return for the use of these resources. The BLM will be pleased to receive detailed feedback from industry, state, Tribal, and local governments, individual citizens and all other interested parties during the comment period for the proposed rule which is open until July 10. Consultation with Tribal governments will continue throughout this process. I am glad to answer any questions you may have.

Mr. LANKFORD. Thank you. Thank you not only for your written testimony but your oral testimony and for allowing you to come in on your pre-first day.

We are verifying right now, I think they may be calling the votes. If they are calling the votes right now, that is going to interrupt our schedule. We will hesitate for just a moment to see.

It looks like they are calling the vote. If they are, we can do a round of questions and come back and do a second round or we can try to stall and do both rounds when we are back. We will try to do maybe three minutes in the first round and come back and do a second round. The second round we will do like 18 minutes each or something like that.

Let me yield to Mr. Kelly for the first round.

Mr. KELLY. Thank you, Mr. Chairman.

Ms. Stoner, I am trying to understand the change in EPA's interpretation of a regulation. Why was the 2010 announcement not subject to the notice and comment procedure? I am talking specifically when we go into the diesel element of it. That was kind of fast paced, was it not? It was just placed on your website and wasn't really the regular procedure taken?

Ms. STONER. This is a guidance document, so it is an interpretation of the statute and the regulations.

Mr. KELLY. I am talking about before the guidance document that EPA posted on their website on the permit using the diesel in fracking.

Ms. STONER. The EPA has on its website information about what is in the Energy Policy Act including the fact that when hydraulic fracturing is done with diesel fuels, a permit is required. That is in the statute so we did include that information on our website. As you may know, we did have a lawsuit associated with that. Which has been—

Mr. KELLY. I understand but that is different than the document that existed before the 2010. Is it true, that has changed?

Ms. STONER. I am not sure I understand your question.

Mr. KELLY. There is a letter from Acting Assistant Administrator Ben Grumbles to the Senate Environment and Public Works Committee stating that the use of hydraulic fracturing using diesel does not fall within the scope of the UIC Class II Program. That is before 2010.

Ms. STONER. Was that before 2005?

Mr. KELLY. No, it is before 2010 The EPA then decides to change that, just going on their website and saying it. It didn't go through the normal processing is what I am saying.

Ms. STONER. It is not my understanding the agency changed its position between 2001 and 2005. In 2001, there was a court decision that said hydraulic fracturing was within the Class II UIC Program. It was at that point that the agency changed its position in response to the Federal court.

Mr. KELLY. Without objection, Mr. Chairman, I ask this letter be put in.

Mr. LANKFORD. Without objection.

Mr. KELLY. I think the concern is things change rather quickly and a process that all of a sudden that was not policy before becomes policy, does not go through the regular process. The frac-

turing was not part of what was in the policy, using diesel fuel. All of a sudden it did become part of it.

Ms. STONER. We are implementing the 2005 statute with the guidance that is going through public notice and comment now after a series of public meetings and discussions with a variety of different groups. We are undertaking that process. We agree with you it is important to have the involvement and a wide variety of partners and stakeholders in the process.

Mr. KELLY. That is the intent of the whole process and that is why I wondered why it was fast tracked like that.

Mr. Chairman, my time is up. I yield back.

Mr. LANKFORD. I recognize Mr. Connolly.

Mr. CONNOLLY. Welcome to both of our panelists. Thank you, Mr. Chairman.

Just to clarify, I am confused, EPA is not proposing a general broad regulation on fracturing. It is only proposing fracturing within the statutory framework provided in the 2005 legislation and the subsequent court ruling, is that correct, Ms. Stoner?

Ms. STONER. Yes, that is correct. We are interpreting the statute and the regulation.

Mr. CONNOLLY. For example, if it does not involve diesel, you are not regulating the process?

Ms. STONER. That is correct. Diesel fuels is in the statute, that is what we are implementing. Congress imposed the obligation on hydraulic fracturing operations using diesel fuels to obtain a permit and the guidance explains how to do that.

Mr. CONNOLLY. This assertion of regulatory responsibility in this particular lane involving diesel was actually insisted upon, is that correct, or ruled upon by a court?

Ms. STONER. The court determined that hydraulic fracturing was covered under the UIC Class II Program. That was in 2001. Congress took action in 2005 that limited that permitting requirement only to hydraulic fracturing using diesel fuel. What the proposed guidance does is indicate how that should be implemented.

Mr. CONNOLLY. Why did it take seven years from that legislation to today to get around to proposed regulations?

Ms. STONER. Initially at the EPA we did a memorandum of agreement with companies involved in coal bed methane hydraulic fracturing indicating they would not use diesel fuels. A shift in the industry has happened so that there is now more hydraulic fracturing that is outside that realm of the coal bed methane. That is why we no longer view the initial steps as sufficient to comply with what Congress asked us to do

Mr. CONNOLLY. Are you aware of any cases where fracturing has come to a halt because of your pending regulatory rules?

Ms. STONER. No, I am not aware of any.

Mr. CONNOLLY. You are also proposing as an emission to regulate carcinogens, benzene and volatile organic compounds but not methane, is that correct?

Ms. STONER. That would be an air rule you are asking about. I don't know the answer to that question.

Mr. CONNOLLY. You don't know the answer. My understanding is you are not proposing anything with respect to methane.

Ms. STONER. I am sorry, I don't know the answer. We could submit that information for the record.

Mr. CONNOLLY. You will recall earlier the Professor's testimony that methane actually is a very serious concern of his and other academics and scientists looking at fracturing. The reason is because it is part of a family of organic compounds—methane in and of itself may not be dangerous but it is a precursor and other carcinogens.

Mr. Pool, did you hear the testimony of Mr. McKee from Uintah, Utah?

Mr. POOL. Yes, sir, I did.

Mr. CONNOLLY. He testified that essentially BLM, being the owner of 59 percent of the land mass in his county, is really putting the crimp in their style in terms of the ability to exploit natural resources because it is Federally-owned land and Federally-controlled land. Would you comment? I know this is your first day in this particular set of responsibilities.

Mr. POOL. That is a very prolific region in terms of natural gas and potential development. We have issued quite a few leases up there and we have issued quite a few APDs. I think when it comes to leasing Federal land, we have other important responsibilities that we have to address in terms of biological and cultural considerations.

When we go into a leasing process or a full development process, we need to work with the operators. These jurisdictions will vary depending on the sensitivity of these resources. I think between Wyoming and Utah, we have about 6,800 APDs that are what we call front logged where we have issued the APDs but the companies have not taken action to activate those. I think a percentage of those are in Uintah County. I don't have that exact number.

Mr. CONNOLLY. Essentially the thrust of the testimony from at least two of the State officials was we don't need no stinking Federal Government, why not just let, for example, Utah regulate what happens on BLM land. What is wrong with that?

Mr. POOL. As relates to hydrologic fracturing or fracking, we discovered in reviewing our own regulations that they are very outdated. Many of the States, including Colorado, Wyoming, Texas, and Arkansas, were starting to develop regulatory procedures to address various requirements associated with fracking.

We looked at our regulations. I think the Secretary of Interior has done an incredible job in terms of public outreach with the forum he held in D.C. back in the fall of 2011. Subsequently we held regional meetings. We got recommendations from the Secretary of Energy, the Natural Gas Subcommittee, all of which was helping the BLM formulate what improved standards should we develop. We looked closely at what the State regulators have been doing. In many cases, they have been out in front of the BLM.

The issue is the State fracking regulations don't pertain to Federal lands. In many provinces of the west, we have fee land, State land and we have public land. We would like to think with development of our proposed rule, with a high degree of outreach and public input—that is still ongoing during the comment period—that our regulations will be very much complementary to and very much

in alignment with what States are doing as well. It is important that they be in line.

Mr. CONNOLLY. Thank you, Mr. Chairman.

Mr. LANKFORD. Mr. Pool, let me ask about that. The public lands, you are saying the State rules would not apply. You are saying State regulations in Utah would not apply to fracking?

Mr. POOL. That is correct.

Mr. LANKFORD. Was there a consideration to say they would or is there a need for BLM to create a whole new group of regulators and go in and evaluate this?

Mr. POOL. Yes, Mr. Chairman. Our authorities come under two principal statutes—the Mineral Leasing Act and the Federal Land Policy and Management Act. Our regulations have to be basically developed under those two statutes for us to enforce whatever requirements we want to impose on the operators.

Mr. LANKFORD. You mentioned before your regulations were very out of date on this. Obviously States keep theirs up to date.

Mr. POOL. That is correct.

Mr. LANKFORD. Is there a process in place where BLM is going to keep up to date on all the different States?

Mr. POOL. In developing our proposed rule, we looked at Colorado, Wyoming, Texas and we even looked at Arkansas. We have taken into account some of the standards they have developed over a period of time. We are using their information along with more recent public information to finalize our rule.

Mr. LANKFORD. I would like to have unanimous consent to add to the record a letter from the Governor of Wyoming mentioning that he feels the rules are very duplicative to what they already do in Wyoming and this will create two different sets and a little frustration with that. I would like to add that to the record as well.

Mr. LANKFORD. Let me ask a couple questions because they have called the votes and I want to be able to honor your time as well.

How long will this process add, do you think, this additional set of regulations, to the permitting process? How many days do you think it will add?

Mr. POOL. I don't have exact days but I think the requirements are very basic. In terms of the constituents or chemicals used primarily in many cases is a water/sand-based solution. We are asking that companies after they complete the fracking operation to file that information to us within 30 days.

Mr. LANKFORD. I asked because this morning in testimony we heard an estimate given that this would add 100 days to the process. I didn't know if you all had set an estimate on that as well.

Mr. POOL. I don't have it with me today but we can provide that.

Mr. LANKFORD. Ms. Stoner, my concern is on the expanded definition of diesel. It is very clear that diesel fuel is included in the 2005 but if I drove a diesel truck, which I don't, and then poured kerosene into it, I would not consider that a diesel fuel. If I drove a diesel truck and instead of filling it up with diesel, instead I put crude oil in there or home heating oil, it would not run because it is a diesel vehicle. The definition is fairly clear it is diesel fuel.

I want to have dialogue about the new, expanded definition of diesel fuels. Many of the companies doing fracking saw the ruling in 2005, saw the statement from Congress saying diesel fuels will

be regulated and so they shifted away from diesel fuel. This has the perception that because they no longer use diesel fuels, we have to redefine what is a diesel fuel to make sure what they are using is included. Does that make sense? Crude oil, home heating oil, kerosene, those are now suddenly diesel fuels.

Ms. STONER. In the Energy Policy Act of 2005, the term diesel fuels appears but there is no definition.

Mr. LANKFORD. Correct.

Ms. STONER. This is the first attempt the agency has made to provide such a definition. It did so by looking at six Chemical Abstract Service or CAS numbers. There are six specific things, all of which are diesel fuels—diesel fuel 1, diesel fuel 2.

Mr. LANKFORD. They are diesel fuel 1, 2 and 3 as designated by who, EPA or by some other group? For instance, the petroleum distillates could be just about anything that is a petroleum product.

Ms. STONER. It has a specific CAS number that doesn't come from the agency called crude oil/diesel fuel. Kerosene is marine diesel fuel. All six of them are diesel fuel and that is where we got the six CAS numbers from. We are taking comment on our proposed definition. We would like a very clear definition because it links specifically to those six CAS numbers.

Mr. LANKFORD. I am second guessing whether Congress in 2005—I was not in Congress in 2005, none of us on this panel were—was considering crude oil a diesel fuel or as broad as petroleum distillates as a diesel fuel. That is a very broad definition. The concern is that this suddenly seems to reach out with a net and be able to snag everything in it.

I have one other quick comment and then want to share some additional time. Why redefining now, why BLM putting in the new regulatory environment now before EPA has finished its study? We have a study due in just a few months to define whether there is even a problem. We just created a new series of regulations, just greatly expanded what diesel fuels pertain to the common sense view of what is a diesel fuel in the past before EPA finalizes a study.

Ms. STONER. The ORD study will actually take a couple more years. We expect to have progress this year but not a final report this year. The information we do have about what Congress did in terms of diesel fuel is that Congress was focused on benzene, toluene, ethyl benzene and zylene or BTEX compounds which are associated with all six of those CAS numbers.

We are doing our best to interpret what Congress was concerned about in terms of chemicals in underground sources of drinking water and the potential risk there. That is our proposed description of diesel fuels. Again, it is out for public comment.

Mr. LANKFORD. Will this be retroactive permitting when the new definition is done?

Ms. STONER. The permitting requirements of the statute and the regulations apply now but the diesel fuel definition is a proposed interpretation of those and would of course not be.

Mr. LANKFORD. If a State doesn't abide by the guidelines, will they lose primacy in this?

Ms. STONER. We don't intend to take away primacy from our State partners. We work closely with them on implementing these

programs in a complementary way and don't intend to do that. The draft guidance applies only to those States where EPA is the permitting authority under the UIC Program.

Mr. LANKFORD. Would this be mandatory in BLM areas?

Ms. STONER. It doesn't differentiate between private lands and Federal lands but it does apply only where EPA is the issuing, permitting authority for UIC. States assume that authority. Many States like Oklahoma have assumed that authority and it does not apply to those States, although they may find it useful.

Mr. LANKFORD. Mr. Pool, obviously that would be your decision to make in days to come whether this applies, this guidance.

I need to give additional minutes back to Mr. Kelly who only got three here.

Mr. KELLY. I thank the Chairman.

Ms. Stoner, I am going to ask you one thing and very quickly, Mr. Pool. The reason I ask is because of Pennsylvania. Dimock, PA, I think you are familiar with the movie Gasland.

Ms. STONER. I am sorry, familiar with what, sir?

Mr. KELLY. The movie Gasland?

Ms. STONER. Yes, I am somewhat familiar with it.

Mr. KELLY. On May 11, Roy Seneca, a spokesman for the regional EPA office said they tested 59 wells in Dimock and found the fracking had nothing to do with any contamination of the water. He says, this set of sampling did not show levels of contaminants that would give the EPA reason to take further action.

The conclusion then would be that the EPA doesn't need to be concerned anymore with Dimock, PA with the testing, so the water is safe. It is not the result of fracturing, there is nothing that has been contaminated.

Ms. STONER. My understanding is there is some limited additional sampling occurring to verify there is no public health concern but that we have not found a public health concern to date.

Mr. KELLY. All the testing has turned up nothing that would determine the water was affected by fracking?

Ms. STONER. My understanding is that we believe nothing required further action.

Mr. KELLY. Okay, that is a settled issue.

Mr. Pool, the President talks a lot about the increase in oil and gas. Where is the increase taking place? Is it taking place in the Federal lands? Where is it taking place?

Mr. POOL. I think the BLM and the public lands has been a major contributor to the production of natural gas and oil. Currently we have about 85,000 producing wells on public lands, about 90 percent of which we do apply hydraulic fracturing to maximize the economic recovery of the resource.

Mr. KELLY. When we talk about the increase, there has been a huge increase, but most of it has taken place in the private sector. Ninety-six percent of it by the way, we have a slide that shows that. The President is saying wow, look what we have done but 96 percent of the increase in U.S. oil production has occurred on non-Federal lands. This really has nothing to do with the Administration.

Mr. POOL. As I mentioned earlier in my comments, we have a variety of statutes that we have to address when we authorize lands for lease.

Mr. KELLY. I understand that.

Mr. POOL. In recent years, we have been much more measured.

Mr. KELLY. Do you think this chart is correct?

Mr. POOL. Congressman, I can't compare that.

Mr. KELLY. It is a CRS chart, by the way. I know this is your first day but I am trying to determine because I am hearing all the time about this tremendous increase under this Administration. The fact of the matter is it really has happened in the private sector; it hasn't happened on Federal lands. I think sometimes you have to clear up those things so people actually understand what is going on.

I have a problem with people who take credit for things they didn't have anything to do with. I think the general public never sees these things and when they hear these numbers, they say this is incredible, what has happened. It has happened through the private sector; it has not happened on Federal lands.

I think when you look at 96 percent has happened in the private sector and 4 percent on Federal, where there would have been some influence, it absolutely had nothing to do with it.

I appreciate the indulgence. We are running short on time. I thank you both for being here today.

Mr. LANKFORD. Thank you.

Would either of you mind if we submit some written statements to you later on and get a chance to do some follow up. We do have additional questions and want to be able to do some follow up. Do either of you have a problem with that? I am sure, Mr. Pool, you will have nothing on your desk tomorrow. You will be eagerly awaiting these questions.

Ms. STONER. That would be fine.

Mr. CONNOLLY. Mr. Chairman, in that category could I just ask Mr. Pool if he would give us more detail in writing because I was intrigued by his answer with respect to the testimony of Mr. McKee on Uintah County and how BLM was an impediment to their economically being able to develop that land. I think the subcommittee would welcome more detailed explanation.

Mr. POOL. I would be glad to give you a complete profile of that.

Mr. CONNOLLY. If I could piggyback on your request, that would be great.

Mr. LANKFORD. That would be great for both the county and the committee as we do our research as well.

Thank you for being here. We will follow up with additional questions to submit for the record.

With that, we are adjourned.

[Whereupon, at 4:08 p.m., the subcommittee was adjourned.]

James Lankford, Chairman, Opening Statement

"Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence."

- As we heard this morning, after years of worry about American supply the oil and gas industry has located significant new areas to explore for energy and the results have been remarkable. Last quarter, 58% of the oil we used in America came from America. 79% of the oil we used came from North America. The United States is currently in an American Energy Renaissance.

- Through hydraulic fracturing and horizontal drilling, domestic oil and natural gas reserves have the potential to create millions of new jobs and make the United States finally energy independent.

- Increased energy exploration and production is one of the keys to turning our economy around and putting Americans back to work. It's no coincidence that states with low unemployment rates are high in energy production.

- While technology has greatly increased the ability to find new oil and gas, this morning, the Full Committee heard testimony about the many ways that the Obama Administration has stood in the way of American energy independence by slowing new production of coal, oil, and natural gas. Under the Obama Administration, red tape and endless government studies have discouraged new federal permitting.

- The energy renaissance we heard of today is taking place almost exclusively on private lands. [refer to chart]

- Based on new regulation issued just last month by the Environmental Protection Agency and the Bureau of Land Management, it appears that the trend of underutilization of federal lands will continue and may spread to private lands.

- The Department of the Interior, through the Bureau of Land Management, just proposed sweeping regulations of hydraulic fracturing on federal and Indian lands that duplicate state regulations, and threaten the decades old primacy relationship of state regulation.

- In proposing the rule, BLM did not assert that the federal government is in any better position to regulate fracking than the states and BLM did not claim that states are not doing a good job. The President's BLM merely asserts that they are proposing the regulation on the basis of "public concern."

- Ironically, this public concern has arguably been fostered by the U.S. EPA.

- In a multi-pronged attack on the industry, EPA has publicly lambasted specific energy producers and fracking locations for alleged problems, but later the EPA has only whispered corrections when science proves the initial EPA assertion invalid.

- This all happened while continuing to issue a stream of regulations affecting hydraulic fracturing, before their current federally-mandated study is completed.

- EPA Administrator Jackson has stated under oath before this Committee, there is not a single documented case where hydraulic fracturing has demonstrably contaminated ground water. But, that has not stopped EPA and BLM from creating a series of new federal regulations.

- This positive record is in part due to physics [see chart]. Fracking activity takes place miles below the nearest aquifer.

- But it is also due to an effective and comprehensive state regulatory regime.

- Regulators in energy resource rich states like Oklahoma, Pennsylvania, Utah, North Dakota and Texas work closely with all interested parties – industry and environmentalists alike – to develop a regulatory regime that is responsive to advancements in industry, while protecting the environment at the same time.

- No one cares more about the water resources of Oklahoma than the people who live in Oklahoma. The assumption that federal regulators from another state understand the geologic strata and energy process better than state enforcement is beyond credible. I also do not accept the assumption that local regulators cannot be trusted because they have political pressures that will discourage enforcement, but federal regulators have only pure motives and no political agenda.

- Look no further than the former EPA Region 6 Administrator, who stepped down after it was revealed that he pursued and trained his staff in a strategy of "crucifixion" against oil and gas companies to keep industry in line. This astonishing statement reveals that some in the EPA sees some people in my district as the enemy and they assume their job is to control them, instead of serve the public.

- State regulators work closely with the Ground Water Protection Council to develop a website knows as FrackFocus – which enables disclosure of fracking fluids, while protecting trade secret information.

- State regulators also work with STRONGER – the State Review of Oil and Natural Gas Environmental Regulations – which is funded in part by the EPA and U.S. Department of Energy. STRONGER, which is comprised of all interested parties, conducts exhaustive reviews of a State's regulation of hydraulic fracturing, comparing the existing regulations to a set of Hydraulic Fracturing Guidelines unanimously adopted in 2010.[1] If a state falls short, they work with STRONGER to get up to code.

- Even so, EPA is now moving forward with a confusing Diesel fuels Guidance, which turns the Safe Drinking Water Act (SDWA) on its head.

- In 2005, Congress specifically exempted hydraulic fracturing from regulations under SDWA because it is an ill-fitting regulatory framework.

- Congress granted EPA the authority to regulate hydraulic fracturing in a very narrow circumstance: when "diesel fuels" were used. That simple statement seems very narrow and clear. But, EPA appears to be attempting an end-run around the statute by brazenly defining "diesel fuels" to include virtually any petroleum product.

- This new regulatory overreach now threatens the entire system of state regulation primacy under the Safe Drinking Water Act.

- We can have safe energy exploration and production overseen by states and local authorities. There is a role for the EPA, but I am very skeptical that thousands of wells in many different types of rock and soil conditions across the country can be overseen from Washington better than state leaders who know the people and land.

- We are so close to energy independence, this is a moment when we will finally solve a decades old problem or the federal government will get in the way and slow or halt our economic future. Today is a pursuit of answers and clarity of direction of the EPA and BLM to determine the goal of an administration who has stated they are for all of the above energy.

---

[1] STRONGER, Inc., ARKANSAS HYDRAULIC FRACTURING STATE REVIEW, Feb. 2012, available at http://www.strongerinc.org/documents/Arkansas%20HF%20Review%202-2012.pdf.

Statement of Congressman Gerald E. Connolly
Ranking Member
Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform Hearing on
"Rhetoric vs. Reality, Part II: Assessing the Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence"
May 31st, 2012

Chairman Lankford, thank you for the opportunity to address oversight of hydraulic fracturing. EPA's website notes "Natural gas plays a key role in our nation's clean energy future." The President has made his support for natural gas extraction abundantly clear, most notably in the State of the Union. More natural gas is being extracted now, under President Obama's EPA, than any previous administration. The Obama administration's support for natural gas extraction is not debatable. The real questions are: What are the risks of hydraulic fracturing, and what is the appropriate governmental response to them?

The gas companies claim that chemicals used in fracking cannot reach underground aquifers or surface water. Chemicals used in hydraulic fracturing are exempt from Safe Water Drinking Act disclosure requirements, due to a provision of the 2005 Energy Policy Act known as the "Halliburton Loophole." This disclosure exemption makes it practically impossible to know the full extent of dangerous chemicals injected into the ground by hydraulic fracturing operators. But fracking fluids frequently contain carcinogens and other toxic chemicals, and water contamination near fracking wells is occurring.

Energy and Commerce Committee staff conducted a study of chemicals used in fracturing and found at least 29 toxins including carcinogens such as benzene, naphthalene and acrylamide. This study found that at least 10.2 million gallons of fracturing fluid contained at least one known carcinogen. A separate study found over 32 gallons of fracturing fluid used between 2005 and 2009 contained diesel fuel, a violation of the Safe Water Drinking Act. Without objection, I will submit for the record a written statement from Clean Water Action expressing concern about certain dangerous chemicals used in fracturing. I also will submit for the record a letter from the Sierra Club in support of Dr. Howarth's research. Finally, I will submit for the record a graph from the U.S. Geological Survey demonstrating a 750% increase in the number of earthquakes in the central U.S. which corresponds to the growth in fracturing and disposition of fracturing waste fluids.

The EPA has confirmed that hydraulic fracturing in Pavilion, Wyoming caused water contamination. Many gas wells have spilled toxic chemicals, including the well-publicized rupture that spilled a large quantity of fracturing fluid into Towanda Creek, a tributary of the Susquehanna River and the Chesapeake Bay. Other large toxic releases such as on Dunkard Creek, Pennsylvania occurred only after hydraulic fracturing in the area. These toxic releases were not anomalous. The Bureau of Land Management recorded 2,025 violations of safety and drilling rules but only levied fines for 6% of those violations. The Pennsylvania Department of Environmental Protection found 272 violations in 2012

alone, and has gone to court following contamination of drinking water in Dimock by a fracturing operation.

To date, Virginia does not have active wells within the Potomac or James River watersheds. However, it is safe to say that the Virginia Department of Mines, Minerals, and Energy (DMME) lacks the scientific knowledge to protect the groundwater from the risks hydraulic fracturing. For instance, DMME approved a permit for a hydraulic fracturing operation in the headwaters of the Shenandoah River, allowing storage of fracking waste and associated toxic chemicals. The Shenandoah is a major tributary of the Potomac River, which provides most of the drinking water for the National Capital Region. For this reason, Fairfax Water and other public water agencies have urged lawmakers to protect our drinking water supply from toxins which could contaminate it as a result of hydraulic fracturing.

If we want to exploit the economic benefits of hydraulic fracturing as the President does, then we should also prevent harm to our drinking water and the safety of our communities. We cannot place the nation at such a risk without sufficient government regulation. The pending regulations from EPA and BLM are a reasonable start but will not be sufficient by themselves to protect our constituents from potential air and water contamination associated with fracturing, much less the earthquakes that have been caused by disposal of fracturing fluids.

CLEAN WATER ACTION

May 31, 2012
TESTIMONY FOR THE RECORD
HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
SUBCOMMITTE ON TECHNOLOGY

"Assessing the Impact of New Federal Red Tape on
Hydraulic Fracturing and American Energy Independence"

Clean Water Action appreciates the opportunity to submit this testimony for the record. Clean Water Action is a national citizens' organization of 1 million members and is active in over a dozen states. Clean Water Action works for strong health and environmental protections and has a long history of work on drinking water and on Safe Drinking Water Act implementation.

Putting in place responsible policy to make sure that hydraulic fracturing operations are in compliance with our nation's drinking water safety programs is far from "red tape." Hydraulic fracturing operations using diesel must have permits under the Safe Drinking Water Act's Underground Injection Control Program. EPA's *"Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels"* is necessary because current rules and guidance for oil and gas wells were not designed for use in permitting hydraulic fracturing operations. State and federal permit writers who conduct this work need up-to-date technical guidelines in order to carry out their responsibilities under the law.

Diesel use in hydraulic fracturing poses a very real public health risk, the exact risks that the American people rely on the Safe Drinking Water Act to address. Injecting diesel underground is especially problematic because of the toxic chemicals it contains, especially the "BTEX" compounds. "BTEX" compounds - benzene, tolulene, ethylbenzene and zylene - are highly mobile in ground water. Health impacts associated with these chemicals include cancer, nervous system problems, kidney and liver problems and anemia. Contamination of underground sources of drinking water with BTEX compounds has been linked to natural gas activities.

Clean Water Action's position is that no hydraulic fracturing operations should be exempt from the Safe Drinking Water Act. However, the issue at hand is how to ensure compliance for those hydraulic fracturing operations which currently are required to obtain Safe Drinking Water Act permits. Because permit writers must have guidelines for issuing these permits in a consistent matter, EPA's Draft Guidance is needed and overdue. We will be making detailed recommendations to EPA during the 60-day public comment period and among our recommendations will be that formal rulemaking is also needed.

Thank you again for the opportunity to submit this testimony.

1010 Vermont Avenue NW, Suite 400 | Washington, DC 20005
Phone: 202.895.0420 | Fax: 202.895.0438
www.cleanwateraction.org

EXECUTIVE COMMITTEE

PRESIDENT
Jefferson Keel
Chickasaw Nation

FIRST VICE-PRESIDENT
Juana Majel Dixon
Pauma Band of Mission Indians

RECORDING SECRETARY
Edward Thomas
Central Council of Tlingit & Haida Indian Tribes of Alaska

TREASURER
W. Ron Allen
Jamestown S'Klallam Tribe

REGIONAL VICE-PRESIDENTS

ALASKA
Bill Martin
Central Council of Tlingit & Haida Indian Tribes of Alaska

EASTERN OKLAHOMA
S. Joe Crittenden
Cherokee Nation

GREAT PLAINS
Robert Shepherd
Sisseton Wahpeton

MIDWEST
Matthew Wesaw
Pokagon Band of Potawatomi

NORTHEAST
Lance Gumbs
Shinnecock Indian Nation

NORTHWEST
Fawn Sharp
Quinault Indian Nation

PACIFIC
Ron Arnold
Susanville Indian Rancheria

ROCKY MOUNTAIN
Scott Russell
Crow Tribe

SOUTHEAST
Larry Townsend
Lumbee Tribe

SOUTHERN PLAINS
Robert Tippeconnic
Comanche Nation

SOUTHWEST
Joe Garcia
Ohkay Owingeh

WESTERN
Ned Norris, Jr
Tohono O'odham Nation

EXECUTIVE DIRECTOR
Jacqueline Johnson Pata
Tlingit

NCAI HEADQUARTERS
1516 P Street, N.W.
Washington, DC 20005
202.466.7767
202.466.7797 fax
www.ncai.org

NATIONAL CONGRESS OF AMERICAN INDIANS

March 7, 2012

The Honorable Ken Salazar
Secretary of the Interior
United States Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

The Honorable Wilma Lewis
Asst. Secretary for Land & Minerals
U.S. Department of the Interior
1849 C Street, NW
Washington, DC 20240

RE: Tribal Consultation on BLM Hydraulic Fracturing Regulations

Dear Secretary Salazar:

On behalf of the National Congress of American Indians, I am writing to request that the Department of Interior and the Bureau of Land Management engage in government-to-government consultation with Indian tribes regarding the BLM's proposed hydraulic fracturing ("HF") regulations.

On December 1, 2011, Secretary Salazar issued Secretarial Order No. 3317 announcing the "Department of the Interior Policy on Consultation with Indian Tribes." This policy updated and expanded the Department's long-standing and on-going commitment to consultation with Indian tribes. We urge that the BLM engage in consultation with tribal governments on the HF regulations.

Over the past couple of months, BLM hosted four meetings in Tulsa, Oklahoma; Billings, Montana; Salt Lake City, Utah; and Farmington, New Mexico. Many tribal leaders became aware of these meetings after they took place, but we understand that BLM is describing these meetings as a starting point for tribal consultation. Indeed, much more needs to be done.

The content of these meetings was purely informational. Tribal leaders were not engaged in a meaningful discussion, instead they were informed of what the BLM plans to do. A draft of the proposed regulations was not available at all of the meetings, and when the draft regulations were available, they were handed out at the end of the meeting with no time to review or ask questions. This falls short of the "exchange of information" and "enhanced communication" that the Secretarial Order requires.

At these meetings, BLM stated that the consultation process would continue through the public comment period, but the consultation policy and the federal government's trust responsibility requires more than merely allowing tribes to participate in the public comments period. Outreach to Indian country is needed. BLM stated that its field offices would be the lead for further consultation. While we a pleased that field offices would be involved, consultation with tribal governments should occur at policymaker levels. In addition, BLM State Directors should engage the tribes in their states so that tribes can be assured that their comments and concerns will reach policymakers in Washington, D.C.

A significant issue is the BLM is proposing these regulations under its authority over "public lands." Indian lands are not "public lands" and should not be included within the proposed regulations. Indian lands are lands held for the use and benefit of tribes and their members, not the public. Instead, the BLM should consider the unique aspects of Indian lands.

Consultation with tribal governments is the only way for BLM to take into account the impacts of its proposed regulation on tribal energy and economic resources. This permitting process for oil and gas developers on Indian lands is already lengthy, time consuming and costly. The proposed HF regulations will require oil and gas operators to seek yet another round of permits for all well stimulation activities leading to further delay. The added delay will cause oil and gas operators to leave Indian country for state and private lands, a fact that is occurring under current permitting requirements.

Tribes and tribal members cannot afford the flight of oil and gas operators from their lands. Oil and gas royalties from drilling on Indian lands are a significant source of revenue for tribes and tribal members. The proposed BLM HF regulations will severely and disproportionately impact tribal economies because of their greater reliance on oil and gas development for economic growth and sustainability.

At the same time, Indian tribes are interested in learning about the potential impacts of hydraulic fracturing on their lands, waters and the surrounding environment. This discussion needs to include tribes because the Department has a trust responsibility to protect tribal resources and tribal communities, and the tribal leaders also have a duty to care for the best interests of their lands and people.

NCAI strongly supports your Secretarial Order on Tribal Consultation and asks Interior engage in consultation on the BLM HF regulations. We greatly appreciate all of your efforts to support tribal governments and we look forward to talking with you about this issue and other pressing issues throughout Indian Country.

Sincerely,

Jefferson Keel

EXECUTIVE COMMITTEE

PRESIDENT
Jefferson Keel
Chickasaw Nation

FIRST VICE-PRESIDENT
Juana Majel Dixon
Pauma Band of Mission Indians

RECORDING SECRETARY
Edward Thomas
Central Council of Tlingit & Haida
Indian Tribes of Alaska

TREASURER
W. Ron Allen
Jamestown S'Klallam Tribe

REGIONAL VICE-PRESIDENTS

ALASKA
Bill Martin
Central Council of Tlingit & Haida
Indian Tribes of Alaska

EASTERN OKLAHOMA
S. Joe Crittenden
Cherokee Nation

GREAT PLAINS
Robert Shepherd
Sisseton Wahpeton

MIDWEST
Matthew Wesaw
Pokagon Band of Potawatomi

NORTHEAST
Lance Gumbs
Shinnecock Indian Nation

NORTHWEST
Fawn Sharp
Quinault Indian Nation

PACIFIC
Don Arnold
Sierra Valley Band of Pomo Indians

ROCKY MOUNTAIN
Scott Russell
Crow Tribe

SOUTHEAST
Larry Townsend
Lumbee Tribe

SOUTHERN PLAINS
Robert Tippeconnic
Comanche Nation

SOUTHWEST
Joe Garcia
Ohkay Owingeh

WESTERN
Ned Norris, Jr
Tohono O'odham Nation

EXECUTIVE DIRECTOR
Jacqueline Johnson Pata
Tlingit

NCAI HEADQUARTERS
1516 P Street, N.W.
Washington, DC 20005
202.466.7767
202.466.7797 fax
www.ncai.org

NATIONAL CONGRESS OF AMERICAN INDIANS

The National Congress of American Indians
Resolution #ECWS-12-005

TITLE: Seeking Meaningful Tribal Consultation on the Bureau of Land Management's Proposed Hydraulic Fracturing Regulations

WHEREAS, we, the members of the National Congress of American Indians of the United States, invoking the divine blessing of the Creator upon our efforts and purposes, in order to preserve for ourselves and our descendants the inherent sovereign rights of our Indian nations, rights secured under Indian treaties and agreements with the United States, and all other rights and benefits to which we are entitled under the laws and Constitution of the United States, to enlighten the public toward a better understanding of the Indian people, to preserve Indian cultural values, and otherwise promote the health, safety and welfare of the Indian people, do hereby establish and submit the following resolution; and

WHEREAS, the National Congress of American Indians (NCAI) was established in 1944 and is the oldest and largest national organization of American Indian and Alaska Native tribal governments; and

WHEREAS, the NCAI seeks meaningful tribal consultation on the Bureau of Land Management's (BLM) proposed regulatory scheme regarding Hydraulic Fracturing (HF); and

WHEREAS, the BLM hosted only four informational meetings throughout the West and is describing these meetings as tribal consultations; and

WHEREAS, the BLM's proposed HF regulations were only available at one of these informational meetings; and

WHEREAS, the BLM proposes conducting tribal consultation through its field offices while Indian tribes should address policy makers in Washington, D.C. for true government-to-government consultation; and

WHEREAS, Indian lands are not "public lands" therefore, the tribes deserve a regulation that deals with Indian lands only; and

WHEREAS, tribes are also interested in consultation on the impacts of hydraulic fracturing on the environment, land and human health; and

WHEREAS, the BLM should consider that oil and gas operators seeking permits to drill on lands held in trust by the federal government already undergo an extensive environmental review process before they can begin drilling activities; and

WHEREAS, the BLM should consider that the permitting process has become lengthy, time consuming and costly, so much so that there is a backlog of hundreds, if not thousands, of applications for permits to drill that have not been processed by the BLM; and

WHEREAS, the proposed BLM regulations will require oil and gas operators to seek another round of permits for all well stimulation activities leading to further delay; and

WHEREAS, this added delay will cause oil and gas operators to leave Indian lands for state and private lands, a fact that is occurring under the Application for Permit to Drill scheme; and

WHEREAS, the BLM should balance regulatory concerns with the needs of Indian tribes to develop their energy resources to provide long-term economic resources for tribal communities; and

WHEREAS, oil and gas royalties from drilling on Indian lands are significant sources of revenue for the tribes and tribal members and the proposed BLM HF regulations will severely and disproportionately impact tribal economies because of their greater reliance on oil and gas development for economic growth and sustainability.

WHEREAS, the NCAI requests that BLM engage in true government-to-government consultation with the tribes regarding the HF regulations.

NOW THEREFORE BE IT RESOLVED, that NCAI seeks meaningful government-to-government consultation on the Bureau of Land Management's proposed Hydraulic Fracturing regulations so that the regulations will better meet the needs of the tribes.

BE IT FURTHER RESOLVED, that the Secretary of the Interior should declare that the proposed BLM Hydraulic Fracturing regulations do not apply to Indian lands because Indian lands are not "public lands" and are for the use and benefit of the tribes and tribal members.

BE IT FURTHER RESOLVED, that NCAI supports the Bureau of Land Management proposing a rule specifically for the Indian lands which should be developed with input from the tribes.

BE IT FURTHER RESOLVED, that this resolution shall be the policy of NCAI until is withdrawn or modified by subsequent resolution.

CERTIFICATION

The foregoing resolution was adopted by the Executive Committee at the 2012 Executive Council Winter Session of the National Congress of American Indians, held at the L'Enfent Hotel and Conference Center in Washington, DC, with a quorum present.

President

ATTEST:

Recording Secretary

NATIONAL CONGRESS OF AMERICAN INDIANS

EXECUTIVE COMMITTEE

PRESIDENT
Jefferson Keel
Chickasaw Nation

FIRST VICE-PRESIDENT
Juana Majel Dixon
Pauma Band of Mission Indians

RECORDING SECRETARY
Edward Thomas
Central Council of Tlingit & Haida Indian Tribes of Alaska

TREASURER
W. Ron Allen
Jamestown S'Klallam Tribe

REGIONAL VICE-PRESIDENTS

ALASKA
Bill Martin
Central Council of Tlingit & Haida Indian Tribes of Alaska

EASTERN OKLAHOMA
S. Joe Crittenden
Cherokee Nation

GREAT PLAINS
Robert Shepherd
Sisseton Wahpeton

MIDWEST
Matthew Wesaw
Pokagon Band of Potawatomi

NORTHEAST
Lance Gumbs
Shinnecock Indian Nation

NORTHWEST
Fawn Sharp
Quinault Indian Nation

PACIFIC
Don Arnold
Scotts Valley Band of Pomo Indians

ROCKY MOUNTAIN
Scott Russell
Crow Tribe

SOUTHEAST
Larry Townsend
Lumbee Tribe

SOUTHERN PLAINS
Robert Tippeconnie
Comanche Nation

SOUTHWEST
Joe Garcia
Ohkay Owingeh

WESTERN
Ned Norris, Jr.
Tohono O'odham Nation

EXECUTIVE DIRECTOR
Jacqueline Johnson Pata
Tlingit

NCAI HEADQUARTERS
1516 P Street, N.W.
Washington, DC 20005
202.466.7767
202.466.7797 fax
www.ncai.org

May 15, 2012

Bob Abbey
Director
Bureau of Land Management
1849 C Street NW, Rm. 5665
Washington DC 20240

Michael Nedd
Assistant Director
Minerals and Realty Management
Bureau of Land Management
1849 C Street NW, Rm 5625
Washington DC 20240

RE: Request for Consultation on BLM Hydraulic Fracturing Regulations

Dear Director Abbey and Assistant Director Nedd:

On behalf of many tribes affected by hydraulic fracturing and oil and gas development, I am writing to request a formal consultation on the proposed regulations published on May 11, 2012. We request a consultation with you the afternoon of June 17th at our Midyear Conference in Lincoln, Nebraska. Our conference runs from June 17th through June 20th and will host tribal leaders and from across the nation. If a different day during our conference would work better for you, please let us know. We would like to work with you to ensure that this consultation occurs.

A meeting to collaboratively develop a scheme for regulation of hydraulic fracturing on tribal lands is the best means to effective regulation and is required by Secretarial Order No. 3317, the "Department of the Interior Policy on Consultation with Indian Tribes." Pursuant to this policy, NCAI requests the opportunity for tribes to consult with BLM at the NCAI Midyear Conference in June.

We sincerely hope you and key staff can attend our Midyear Conference from June 17th through June 20th in Lincoln, Nebraska to engage in consultation on the BLM hydraulic fracturing regulations. Please contact Katie Hoyt at 202-466-7767 ext. 224 or khoyt@ncai.org to set up the consultation. We greatly appreciate all of your efforts to support tribal governments and we look forward to talking with you about this issue and other pressing issues throughout Indian Country.

Sincerely,

Jefferson Keel

Comment for the record 5/31/12

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED TWELFTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115

Majority (202) 225-2927
Minority (202) 225-3641

May 31, 2012

Chairman James Lankford
Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform
Committee on Oversight and Government Reform
2157 Rayburn House Office Building,
Washington, DC 20515

Ranking Member Gerald E. Connolly
Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform
Committee on Oversight and Government Reform
2157 Rayburn House Office Building,
Washington, DC 20515

Dear Chairman Lankford and Ranking Member Connolly:

Michael Krancer, Secretary of the Pennsylvania Department of Environmental Protection, is scheduled to appear before the Subcommittee on Technology today to discuss state and federal regulation of oil and gas extraction. In his written testimony, he criticizes a report released by me, Natural Resources Committee Ranking Member Edward J. Markey, and Oversight and Investigations Subcommittee Ranking Member Diana DeGette in April 2011. I wanted to address some of his concerns for the record.

On April 16, 2011, we released a report summarizing the types, volumes, and chemical contents of the hydraulic fracturing products used by the 14 leading oil and gas service companies. At that time, the report contained the first comprehensive national inventory of chemicals used by hydraulic fracturing companies during the drilling process. The report found that between 2005 and 2009, the 14 oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components. Overall, these

companies used 780 million gallons of hydraulic fracturing products – not including water added at the well site – over the five year period studied.[1]

In his written testimony, Secretary Krancer faults the report. He says it is "not a toxicological review of chemicals used in fracking" and "does not provide a sound scientific assessment of exposures, exposure pathways or risks to human health that might be associated with such theoretical exposure." Secretary Krancer appears here to be rebutting a claim we never made; we were careful to characterize the report as exactly what it was: an inventory of the chemicals that had been used in hydraulic fracturing products over a five year time period.

When we released our report it was designed to fill the informational void about the contents and volumes of fluids used during fracturing operations across the country. FracFocus, the voluntary national hydraulic fracturing chemical registry website, was in its infancy. It had gone live on April 11, 2011, just five days before our report was released. Until then, industry had steadfastly resisted calls to publicly disclose the contents of hydraulic fracturing fluids. Even today the industry continues to refuse to comprehensively disclose to the public the identities and volumes of all of the chemicals that comprise hydraulic fracturing fluids.

Secretary Krancer also states in his testimony that the report "creates misimpressions by focusing on total liquid volumes and not the amounts or volumes of any additives in the liquid." Any misimpression is created by industry's insistence on opaqueness and the quality of the data provided to the Committee. In response to our request, the oil and gas service companies provided a Material Safety Data Sheet (MSDS) detailing the chemical components of each hydraulic fracturing product used. These MSDSs at times listed the concentration of each chemical as "trade secret," simply did not include any concentration data, or in many cases listed the chemical concentrations as a broad range. This inconsistency, which made it impossible for us to estimate the overall concentration of the chemical components with any level of certainty, speaks more to the adequacy of MSDSs as a disclosure tool than to the quality of the Committee's analysis.

Secretary Krancer also claims that the report "is very loose with respect to its use, or misuse, of the label 'carcinogen.'" This statement is not correct. Committee staff relied on established lists of carcinogens for the report's analysis. For purposes of the report, a chemical is considered a "carcinogen" if it is on one of two lists: (1) substances identified by the National Toxicology Program as "known to be human carcinogens" or as "reasonably anticipated to be human carcinogens";[2] and (2) substances identified by the International Agency for Research on

[1] U.S. Committee on Energy and Commerce, Democratic Staff, *Chemicals Used in Hydraulic Fracturing*, Prepared by Democratic Committee Staff for Henry A. Waxman, Ranking Member, Committee on Energy and Commerce; Edward J. Markey, Ranking Member, Committee on Natural Resources; and Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce (Apr. 16, 2011).

[2] U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, Eleventh Edition* (Jan. 31, 2005).

Cancer, part of the World Health Organization, as "carcinogenic" or "probably carcinogenic" to humans.[3]

I hope this clarifies several of Secretary Krancer's concerns about the report.

Sincerely,

Henry A. Waxman
Ranking Member

[3] World Health Organization, International Agency for Research on Cancer, *Agents Classified by the IARC Monographs* (online at http://monographs.iarc.fr/ENG/Classification/index.php)

Committee for the Record 5/31

Statement of Sierra Club Executive Director Michael Brune
Before the Committee on Oversight & Government Reform

May 31, 2012

The Sierra Club is deeply concerned about methane emissions associated with the production and transportation of natural gas, which in combination are among the largest sources of global warming pollution in the United States. Although the EPA has recently taken steps to require operators to control some of these emissions, with requirements phasing in over the next three years, the natural gas industry will remain an enormous source of global warming pollution, destabilizing the climate and endangering public health.

According to the EPA's Inventory of Greenhouse Gas Sources and Sinks, our authoritative national report on global warming pollution, methane leaked – or just plain dumped – from natural gas production sites poured the equivalent of 215 million metric tons of carbon dioxide into our atmosphere in 2010. This pollution is expected to increase in step with the fracking boom, absent strong action to control these emissions.[1] That is more carbon pollution than oil refineries, cement plants, or steel mills – more pollution, in fact, than from any other single industry except for electrical generation. Worse, this pollution is entering the atmosphere when the climate system is already dangerously unstable. We need to clean it up now.

Minimizing these methane leaks is essential to reduce climate impacts regardless of whether this enormous amount of air pollution renders gas superior or inferior to coal for energy production on a carbon life-cycle basis. Controlling methane emissions will also reduce volatile organic compounds, which form asthma-causing smog and which include cancer-causing toxic chemicals. Industry has resisted responsible regulation even though it could clean up its act – and make money by selling natural gas that would otherwise would have leaked – by using readily available, cost-effective control measures.

This point bears emphasis: Whether or not natural gas is nominally better or worse than coal for energy production, it remains a huge source of air pollution and a threat to our health and to our climate that we must address, and can address economically.

I understand that Pennsylvania Department of the Environment Secretary Michael Krancer, who has been a loud voice for industry, will nonetheless testify to this Committee that these emissions are not serious and, specifically, that the Committee should disregard the testimony of Dr. Robert Howarth, a distinguished ecologist from

[1] U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010* (2012) at Table ES-2.

Cornell. Mr. Krancer apparently relies in part on a Carnegie-Mellon study partially funded by the Sierra Club to make his case. He could not be more wrong.

Dr. Howarth did the country a valuable service by raising the alarm about methane emissions during the production and transportation of natural gas. As he himself acknowledges, his early papers were based on limited and sometimes genuinely incomplete information. This lack of information is unsurprising, given that the industry has long resisted emissions monitoring and has sued EPA to block greenhouse gas reporting. Dr. Howarth's team had to patch together their initial analysis from whatever sources they could find, so if Mr. Krancer criticizes Dr. Howarth on that ground, his objections are ones that the Cornell team already acknowledges. The right response, of course, is to call for transparency from industry – not to condemn scientists for raising questions. As it turns out, more recent data from the National Oceanic and Atmospheric Administration is confirming that Dr. Howarth was right to be seriously concerned.

Let me briefly walk through the state of the science: Dr. Howarth's initial study, published in spring 2011 and drawing from as much data as he could find, including some industry-reported data that he himself has acknowledged was somewhat speculative, suggested that natural gas leak rates were between 3.6 and 7.9% of production. His study concluded that with leak rates in that range, gas may be just as bad as coal for our climate, especially if methane's impacts are considered over a 20-year time-scale.[2]

In summer 2011, a study by Carnegie-Mellon researchers, relying largely on existing EPA inventory estimates rather than the additional data sources Dr. Howarth had used, concluded that natural gas life-cycle emissions were lower than Dr. Howarth's estimates, but added that, on the same 20-year global warming impact measurement, natural gas life-cycle emissions would approach coal's if leak rates reached 7%.[3] Sierra Club helped to fund that study, but did not control its findings. We believe the researchers did an excellent job of drawing on the data then available to them, but we also recognize that the Carnegie-Mellon study is just one entry into an evolving area of scientific research, which we are closely following. More recent climate modeling and leak rate data suggest that the problem is more serious than the prior research and inventory data indicated.

Specifically a recent paper published in the Proceedings of the National Academy of Sciences used more sophisticated climate analysis to help refine our understanding of the importance of natural gas leak rates. According to this research, if leak rates exceed

---

[2] Howarth *et al.*, *Methane and the greenhouse-gas footprint of natural gas from shale formations*, Climatic Change (2011).

[3] Jiang *et al.*, *Life Cycle Greenhouse Gas Emissions of Marcellus Shale Gas*, 6 Environ. Res. Letters 1 (2011).

just 3.2% – which is below the Howarth estimate – natural gas may lose any climate advantage over coal when used for electricity generation.[4]

That is why it is so troubling that researchers at the National Oceanic and Atmospheric Administration have recently concluded that leak rates may well exceed that threshold. Those researchers, led by Dr. Gabrielle Pétron, measured leak rates around natural gas fields in Colorado. What they found startled them: The amount of methane and other dangerous gases leaking from the gas fields was far higher than the rates used by EPA to compile its greenhouse gas inventory. They concluded that emissions "are most likely underestimated in current [EPA] inventories and that the uncertainties attached to these estimates can be as high as a factor of two."[5] EPA's current estimates put leaks at roughly 2%-2.5% of production: If they are low by a factor of two, and the Colorado leak rates are representative of national conditions, that puts leak rates at around 4-5%, above the leak rate estimated to eliminate gas's climate advantage.

One point more is worth making. Even if natural gas retains an advantage over coal on a climate basis, we cannot solve the climate crisis by simply replacing coal with natural gas. Recent work from the Department of Global Ecology at Stanford tells us that, regardless of natural gas leak rates, simply switching wholesale from coal to gas will not reduce carbon emissions quickly enough to stabilize our climate.[6] We absolutely should ensure that whatever fossil fuels we burn are burned as efficiently as possible. That means moving away from dirty coal as quickly as possible and could include using some existing, under-utilized and efficient natural gas plants if necessary, as well as using natural gas in combined heat and power applications. But that is not enough. We need to accelerate the welcome downward trend in US global warming pollution by continuing to invest in homegrown clean energy like wind and solar, as well as energy efficiency measures that help homeowners and businesses reduce their energy use and energy bills. Switching from one fossil fuel to another will not solve our climate crisis.

The conclusion is simple: After Dr. Howarth warned us that methane emissions were a serious problem, researchers have started measuring and monitoring those emissions more rigorously. Their findings underscore the seriousness of the problems, which are substantial enough to call into serious question any benefits natural gas may have over coal for reducing global warming pollution. As this research continues, the right response is to better measure emissions, to better detect and control leaks from natural gas systems, and to accelerate the deployment of clean energy that avoids expanding our reliance on fossil fuels no matter what the leak rates are.

---

[4] Alvarez *et al.*, *Greater focus needed on methane leakage from natural gas infrastructure*, Proceedings of the National Academy of Sciences (2012).

[5] Pétron *et al.*, *Hydrocarbon emissions characterization in the Colorado front range – A pilot study*, Journal of Geophysical Research, *in press* (2012).

[6] Myrhvold and Caldeira, *Greenhouse gases, climate change and the transition from coal to low-carbon electricity*, Environ. Res. Letters (2012).

We are in Dr. Howarth's debt for his efforts to focus our attention on these serious problems. Fortunately, EPA and some innovative states, including Colorado and Wyoming, have begun reducing this pollution. EPA's recent New Source Performance Standards for the industry are a major step forward in this regard. But they are incomplete and imperfect: They do not directly reduce methane emissions, and they leave emissions from the majority of existing sources in the industry uncontrolled.

More action is needed. Until the industry fully implements the cost-effective pollution measures that we know can help to control its pollution, it will keep on pouring methane and smog-forming pollution into the skies over Utah, Wyoming, Ohio, Pennsylvania, and Texas – among other states facing the shale gas boom – and it will keep on pushing us towards serious climate disruption. The Administration and state leaders have begun to take steps to clear the air. The Sierra Club strongly supports efforts to control this industry's pollution and to accelerate our transition to clean energy and away from dangerous fossil fuels.

Addendum to the testimony of Robert W. Howarth, Ph.D.

before the Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform,
Committee on Oversight and Government Reform,
Congress of the United States, House of Representatives

May 31, 2012

Some in the oil and gas industry are critics of my research, and my co-witness, Mr. Michael Krancer, shares some of those views, based on what I have read in his written testimony submitted for today. I would like to briefly set the record straight.

Mr. Krancer states my "study has been rejected by almost every legitimate source in the scientific community." That is completely false. We published the first ever comprehensive analysis of the greenhouse gas footprint of shale gas, 13 months ago now. In the time since, numerous other studies have come forward. Some disagree with portions of our analysis or some of our conclusions, but many support our analysis and conclusions. I note that the EPA has since released new estimates of methane emissions (their first update since 1996), and those estimates overlap with ours. And as new and better data are being produced, they indicate we were probably conservative, and that the greenhouse gas footprint of unconventional gas may be even greater than we estimated.

Mr. Krancer states a paper by Jiang et al. published last summer from the Carnegie Mellon group proves us wrong. That is a highly misleading statement. Their study did not even mention our work, and it looked only at using gas to generate electricity, not for heat (which is the major use of natural gas). They did not consider the use of gas as a transportation fuel, which would be disastrous from a global warming standpoint. And they did not consider the export of gas from the US, which is also a very poor idea from a global warming perspective. They also used out-of-date information on the radiative forcing of methane, and they looked at the effects of methane only at the time scale one century from now. A report published by the United Nations last summer and a paper published by NASA scientists in the journal Science this past January point out the urgent need to look at a much shorter time scale. We used more up to date science on the radiative forcing of methane in our study, we looked more comprehensively at the use of gas, and we looked at the critical time periods of the next few decades. Again, our study is holding up well to scrutiny by scientific peers.

Mr. Krancer refers to a newspaper editorial, saying the Environmental Defense Fund came up with methane emission estimates 75% less than ours. When the EDF recently published their numbers, this turned out not to be true. They used EPA estimates for conventional gas, estimates which are within the range of what we published.

Mr. Krancer places very high stock in a non-peer reviewed report hastily put out by IHS CERA that criticizes both the EPA and our analysis. I am told they are a respected consultant company in terms of their economic analysis. As a scientific report, they are way off the mark. Apparently, HIS CERA has not tried to publish their report in the peer-reviewed literature. I truly doubt that they could do so, in anything like the current form of their report. I have far more confidence in the analysis by EPA, and in our analysis.

In our paper, we used the best available data. But we noted that the data are limited, that most of the data are held secret by industry, and that those data which are publicly available are often poorly documented. Given the critical importance of this topic, we called for more open-ness by industry, and we called for more study on emissions by independent, non-industry scientists as well. That has started to happen, and the most recent publication by scientists at the University of Colorado and NOAA now shows we probably underestimated methane emissions. Natural gas is probably worse for global warming than we originally concluded.

A comparison of our methane emission estimates from unconventional gas and all others ever published in the peer-reviewed literature are part of a background paper I and others wrote for the National Climate Assessment (Office of Science and Technology Policy Assessment) in February. I ask that the NCA report be made part of my testimony. It demonstrates how well our data are holding up to independent scrutiny. The report is available on line at
http://www.eeb.cornell.edu/howarth/Howarth%20et%20al.%20--%20National%20Climate%20Assessment.pdf

Finally, I must note that the written testimony of Mr. Krancer provides very strong evidence for the need for federal oversight of oil and gas regulation. The Commonwealth of Pennsylvania, under his leadership and that of his predecessor, has utterly failed to take the steps necessary to protect public health and the environment. Lacking adequate scientific expertise within their state agency, they have relied excessively on industry guidance. They have performed an experiment on the citizens of the Pennsylvania. I believe it is past time for the federal government to step in.

Methane Emissions from Natural Gas Systems

Background Paper Prepared for the National Climate Assessment
Reference number 2011-0003

Robert Howarth (Cornell University), Drew Shindell (NASA Goddard Space Institute), Renee Santoro (Cornell University), Anthony Ingraffea (Cornell University), Nathan Phillips (Boston University), and Amy Townsend-Small (University of Cincinnati)

February 25, 2012

Trial Version
www.avanan.com

The past few years have seen major changes both in our understanding of the importance of methane as a driver of global climate change and in the importance of natural gas systems as a source of atmospheric methane. Here, we summarize the current state of knowledge, relying on peer-reviewed literature.

Methane is the second largest contributor to human-caused global warming after carbon dioxide. Hansen and Sato (2004) and Hansen et al. (2007) suggested that a warming of the Earth to 1.8° C above the 1890-1910 baseline may trigger a large and rapid increase in the release of methane from the arctic due to melting of permafrost. While there is a wide range in both the magnitude and timing of projected carbon release from thawing permafrost in the literature (e.g. Schaefer et al., 2011), warming consistently leads to greater release. This release will therefore in turn cause a positive feedback of accelerated global warming (Zimov et al. 2006).

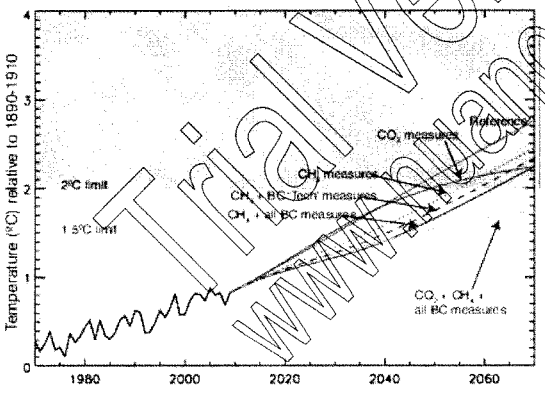

Fig. 1. Observed global mean temperature from 1900 to 2009 and projected future temperature under various scenarios of controlling methane + black carbon (BC) and carbon dioxide, alone and in combination. An increase to 1.5° to 2.0 ° C above the 1890-1910 baseline (illustrated by the yellow bar) poses high risk of passing a tipping point and moving the Earth into an alternate state for the climate system. Reprinted from Shindell et al. (2012).

Shindell et al. (2012) noted that the climate system is more immediately responsive to changes in methane (and black carbon) emissions than carbon dioxide emissions (Fig. 1). They predicted that unless emissions of methane and black carbon are reduced immediately, the Earth will warm to 1.5° C by 2030 and to 2.0° C by 2045 to 2050 whether or not carbon

dioxide emissions are reduced. Reducing methane and black carbon emissions, even if carbon dioxide is not controlled, would significantly slow the rate of global warming and postpone reaching the 1.5° C and 2.0° C marks by 12 to 15 years. Controlling carbon dioxide as well as methane and black carbon emissions further slows the rate of global warming after 2045, through at least 2070.

Natural gas systems are the single largest source of anthropogenic methane emissions in the United States (Fig. 2), representing almost 40% of the total flux according to the most recent estimates from the U.S. Environmental Protection Agency (EPA) as compiled by Howarth et al. (2012). Note that through the summer of 2010, the EPA used emission factors from a 1996 study to estimate the contribution of natural gas systems to the U.S. greenhouse gas (GHG) inventory. Increasing evidence over the past 16 years has indicated these emission factors were probably too low, and in November 2010 EPA began to release updated factors. The estimates for natural gas systems in Fig. 2 are based on these updated emission factors and information released through 2011 in two additional EPA reports, as presented in Howarth et al. (2012). Note that the use of these new methane emission factors resulted in a doubling in the estimate of methane emissions from the natural gas industry. Note also that, to date, EPA has only increased emission factors for "upstream" and "midstream" portions of the natural gas industry (leaks and emissions at the well site and in processing gas). Factors for "downstream" emissions (storage systems and transmission and distribution pipelines) are still from the 1996 report, although EPA is considering also modifying these (Howarth et al. 2012).

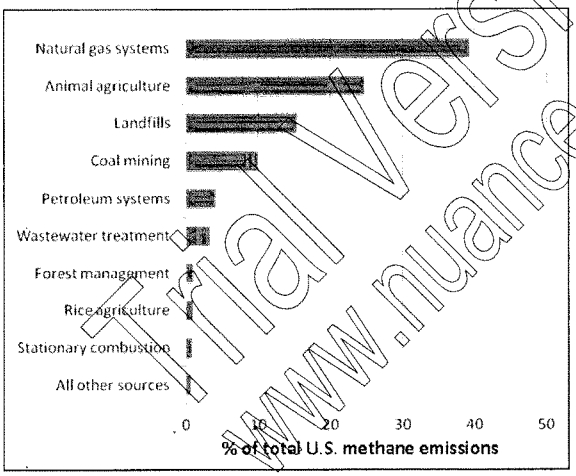

Fig. 2. Human-controlled sources of atmospheric methane from the United States for 2009, based on emission estimates from the U.S. Environmental Protection Agency in 2011. Reprinted from Howarth et al. (2012).

The natural-gas-system emissions in Fig. 2 are based on an average emission of 2.6% of the methane produced from natural gas wells over their production lifetime, with 1.7% from upstream and midstream emissions (for the national mix of conventional and unconventional gas in 2009) and 0.9% from downstream emissions (Howarth et al. 2012). As discussed below, these methane emission estimates from natural gas systems are based on limited data and remain uncertain.

Trial Version
www.nuance.com

Recent estimates in the peer-reviewed literature for downstream emissions of methane from natural gas systems range from 0.07% to 10% of the methane produced over the lifetime of a well (Table 1). It is important to note that only Lelieveld et al. (2005) presented actual data on emissions, in their case leakage from high-pressure transmission pipelines. Other estimates are based on emission factors from the 1996 EPA study, on emission factors from a more recent report from the American Petroleum Institute, or on reports of "lost and unaccounted for gas" to governmental agencies, leading to high uncertainty. Lelieveld et al. reported a leakage rate from high-pressure transmission pipelines of 0.4% to 1.6%, with a "best estimate" of 0.7%; they used the 1996 EPA emission factors to estimate emissions from storage and distribution systems, yielding an estimate for total downstream emissions of 1.4% (or twice their measured value for just transmission). Howarth et al. (2011) took the "best estimate" of 1.4% from Lelieveld et al. (2005) as their low-end estimate, arguing that the 1996 EPA emission factors were probably low. For their high-end estimate, Howarth et al. (2011) used data on "missing and unaccounted for gas" from Texas. Their mean estimate of 2.5% is identical to the "best estimate" from Hayhoe et al.

Table 1. Estimates of methane emission from downstream emissions (transmission pipelines and storage and distribution systems) expressed as the percentage of methane produced over the lifecycle of a well. Studies are listed chronologically by date of publication. Modified from Howarth et al. (2012).

Hayhoe et al. (2002)	2.5 % ("best estimate;" range = 0.2% – 10%)
Lelieveld et al. (2005)	1.4 % ("best estimate;" range = 1.0% – 2.5%)
Howarth et al. (2011)	2.5 % (mean; range = 1.4% – 3.6%)
EPA (2011)*	0.9 %
Jiang et al. (2011)	0.4 %
Hultman et al. (2011)	0.9 %
Ventakesh et al. (2011)	0.4 %
Burnham et al. (2011)	0.6 %
Stephenson et al. (2011)	0.07 %
Cathles et al. (2012)	0.7 %

* The EPA (2011) estimate is as calculated in Howarth et al. (2012), using national emissions from EPA reports and national gas production data from US Department of Energy reports.

Trial Version www.nianc.com

(2002). The estimates of Jiang et al. (2011), Hultman et al. (2011), Ventakesh et al. (2011), Burnham et al. (2011), and Cathles et al. (2012) are all based on various permutations of the 1996 EPA emission factors, factors that were developed before the measurements of Lelieveld et al. (2005). The "best estimate" of measured emissions from transmission pipelines of 0.7% by Lelieveld et al. (2005) is similar to or greater than the estimates for all downstream emissions (including storage and distribution) from these studies that used the 1996 EPA emission factors. The estimate of Stephenson et al. (2011) includes only transmission pipelines, is based on emission factors reported by the American Petroleum Institute in 2009 (which in turn are derived from the EPA 1996 emission factors), and is far lower than any other estimate. Comparisons of predicted and observed methane concentrations in Los Angeles have indicated that emissions factors for leakage from natural gas systems may be underestimated (Wunch et al. 2009; Hsu et al. 2010). A new study using stable isotopic and radiocarbon signatures of methane confirms that emission from natural gas systems is likely the dominant source of methane in Los Angeles (Townsend-Small et al. 2012).

Most recent estimates for upstream emissions (those that occur during well completion and production at the well site) and midstream emissions (those that occur during gas processing) for conventional natural

Table 2. Conventional natural gas, estimates of methane emissions from upstream (at the well site) plus midstream (at gas processing plants), expressed as the percentage of methane produced over the lifecycle of a well. Studies are listed chronologically by date of publication. Modified from Howarth et al. (2012).

Hayhoe et al. (2002)	1.2 %	("best estimate")
Howarth et al. (2011)	1.4 %	(mean; range = 0.2% to 2.4%)
EPA (2011)*	1.6 %	
Hultman et al. (2011)	1.3 %	
Venkatesh et al. (2011)	1.8 %	
Burnham et al. (2011)	2.0 %	
Stephenson et al. (2011)	0.4 %	
Cathles et al. (2012)	0.9 %	

* The EPA (2011) estimate is as calculated in Howarth et al. (2012), using national emissions from EPA reports and national gas production data from US Department of Energy reports.

TrialStore www.iStore.com

gas cluster fairly closely to the new EPA estimate of 1.6% (Table 2). The mean estimate from Howarth et al. (2011) is 1.4%; the Howarth et al. (2011) low-end value of 0.2% is an estimate of what is possible using best technologies, while 2.4% reflects emissions using poor technologies. Other estimates range from 0.4% to 2.0% (Table 2). As for the downstream emissions, the lowest number (0.4%) comes from Stephenson et al. (2011).

Table 3. Unconventional gas (shale gas and gas from tight sands), estimates of methane emissions from upstream (at the well site) plus midstream (at gas processing plants), expressed as the percentage of methane produced over the lifecycle of a well. Studies are listed chronologically by date of publication. Modified from Howarth et al. (2012).

Howarth et al. (2011)	3.3 % (mean; range = 2.2% to 4.8%)
EPA (2011)*	3.0 %
Jiang et al. (2011)	2.0 %
Hultman et al. (2011)	2.8 %
Burnham et al. (2011)	1.3 %
Stephenson et al. (2011)	0.6 %
Cathles et al. (2012)	0.9 %
Petron et al. (2012)	4.0 % ("best estimate;" range = 2.3 to 7.7%)

* The EPA (2011) estimate is as calculated in Howarth et al. (2012), using national emissions from EPA reports and national gas production data from US Department of Energy reports.

Final Version www.nuance.com

Estimates for upstream plus midstream methane emissions from unconventional gas (obtained from shales and tight-sands) vary from 0.6% to 4.0% for mean or "best" estimates (Table 3). The US EPA 2011 data indicate an estimated loss of 3.0% for upstream plus midstream emissions from unconventional gas (Howarth et al. 2012).

With the exception of the estimate by Petron et al. (2012), all of these upstream emissions for unconventional gas are based on sparse and poorly documented data (Howarth et al. 2011, 2012). The study by Petron et al. (2012) measured fluxes from an unconventional gas field – at the landscape scale – over the course of a year, and is a robust estimate. Although it represents only one field (the Piceance tight-sands basin in Colorado), emissions during the flowback period following hydraulic fracturing for unconventional gas are similar in this basin to other unconventional gas basins for which data are available (Howarth et al. 2011).

The Petron et al. (2012) study should be repeated in other unconventional gas fields, but it nonetheless suggests that most of the estimates in Table 3 are likely to be too low.

The methane emissions during flowback of fracking fluids, which occur during a 1-2 week period following hydraulic fracturing, are the major difference in emissions between unconventional and conventional gas. Flowback emissions are estimated as 1.9% of the lifetime production of an unconventional gas well according to Howarth et al. (2011), although the data of Petron et al. (2012) suggest the flux may in fact be greater. Flowback does not occur when a conventional gas well is completed, and the methane emissions at the time of well completion are far less (Howarth et al. 2011, 2012). Howarth et al. (2012), which was published before the Petron et al. (2012) study was released, concluded that shale gas emissions are 40% to 60% greater than emissions from conventional natural gas, when both upstream and downstream emissions are considered.

The US Department of Energy predicts that the major use of shale gas over the next 23 years will be to replace conventional reserves of natural gas as these become depleted. To the extent that methane emissions associated with shale gas and other unconventional gas are greater than for conventional gas, this will increase the methane emissions from the US from the natural gas industry beyond those indicated in Fig. 2. An increase of 40% to 60% in methane emissions is likely, based on the majority of studies summarized in Howarth et al. (2012), possibly more in light of the new field-based measurements by Petron et al. (2012). Note further that to the extent the US EPA is underestimating emissions from downstream sources (storage, transmission, and distribution), methane emissions from natural gas systems may already be substantially greater than shown in Fig. 2.

Global warming potentials provide a relatively simple approach for comparing the influence of methane and carbon dioxide on climate change. In the national GHG inventory, the US EPA uses a global warming potential of 21 over an integrated 100-year time frame, based on the 1995 report from the Intergovernmental Panel on Climate Change (IPCC) and the Kyoto protocol. However, the latest IPCC Assessment from 2007 used a value of 25, while more recent research that better accounts for the interaction of methane with other radiatively active materials in the atmosphere suggests a mean value for the global warming potential of 33 for the 100-year integrated time frame (Shindell et al. 2009). Using this value and the methane emission estimates based on EPA data shown in Fig. 2, Howarth et al. (2012) calculated that methane contributes 19% of the entire GHG inventory of the U.S., including carbon dioxide and all other gases from all human activities. The methane from natural gas systems alone contributes over 7% of the entire GHG inventory of the U.S. Note that the variation in the global warming potential estimates between 21 and 33 is substantially less than the variation among the methane emission estimates.

The global warming potentials of 21, 25 and 33 are all for an integrated 100-year time frame following emission of methane to the atmosphere. The choice of 100 years is arbitrary, and one can also consider the global warming potentials at

longer or shorter time scales. To date, estimates have typically been provided at time scales of 20 years and 500 years, in addition to the 100-year time frame. An emphasis on the 20-year time frame in addition to the widely-used 100-year timeframe is important, given the urgency of reducing methane emissions and the evidence that if measures are not taken to rapidly reduce the rate of warming, the Earth will continue to warm so quickly that risk of dangerous consequences will grow markedly. We may reach critical tipping points in the climate system, on the time scale of 18 to 38 years (Figure 1).

For the 20-year time frame, Shindell et al. (2009) provide a mean estimate of 105 for the global warming potential. Using this value, Howarth et al. (2012) calculated that methane contributes 44% of the entire GHG inventory of the U.S., including carbon dioxide and all other gases from all human activities. Hence while methane is only causing about 1/5 of the century-scale warming due to US emissions, it is responsible for nearly half the warming impact of current US emissions over the next 20 years. At this time scale, the methane emissions from natural gas systems contribute 17% of the entire GHG inventory of the U.S., for all gases from all sources. We repeat that these estimates may be low, and that the gradual replacement of conventional natural gas by shale gas is predicted to increase these methane fluxes by 40% to 60% or more (Howarth et al. 2012).

References Cited:

Burnham A, Han J, Clark CE, Wang M, Dunn JB, and Rivera IP (2011). Life-cycle greenhouse gas emissions of shale gas, natural gas, coal, and petroleum. *Environ. Sci. Technol.*, doi:10.1021/es201942m

Cathles LM, Brown L, Taam M, and Hunter A (2012). A commentary on "The greenhouse-gas footprint of natural gas in shale formations" by R.W. Howarth, R. Santoro, and Anthony Ingraffea. *Climatic Change*, doi: 10.1007/s10584-011-0333-0.

Hansen J, and Sato M (2004). Greenhouse gas growth rates. *Proc. Natl Acad. Sci. USA* 101: 16 109–16 114.

Hansen J, Sato M, Kharecha P, Russell G, Lea DW, and Siddall M. (2007). Climate change and trace gases. *Phil. Trans. R. Soc. A* 365: 1925–1954.

Hayhoe K, Kheshgi HS, Jain AK, Wuebbles DJ (2002). Substitution of natural gas for coal: Climatic effects of utility sector emissions. *Climatic Change* 54: 107-139.

Howarth RW, Santoro R, and Ingraffea A (2011). Methane and the greenhouse gas footprint of natural gas from shale formations. *Climatic Change Letters*, doi: 10.1007/s10584-011-0061-5

Howarth RW, Santoro R, and Ingraffea A (2012). Venting and leakage of methane from shale gas development: Reply to Cathles et al. *Climatic Change,* doi:10.1007/s10584-012-0401-0

Hsu, YK, van Curen T, Park S, Jakober C, Herner J, FitzGibbon M, Blake DR, and

Parrish DD (2010). Methane emissions inventory verification in southern California, *Atmos. Environ.* 44: 1-7, doi:10.1016/j.atmosenv.2009.10.002.

Hultman N, Rebois D, Scholten M, and Ramig C (2011). The greenhouse impact of unconventional gas for electricity generation. *Environ. Res. Lett.* 6: 044008, doi:10.1088/1748-9326/6/4/044008

Jiang M., Griffin WM, Hendrickson C, Jaramillo P, van Briesen, J and Benkatesh A (2011). Life cycle greenhouse gas emissions of Marcellus shale gas. *Environ. Res. Lett.* 6: 034014, doi:10.1088/1748-9326/6/3/034014

Lelieveld J, Lechtenbohmer S, Assonov SS, Brenninkmeijer CAM, Dinest C, Fischedick M, and Hanke T (2005). Low methane leakage from gas pipelines. *Nature* 434: 841-842.

Petron G, Frost G, Miller BT, Hirsch AI, Montzka SA, Karion A, Trainer M, Sweeney C, Andrews AE, Miller L, Kofler J, Bar-Ilan A, Dlgokencky EJ, Patrick L, Moor CT, Ryerson TB, Siso C, Kolodzev W, Lang PM, Conway T, Novelli P, Masarie K, Hall B, Guenthere D, Kitzis D, Miller J, Welsh D, Wolfe D, Neff W., and Tans P. (2012). Hydrocarbon Emissions Characterization in the Colorado Front Range – A Pilot Study. *Journal of Geophysical Research*, in press, doi:10.1029/2011JD016360.

Schaefer K, Zhang T, Bruhwiler L, and Barrett A. (2011). Amount and timing of permafrost carbon release in response to climate warming. *Tellus* 63: 165-180. doi: 10.1111/j.1600-0889.2011.00527.x

Shindell DT, Faluvegi G, Koch DM, Schmidt GA, Unger N, and Bauer SE (2009). Improved attribution of climate forcing to emissions. *Science* 326: 716-718.

Shindell D, and others (2012). Simultaneously mitigating near-term climate change and improving human health and food security. *Science* 335: 183-189.

Stephenson T, Valle JE, Riera-Palou X (2011). Modeling the Relative GHG Emissions of Conventional and Shale Gas Production. *Environ. Sci. Tech.* 45: 10757–10764.

Townsend-Small A, Tyler SC, Pataki DE, Xu X, and Christensen LE (2012). Isotopic measurements of atmospheric methane in Los Angeles, California, USA reveal the influence of "fugitive" fossil fuel emissions. *Journal of Geophysical Research*, in press, doi: 10.1029/2011JD016826.

Venkatesh A, Jamarillo P, Griffin WM, and Matthews HS (2011). Uncertainty in life cycle greenhouse gas emissions from United States natural gas end-uses and its effect on policy. *Environ. Sci. Tech.* 45: 8182-8189.

Wunch D, Wennberg PO, Toon GC, Keppel-Aleks G, and Yavin YG (2009). Emissions of greenhouse gases from a North American megacity. *Geophysical Research Letters* 36: L15810, doi:10.1029/2009GL039825.

Zimov SA, Schuur EAG, and Chapin FS (2006). Permafrost and the global carbon budget. *Science* 312: 1612–1613.

Trial Version www.nuance.com

to prescribe personnel strengths for such fiscal year for the Armed Forces, and for other purposes.

STATEMENTS ON INTRODUCED BILLS AND JOINT RESOLUTIONS

By Mrs. LINCOLN (for herself and Mr. TALENT):

S. 1076. A bill to amend the Internal Revenue Code of 1986 to extend the excise tax and income tax credits for the production of biodiesel; to the Committee on Finance.

Mr. TALENT. Mr. President, today Senator LINCOLN and I introduce legislation to extend the current excise tax credit for biodiesel through 2010. This tax credit brings great benefits to our nation's economy and environment while at the same time reducing our dependence on foreign oil.

Biodiesel is a cleaner burning alternative to petroleum-based diesel, and it is made from renewable resources like soybeans and other natural fats and oils, grown here in the United States. It works in any diesel engine with few or no modifications. It can be used in its pure form (B100), or blended with petroleum diesel at a level—most commonly 20 percent (B20). Soybean farmers in Missouri and across the Nation have invested millions of dollars to build a strong and viable biodiesel industry.

In last years JOBS bill, we created an excise tax credit for biodiesel; a $1/gallon credit for biodiesel produced from virgin oils, and a $0.50/gallon credit for biodiesel produced from yellow grease or recycled cooking oil. This important tax credit is set to expire in less than 2 years. It is imperative that we extend this incentive that is expected to increase domestic energy security, reduce pollution and stimulate the economy.

I certainly would prefer to fill up my tank with a clean burning fuel grown by farmers in our Nation's heartland instead of petroleum imported from the Saudis. Our farmers pose no security risks. I'm not alone in this preference. More than 400 major fleets use biodiesel commercially nationwide. About 300 retail filling stations make biodiesel available to the public, and more than 1,000 petroleum distributors carry it nationwide.

I am pleased that we will soon have a biodiesel plant in Missouri. Missouri Soybean Association and Mid-America Biofuels LLC recently announced plans to build a biodiesel plant in Mexico, MO. The plant is expected to produce 30 million gallons of biodiesel annually. There is strong support for this endeavor and they have exhibited exceptional leadership by bringing this plant to Missouri. I look forward to working with them.

As I've said before, biodiesel is a fuel of the future that we can use today. It is nontoxic, biodegradable and essentially free of sulfur and aromatics. Biodiesel offers similar fuel economy, horsepower and torque to petroleum diesel while providing superior lubricity. It significantly reduces emissions of carbon monoxide, particulate matter, unburned hydrocarbons and sulfates. On a lifecycle basis, biodiesel reduces carbon dioxide emissions by 78 percent compared to petroleum diesel. In other words, biodiesel is good for your car and the environment.

Additionally, this new value added market for soybeans brings jobs to our economy and benefits to farmers. Based on the USDA baseline estimates for future soybean production, over a five year time period the biodiesel tax incentive could add almost $1 billion directly to the bottom line of U.S. farm income. In addition, the provisions will significantly benefit the U.S. economy and could increase U.S. gross output by almost $7 billion.

I want to thank Senator LINCOLN and Senator GRASSLEY for their leadership on this important issue. We need to prevent this tax credit from expiring. It is expected to increase biodiesel demand from an estimated 30 million gallons in fiscal year 2004 to at least 124 million gallons per year, based on a U.S. Department of Agriculture study.

By Mr. JEFFORDS (for himself, Mr. LAUTENBERG, Mrs. BOXER, and Mr. LIEBERMAN):

S. 1080. A bill to amend the Safe Drinking Water Act to require the use of nontoxic products in the case of hydraulic fracturing that occurs during oil or natural gas production activities; to the Committee on Environment and Public Works.

Mr. JEFFORDS. Mr. President, I would like to thank Senators LAUTENBERG, BOXER, and LIEBERMAN for working with me to introduce this important legislation, the Hydraulic Fracturing Safety Act of 2005.

Over half of our Nation's fresh drinking water comes from underground sources. The process of hydraulic fracturing threatens our drinking water supplies. Hydraulic fracturing occurs when fluids are injected at high rates of speed into rock beds to fracture them and allow easier harvesting of natural oils and gases. It is these injection fluids that are of high concern.

In a recent report, the EPA acknowledged that these fluids, many of them toxic and harmful to people, are pumped directly into or near underground sources of drinking water. This same report cited earlier studies that indicated that only 61 percent of these fluids are recovered after the process is complete. This leaves 39 percent of these fluids in the ground, risking contamination of our drinking water.

Let me share with you the story of Laura Amos, a resident of Colorado who suffers from ill health effects today. In May of 2001, while an oil and gas well was being hydraulically fractured near her home, the metal top of her drinking well exploded into the air. At the same time, her water became bubbly and developed a horrible odor.

For three months, she was provided alternate drinking water by Ballard, later know as Encana, the company that owned the well near her home. It took this long until her water appeared normal again. Laura and her family drank from this well over the next couple of years. It was then that Laura developed a rare adrenal-gland tumor. During this time, Laura began actively investigating the chemicals used during the hydraulic fracturing of a well near her home. She learned about a chemical called 2-BE, which was later linked to adrenal-gland tumors in rodents.

Litigation over the last several years has resulted in findings that hydraulic fracturing should be regulated as part of the underground injection control program in the Safe Drinking Water Act. Yet, EPA indicates in writing that they have no intention of publishing regulations to that effect or ensuring that state programs adequately regulate hydraulic fracturing.

I ask unanimous consent that a series of letters to EPA and their responses dated October 14, 2004 and December 7, 2004, be inserted in the RECORD.

In June of 2004, an EPA study on hydraulic fracturing identified diesel as a "constituent of potential concern." Prior to this, EPA had entered into a Memorandum of Agreement with three of the major hydraulic fracturing corporations, whom all voluntarily agreed to ban the use of diesel, and if necessary select replacements that will not cause hydraulic fracturing fluids to endanger underground sources of drinking water. However, all parties acknowledged that only technically feasible and cost-effective actions to provide alternatives will be sought.

Hydraulic fracturing needs to be regulated under the Safe Drinking Water Act and it has got to start now. It is unconscionable to allow the oil and gas industry to pump toxic fluids into the ground.

My bill, the Hydraulic Fracturing Safety Act of 2005, clarifies once and for all that hydraulic fracturing is part of the Underground Injection Control Program regulated under the Safe Drinking Water Act.

This legislation also bans the use of diesel and other toxic pollutants for oil and natural gas exploration.

Lastly, this legislation requires EPA to ensure that States adequately regulate hydraulic fracturing activities in all States to ensure that companies area adhering to our Nation's laws and conducting business in a manner safe for all Americans.

We need to do the right thing, and take action now to protect our Nation's drinking water supply. According to the oil and gas industry, 90 percent our oil and gas wells will be accessed through hydraulic fracturing. Congress and the EPA have to work together to provide a consistent and safe supply of drinking water for all Americans.

I ask unanimous consent that the text of the bill be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

U.S. SENATE, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC, October 14, 2004.

Administrator MICHAEL O. LEAVITT,
Environmental Protection Agency, Ariel Rios Building, Washington, DC.

DEAR ADMINISTRATOR LEAVITT: We are writing to you regarding the Environmental Protection Agency's (EPA's) administration of the Safe Drinking Water Act (SDWA) as it pertains to hydraulic fracturing. In recent months, the Agency has taken several key actions on this issue:

On December 12, 2003, the EPA signed a Memorandum of Understanding with three of the largest service companies representing 95 percent of all hydraulic fracturing performed in the U.S. These three companies, Halliburton Energy Services, Inc., Schlumberger Technology Corporation, and BJ Services Company, voluntarily agreed not to use diesel fuel in their hydraulic fracturing fluids while injecting into underground sources of water for coalbed methane production.

In June of 2004, EPA completed its study on hydraulic fracturing impacts and released its findings in a report entitled, "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs. The report concluded that hydraulic fracturing poses little chance of contaminating underground sources of drinking water and that no further study was needed.

On July 15, 2004, the EPA published in the Federal Register its final response to the court remand *(Legal Environmental Assistance Foundation (LEAF), Inc.*, v. *United States Environmental Protection Agency*, 276 F. 3d 1253). The Agency determined that the Alabama underground injection control (UIC) program for hydraulic fracturing, approved by EPA under section 1425 of the SDWA, complies with Class II well requirements.

We are concerned that the Agency's execution of the SDWA, as it applies to hydraulic fracturing, may not be providing adequate public health protection, consistent with the goals of the statute.

First, we have questions regarding the information presented in the June 2004 EPA Study and the conclusion to forego national regulations on hydraulic fracturing in favor of an MOU limited to diesel fuel. In the June 2004 EPA Study, EPA identifies the characteristics of the chemicals found in hydraulic fracturing fluids, according to their Material Safety Data Sheets (MSDSs), identifies harmful effects ranging from eye, skin, and respiratory irritation to carcinogenic effects. EPA determines that the presence of these chemicals does not warrant EPA regulation for several reasons. First, EPA states that none of these chemicals, other than BTEX compounds, are already regulated under the SDWA or are on the Agency's draft Contaminant Candidate List (CCL). Second, the Agency states that it does not believe that these chemicals are present in hydraulic fracturing fluids used for coalbed methane, and third, that if they are used, they are not introduced in sufficient concentrations to cause harm. These conclusions raise several questions:

1. The data presented in the June 2004 EPA study identifies potential harmful effects from the chemicals listed by the Agency in this report. Has the Agency or does the Agency plan to incorporate the results of this study and the fact that these chemicals are present in hydraulic fracturing agents into the CCL development process, and if not, why not?

2. In the June 2004 EPA study, the Agency concludes that hydraulic fracturing fluids do not contain most of the chemicals identified. This conclusion is based on two items—"conversations with field engineers" and "witnessing three separate fracturing events" (June 2004 EPA Study, p. 4–17.)

a. How did the Agency select particular field engineers with whom to converse on this subject?

b. Please provide a transcript of the conversations with field engineers, including the companies or consulting firms with which they were affiliated.

c. How did the Agency select the three separate fracturing events to witness?

d. Were those events representative of the different site-specific characteristics referenced in the June 2004 study (June 2004 EPA Study, p. 4–19) as determining factors in the types of hydraulic fracturing fluids that will be used?

e. Which companies were observed?

f. Was prior notice given of the planned witnessing of these events?

g. What percentage of the annual number of hydraulic fracturing events that occur in the United States does "3" represent?

h. Finally, please explain why the Material Safety Data Sheets for the fluids identified as potentially being used in hydraulic fracturing list component chemicals that the EPA does not believe are present.

The Agency concludes in the June 2004 study that even if these chemicals are present, they are not present in sufficient concentrations to cause harm. The Agency bases this conclusion on assumed flowback, dilution and dispersion, adsorption and entrapment, and biodegradation. The June 2004 study repeatedly cites the 1991 Palmer study, "Comparison between gel-fracture and water-fracture stimulations in the Black Warrior basin; Proceedings 1991 Coalbed Methane Symposium," which found that only 61 percent of the fluid injected during hydraulic fracturing is recovered. Please explain what data EPA collected and what observations the Agency made in the field that would support the conclusion that the 39 percent of fluids remaining in the ground are not present in sufficient concentrations to adversely affect underground sources of drinking water.

After identifying BTEX compounds as the major constituent of concern (June 2004 EPA study, page 4–15), the Agency entered into the MOU described above as its mechanism to eliminate diesel fuel from hydraulic fracturing fluids.

3. a. How does the Agency plan to enforce the provisions in the MOU and ensure that its terms are met?

b. For example, will the Agency conduct independent monitoring of hydraulic fracturing processes in the field to ensure that diesel fuel is not used?

c. Will the Agency require states to monitor for diesel use as part of their Class II UIC Programs?

4. a. Should the Agency become aware of an unreported return to the use of diesel fuel in hydraulic fracturing by one of the parties to the MOU, what recourse is available to EPA under the terms of the MOU?

b. What action does the Agency plan to take should such a situation occur?

c. Why did EPA choose to use an MOU as opposed to a regulatory approach to achieve the goal of eliminating diesel fuel in hydraulic fracturing?

d. What revisions were made to the June 2004 EPA study between the December 2003 adoption of the MOU and the 2004 release of the study? Which of those changes dealt specifically with the use and effects of diesel fuel in hydraulic fracturing?

e. The Agency also states that it expects that even if diesel were used, a number of factors would decrease the concentration and availability of BTEX. Please elaborate on the data EPA collected and the observations the Agency made in the field that would support the conclusion that the 39 percent of fluids remaining in the ground (1991 Palmer), should they contain BTEX compounds, would not be present in sufficient concentrations to adversely affect underground sources of drinking water.

We are also concerned that the EPA response to the court remand leaves several unanswered questions. The Court decision found that hydraulic fracturing wells "fit squarely within the definition of Class II wells," (LEAF II, 276 F.3d at 1263), and remanded back to EPA to determine if the Alabama underground injection control program under section 1425 complies with Class II well requirements. On July 15, 2004, EPA published its finding in the Federal Register that the Alabama program complies with the requirements of the 1425 Class II well requirements. (69 FR No. 135, pp 42341.) According to EPA, Alabama is the only state that has a program specifically for hydraulic fracturing approved under section 1425. Based on this analysis, it seems that in order to comply with the Court's finding that hydraulic fracturing is a part of the Class II well definition, the remaining states should be using their existing Class II, EPA-approved programs, under 1422 or 1425, to regulate hydraulic fracturing.

To date, EPA has approved Underground Injection Control programs in 34 states. Approval dates range from 1981–1996.

5. Do you plan to conduct a national survey or review to determine whether state Class II programs adequately regulate hydraulic fracturing?

At the time that these programs were approved, the standards against which state Class II programs were evaluated did not include any minimum requirements for hydraulic fracturing. In its January 19, 2000 notice of EPA's approval of Alabama's 1425 program, the Agency stated, "When the regulations in 40 CFR parts 144 and 146, including the well classifications, were promulgated, it was not EPA's intent to regulate hydraulic fracturing of coal beds. Accordingly, the well classification systems found in 40 CFR 144.6 and 146.5 do not expressly include hydraulic fracturing injection activities. Also, the various permitting, construction and other requirements found in Parts 144 and 146 do not specifically address hydraulic fracturing." (65 FR No. 12, p. 2892.)

Further, EPA acknowledges that there can be significant differences between hydraulic fracturing and standard activities addressed by state Class II programs. In the January 19, 2000 Federal Register notice, the Agency states: . . . since the injection of fracture fluids through these wells is often a one-time exercise of extremely limited duration (fracture injections generally last no more than two hours) ancillary to the well's principal function of producing methane, it did not seem entirely appropriate to ascribe Class II status to such wells, for all regulatory purposes, merely due to the fact that, prior to commencing production, they had been fractured." (65 FR No. 12, p. 2892.)

Although hydraulic fracturing falls under the Class II definition, the Agency has acknowledged that hydraulic fracturing is different than most of the activities that occur under Class II and that there are no national regulations or standards on how to regulate hydraulic fracturing.

6. In light of the Court decision and the Agency's July 2004 response to the Court remand, did the Agency consider establishing national regulations or standards for hydraulic fracturing or minimum requirements for hydraulic fracturing regulations under state Class II programs?

7. a. If so, please provide a detailed description of your consideration of establishing these regulations or standards and the rationale for not pursuing them.

b. Do you plan to establish such regulations or standards in the future?

c. If not, what standards will be used as the standard of measurement for compliance for hydraulic fracturing under state Class II programs?

We appreciate your timely response to these questions in reaction to the three recent actions taken by the EPA in relation to hydraulic fracturing—the adoption of the MOU, the release of the final study, and the response to the Court remand. Clean and safe drinking water is one of our nation's greatest assets, and we believe we must do all we can to continue to protect public health. Thank you again for your response.

Sincerely,

JIM JEFFORDS.
BARBARA BOXER.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Washington, DC, December 7, 2004.

Hon. JIM JEFFORDS,
U.S. Senate,
Washington, DC.

DEAR SENATOR JEFFORDS: Thank you for your letter to Administrator Michael Leavitt, dated October 14, 2004, concerning the recent actions that the Environmental Protection Agency (EPA) has taken in implementing the Underground Injection Control (UIC) program with respect to hydraulic fracturing associated with coalbed methane wells.

The Office of Ground Water and Drinking Water (OGWDW) has prepared specific responses to your technical and policy questions regarding how we conducted the hydraulic fracturing study, the reasons behind our decisions pertaining to the recommendations contained in the study, and any plans or thoughts we may have on the likelihood for future investigation, regulation, or guidance concerning such hydraulic fracturing.

Since the inception of the UIC program, EPA has implemented the program to ensure that public health is protected by preventing endangerment of underground sources of drinking water (USDWs). The Agency has placed a priority on understanding the risks posed by different types of UIC wells, and worked to ensure that appropriate regulatory actions are taken where specific types of wells may pose a significant risk to drinking water sources. In 1999, in response to concerns raised by Congress and other stakeholders about issues associated with the practice of hydraulic fracturing of coalbed methane wells in the State of Alabama, EPA initiated a study to better understand the impacts of the practice.

EPA worked to ensure that its study, which was focused on evaluating the potential threat posed to USDWs by fluids used to hydraulically fracture coalbed methane wells, was carried out in a transparent fashion. The Agency provided many opportunities to all stakeholders and the general public to review and comment on the Agency study design and the draft study. The study design was made available for public comment in July 2000, a public meeting was held in August 2000, public notice of the final study design was provided in the Federal Register in September 2000, and the draft study was noticed in the Federal Register in August 2002. The draft report was also distributed to all interested parties and posted on the internet. The Agency received more than 100 comments from individuals and other entities.

EPA's final June 2004 study, Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs, is the most comprehensive review of the subject matter to date. The Agency did not recommend additional study at this time due to the study's conclusion that the potential threat to USDWs posed by hydraulic fracturing of coalbed methane wells is low. However, the Administrator retains the authority under the Safe Drinking Water Act (SDWA) section 1431 to take appropriate action to address any imminent and substantial endangerment to public health caused by hydraulic fracturing.

During the course of the study, EPA could not identify any confirmed cases where drinking water was contaminated by hydraulic fracturing fluids associated with coalbed methane production. We did uncover a potential threat to USDWs through the use of diesel fuel as a constituent of fracturing fluids where coalbeds are co-located with a USDW. We reduced that risk by signing and implementing the December 2003 Memorandum of Agreement (MOA) with three major service companies that carry out the bulk of coalbed methane hydraulic fracturing activities throughout the country. This past summer we confirmed that the companies are carrying out the MOA and view the completion of this agreement as a success story in protecting USDWs.

In your letter, you asked about the Agency's actions with respect to hydraulic fracturing in light of LEAF v. EPA. In this case, the Eleventh Circuit held that the hydraulic fracturing of coalbed seams in Alabama to produce methane gas was "underground injection" for purposes of the SDWA and EPA's UIC program. Following that decision, Alabama developed—and EPA approved—a revised UIC program to protect USDWs during the hydraulic fracturing of coalbeds. The Eleventh Circuit ultimately affirmed EPA's approval of Alabama's revised UIC program.

In administering the UIC program, the Agency believes it is sound policy to focus its attention on addressing those wells that pose the greatest risk to USDWs. Since 1999, our focus has been on reducing risk from shallow Class V injection wells. EPA estimates that there are more than 500,000 of these wells throughout the country. The wastes injected into them include, in part, storm water runoff, agricultural effluent, and untreated sanitary wastes. The Agency and States are increasing actions to address these wells in order to make the best use of existing resources.

EPA remains committed to ensuring that drinking water is protected. I look forward to working with Congress to respond to any additional questions, or the concerns that Members of Congress or their constituents may have. If you have further comments or questions, please contact me, or your staff may contact Steven Kinberg of the Office of Congressional and Intergovernmental Relations at (202) 564-5037.

Sincerely,

BENJAMIN H. GRUMBLES,
Acting Assistant Administrator.

EPA RESPONSE TO SPECIFIC QUESTIONS REGARDING HYDRAULIC FRACTURING

1. The data presented in the June 2004 EPA study identifies potential harmful effects from the chemicals listed by the Agency in this report. Has the Agency or does the Agency plan to incorporate the results of this study and the fact that these chemicals are present in hydraulic fracturing agents into the Contaminant Candidate List (CCL) development process, and if not, why not?

Although the EPA CBM study found that certain chemical constituents could be found in some hydraulic fracturing fluids, EPA cannot state categorically that they are contained in all such fluids. Each fracturing procedure may be site specific or basin specific and fluids used may depend on the site geology, the stratigraphy, (i.e., type of coal formation), depth of the formation, and the number of coal beds for each fracture operation. The Agency's study did not develop new information related to potential health effects from these chemicals; it merely reported those potential health effects indicated on the Material Safety Data Sheet (MSDS) or other information we obtained from the service companies.

As noted in the final report, "Contaminants on the CCL are known or anticipated to occur in public water systems . . ." The extent to which the contaminants identified in fracturing fluids are part of the next CCL process will depend upon whether they meet this test.

2. In the June 2004 EPA study, the Agency concludes that hydraulic fracturing fluids do not contain most of the chemicals identified. This conclusion is based on two items—"conversations with field engineers" and "witnessing three separate fracturing events".

a. How did the agency select particular field engineers with whom to converse on this subject?

The Agency did not "select" any of the engineers; we talked with the engineers who happened to be present at the field operations. In general those were engineers from the coalbed methane companies and the service companies who conducted the actual hydraulic fracturing. When we scheduled to witness the events, we usually conversed with the production company engineer to arrange the logistics and only spoke with the field engineers from the service companies at the well site.

b. Please provide a transcript of the conversations with field engineers, including the companies or consulting firms with which they were affiliated.

EPA did not prepare a word-for-word transcript of conversations with engineers.

c. How did the Agency select the three separate fracturing events to witness?

The events selected were dependent on the location of the fracturing events, the schedules of both EPA OGWDW staff and EPA Regional staff to witness the event, and the preparation time to procure funding and authorization for travel EPA witnessed the 3 events because the planning and scheduling of these happened to work for all parties. In one event, only EPA HQ staff witnessed the procedure, in another event only EPA Regional staff witnessed it, and in one event, both EPA HQ and Regional staff attended with DOE staff.

d. Were those events representative of the different site-specific characteristics referenced in the June 2004 study (p. 4-19)" as determining factors in the types of hydraulic fracturing fluids that will be used?

Budget limitations precluded visits to each of the 11 different major coal basins in the U.S. It would have proven to be an expensive and time-consuming process to witness operations in each of these regions. Additionally, even within the same coal basin there are potentially many different types of well configurations, each of which could affect the fracturing plan. EPA believed that witnessing events in 3 very different coal basin settings—Colorado, Kansas, and south western Virginia—would give us an understanding of the practice as conducted in different regions of the country.

e. Which companies were observed?

EPA observed a Schlumberger hydraulic fracturing operation in the San Juan basin of Colorado, and Halliburton hydraulic fracturing operations in southwest Virginia and Kansas.

f. Was prior notice given of the planned witnessing of these events?

Yes, because it would have been very difficult to witness the events had they not been planned. To plan the visit, EPA needed to have prior knowledge of the drilling operation, the schedule of the drilling, and the scheduling of the services provided by the hydraulic fracturing service company. Wells, in general, take days to drill (in some cases weeks and months depending on depth of the well) and the fracturing may take place at a later date depending on the availability of the service company and other factors beyond anyone's control.

g. What percentage of the annual number of hydraulic fracturing events that occur in the United States does "3" represent?

Because of a limited project budget, EPA did not attempt to attend a representative number of hydraulic fracturing events; that would have been beyond the scope of this Phase I investigation. The primary purpose of the site visits was to provide EPA personnel familiarity with the hydraulic fracturing process as applied to coalbed methane wells. The visits served to give EPA staff a working-level, field experience on exactly how well-site operations are conducted, how the process takes place, the logistics in setting up the operation, and the monitoring and verification conducted by the service companies to assure that the fracturing job was accomplished effectively and safely. EPA understands that thousands of fracturing events take place annually, for both conventional oil and gas operations and coalbed methane production, and that three events represent an extremely small fraction of that total.

h. Finally, please explain why the Material Safety Data Sheets for the fluids identified as potentially being used in hydraulic fracturing list component chemicals that the EPA does not believe are present.

In Table 4-1 of the final study, EPA identified the range of fluids and fluid additives commonly used in hydraulic fracturing. Some of the fluids and fluid additives may contain constituents of potential concern, however, it is important to note that the information presented in the MSDS is for the pure product. Each of the products listed in Table 4-1 is significantly diluted prior to injection. The MSDS information we obtained is not site specific. We reviewed a number of data sheets and we noted that many of them are different, contain different lists of fluids and additives, and thus we concluded in the final report that we cannot say whether one specific chemical, or chemicals, is/are present at every hydraulic fracturing operation.

3. a. How does the Agency plan to enforce the provisions in the MOU and ensure that its terms are met?

There is no mechanism to "enforce" a voluntary agreement such as the MOA signed by EPA and the three major service companies. The MOA was signed in good faith by senior managers from the three service companies and the Assistant Administrator for Water, and EPA expects it will be carried out. EPA has written all signers of the MOA and asked if they have implemented the agreement and how will they ensure that diesel fuel is not being used in USDWs. All three have written back to EPA, stating that they have removed diesel from their CBM fracturing fluids when a USDW is involved and intend to implement a plan to ensure that such procedures are met. EPA intends to follow up with the service companies on progress in implementing such plans.

b. For example, will the Agency conduct independent monitoring of hydraulic fracturing processes in the field to ensure that diesel fuel is not used?

It is unlikely that EPA will conduct such field monitoring. First, in most oil and gas producing states, and coalbed methane producing states, the State Oil and Gas Agency generally has UIC primary enforcement responsibility, and the state inspectors are the primary field presence for such operations. Second, EPA has a very limited field staff and in most cases they are engaged in carrying out responsibilities related to Class I, III and V wells in states in which they directly implement the UIC program. EPA plans to work with several organizations, including the Ground Water Protection Council and the Independent Petroleum Association of America to determine if there are other smaller companies conducting CBM hydraulic fracturing with diesel fuel as a constituent and will explore the possibility of including them in the MOA.

c. Will the Agency require states to monitor for diesel use as part of their Class II programs?

Given limited funds for basic national and state UIC program requirements, EPA does not have plans to include the states as parties to the MOA or require them to monitor for diesel fuel in hydraulic fracturing fields. The State of Alabama's EPA-approved UIC program prohibits the hydraulic fracturing of coalbeds in a manner that allows the movement of contaminants into USDWs at levels exceeding the drinking water MCLs or that may adversely affect the health of persons. Current federal regulations do not expressly address or prohibit the use of diesel fuel in fracturing fluids, but the SDWA and UIC regulations allow States to be more stringent than the federal UIC program.

4. a. Should the Agency become aware of an unreported return to the use of diesel fuel in hydraulic fracturing by one of the parties to the MOD, what recourse is available to EPA under the terms of the MOD?

There are no terms in the MOA that would provide EPA a mechanism to take any enforcement action should the Agency become aware of an unreported return to the use of diesel fuel in hydraulic fracturing by one of the parties to the MOA. However, EPA would work closely with the companies to determine why such action occurred and discuss possible termination procedures. The agreement defines how either party can terminate the agreement. EPA would make every effort to work with such a company to maintain their participation in the agreement. EPA entered the agreement with an assumption that the companies would honor the commitments they have made about diesel use in hydraulic fracturing fluids.

b. What action does the Agency plan to take should such a situation occur?

If such a situation does happen, and EPA learns that diesel fuel used in hydraulic fracturing fluid may enter a USDW and may present an imminent and substantial threat to public health, EPA may issue orders or initiate litigation as necessary pursuant to SDWA section 1431 to protect public health. Otherwise, EPA would take the actions described under the previous question.

c. Why did EPA choose to use an MOU as opposed to a regulatory approach to achieve the goal of eliminating diesel fuel in hydraulic fracturing?

While the report's findings did not point to a significant threat from diesel fuel in hydraulic fracturing fluids, the Agency believed that a precautionary approach was appropriate. EPA chose to work collaboratively with the oil service companies because we thought that such an approach would work quicker, and be more effective than other approaches the Agency might employ (i.e. rulemaking, enforcement orders, etc.). We believed that once the service companies became familiar with the issue, they would willingly address EPA's concerns. After several months of meetings and negotiations between representatives of the service companies and high level management in EPA's Office of Water, a Memorandum of Agreement (MOA) was drafted and signed by all parties effective December 24, 2003.

We believe that the MOA mechanism accomplished the intended goal of removing diesel from hydraulic fracturing fluids in a matter of months, whereas proposing a rule to require removal would have taken at least a year or more.

d. What revisions were made to the June 2004 EPA study between the December 2003 adoption of the MOD and the 2004 release of the study? Which of those changes dealt specifically with the use and effects of diesel fuel in hydraulic fracturing?

During the specified time-frame, EPA focused on making editorial changes to the report and clarifying information relative to its qualitative discussion of the mitigating effects of dilution, dispersion, adsorption, and biodegradation of residual fluids. With respect to the use and effects of diesel fuel, changes in the study primarily focused on including language in the text of the report which acknowledged that we had successfully negotiated an MOA with the service companies. Specifically, EPA referenced this agreement in the text of the report in the Executive Summary at page ES-2 and on page ES-17 and further discussed the MOA in Chapter 7 in the Conclusions Section of the study.

e. The Agency also states that it expects that even if diesel were used a number of factors would decrease the concentration and availability of BTEX. Please elaborate on the data EPA collected and the observations the Agency made in the field that would support the conclusion that 39% of fluids remaining in the ground (1991 Palmer), should they contain BTEX compounds would not be present in sufficient concentrations to adversely affect underground sources of drinking water.

EPA reiterates that the 39% figure from the 1991 Palmer paper is only one instance where it has been documented what quantity of the hydraulic fracturing fluids injected into wells will remain behind. Dr. Palmer, who conducted the original research, estimated that coalbed methane production wells flow back a greater percentage of fracturing fluids injected during the process. Where formations are dewatered or produced for a substantial period of time, greater quantities of formation and fracturing fluids would presumably be removed. We used 39% remaining fluids as a "worst case" scenario while doing our qualitative assessment, since it was the only figure we had from research conducted on coalbed methane wells.

With respect to the BTEX compounds, we no longer believe that they are a concern owing to the MOA negotiated between EPA and the three major service companies.

5. Do you plan to conduct a national surveyor survey or review to determine whether state Class II programs adequately regulate hydraulic fracturing?

At this time, EPA has no plans to conduct such a survey or review regarding the adequacy of Class II programs in regulating hydraulic fracturing. In its final study design, EPA indicated that it would not begin to evaluate existing state regulations concerning hydraulic fracturing until it decided to do a Phase III investigation. The Agency, however, reserves the right to change its position on this if news information warrants such a change.

6. In light of the Court decision and the Agency's July 2004 response to the Court remand, did the Agency consider establishing national regulations or standards for hydraulic fracturing or minimum requirements for hydraulic fracturing regulations under Class II programs?

When State UIC programs were approved by the Agency—primarily during the early 1980s—there was no Eleventh Circuit Court decision indicating that hydraulic fracturing was within the definition of ''underground injection.'' Prior to LEAF v. EPA, EPA had never interpreted the SDWA to cover production practices, such as hydraulic fracturing. After the Court decision in 1997, the Agency began discussions with the State of Alabama on revising their UIC program to include hydraulic fracturing. The net result of that process was the EPA approval of Alabama's revised section 1425 SDWA UIC program to include specific regulations addressing CBM hydraulic fracturing. This approval was signed by the Administrator in December 1999, and published in the Federal Register in January 2000.

In light of the Phase I HF study and our conclusion that hydraulic fracturing did not present a significant public health risk, we see no reason at this time to pursue a national hydraulic fracturing regulation to protect USDWs or the public health. It is also relevant that the three major service companies have entered into an agreement with EPA to voluntarily remove diesel fuel from their fracturing fluids.

7. a. If so, please provide a detailed description of your consideration of establishing these regulations or standards and the rationale for not pursuing them. b. Do you plan to establish such regulations or standards in the future? c. If not, what standards will be used as the standard of measurement for compliance for hydraulic fracturing under state Class II programs?

EPA has not explored in any detailed fashion minimum national or state requirements for hydraulic fracturing of CBM wells, except when it evaluated the revised UIC program in Alabama.

Considering and developing national regulations for hydraulic fracturing would involve discussions with numerous stakeholders, the states, and the public and it would require an intensive effort to arrive at regulatory language that could be applied nationwide. As EPA's study indicates, coalbeds are located in very distinct geologic settings and the manner in which they are produced for methane gas may be very different in each locale. The proximity of USDWs to the coal formations, and the regional geology and hydrology all play roles in how hydraulic fracturing operations are conducted.

If EPA receives information of drinking water contamination incidents and follow-up investigations point to a problem, EPA would then re-evaluate its decision to not continue with additional study relating to CBM hydraulic fracturing.

Should additional states submit revised UIA programs for EPA's review and approval which include hydraulic fracturing regulations, we would evaluate these programs under the effectiveness standards of the SDWA section 1425 as we did for the State of Alabama.

S. 1080

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Hydraulic Fracturing Safety Act of 2005''.

SEC. 2. HYDRAULIC FRACTURING.

Section 1421(d)(1) of the Safe Drinking Water Act (42 U.S.C. 300h(d)(1)) is amended—

(1) by adding at the end the following: ''The term 'underground injection' includes hydraulic fracturing, which means the process of creating a fracture in a reservoir rock, through the injection of fluids and propping agents, for the purpose of reservoir stimulation relating to oil and gas production activities.''; and

(2) by adding at the end the following:

''(3) HYDRAULIC FRACTURING.—

''(A) IN GENERAL.—In the case of hydraulic fracturing that occurs during the exploration for, or the production of, oil or natural gas, a producer of oil or natural gas shall not use diesel fuel or any other material that the Administrator has listed as a priority pollutant under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).

''(B) REGULATIONS.—The Administrator shall promulgate such regulations as are necessary—

''(i) to regulate hydraulic fracturing in accordance with this subsection; and

''(ii) to ensure that State programs under section 1422 or 1425 regulate hydraulic fracturing in accordance with this subsection.''.

By Mr. KYL (for himself, Ms. STABENOW, Mr. CORZINE, and Mr. TALENT):

S. 1081. A bill to amend title XVIII of the Social Security Act to provide for a minimum update for physicians' services for 2006 and 2007; to the Committee on Finance.

Mr. KYL. Mr. President, I rise today to introduce the Preserving Patient Access to Physicians Act of 2005. This bill updates Medicare physician reimbursement for 2006 and 2007 according to the recommendations of the Medicare Payment Advisory Committee (MedPAC). There would be a 2.7 percent increase to the physician payment schedule for 2006 and using the Medicare Economic Index update for the price of inputs, a 2.6 percent increase in 2007.

If the schedule is left alone, the consequences for physicians will be a negative. Instead of the 1.5 percent payment increase for 2004 and 2005 which I helped author in the Medicare Modernization Act, there would be a 4.3 percent decrease.

The sustainable growth rate (SGR) formula used to calculate physician payment depends on a number of factors: the number of Medicare fee-for-service beneficiaries, the volume and type of services provided, the price of services rendered, changes in regulations and laws. The formula also incorporates other factors such as prescription-drug prices and the gross domestic product. The SGR was intended to control expenditures by basing a given year's physician payment rate on the previous year's performance. Instead, it creates an arbitrary deficiency that continues to force Congress to intervene.

There is a debate going on, her CMS has the authority to alter the SGR formula by removing drugs. Setting that aside, though, the fact of the matter is that without Congress stepping in to provide for a physician payment update, it probably will not occur. My Senate colleagues and I have talked for many years about ensuring adequate physician payment because current and past administrations have failed to modify the formula. This formula is not doing what it was intended to do. Therefore, I believe we need to scrap it and start again. My bill is a starting point and proposes amounts for an update, but I would really like to see us go all the way back to the drawing board and answer the fundamental question of how to pay physicians appropriately for their services.

I want doctors to be able to continue to assist our nation's seniors, but it is unfair to expect them to practice and to have their reimbursement decrease. Practice expenses, the costs of medical technology, wages for administrative and clinical staff, and medical liability premiums are all increasing while physicians are on track to receive a payment decrease. They cannot afford to continue practicing medicine while receiving reimbursements that do not allow them to even break even. Many are retiring early or threatening to limit the number of Medicare patients they treat.

The service of physicians all across the country is vital to our seniors. Almost half a million doctors provide treatment to the 42 million people under the Medicare program. Physicians are often the gateway for access to other medical services and treatments. Not being able to consult a physician results in delayed referrals, delayed treatment and delayed care. In sum, the quality of health care continues to erode and our system does not operate efficiently.

Should the scheduled physician reimbursement cuts take effect, the result will be a $710 million decrease in payments to doctors in Arizona over 2006 through 2010. I have heard from virtually every physician with whom I have spoken about the constraints that inadequate payments are placing on their practice of medicine. While many work for hospitals and health systems, in the rural areas, a large number are solo practitioners or in small practices. For these physicians, poor payment hits their practice especially hard.

If Medicare rates for doctors are inadequate, many other health care payors will also lack for adequate reimbursement. Other payors such as Medicaid and private insurers often base their payments on Medicare rates. While this bill only addresses Medicare physician payment, the problem of access to services will be compounded if physicians receive reimbursement from other payors that is below the appropriate levels.

The cost of addressing the physician payment update is not cheap. Estimates on the cost of this bill are between $25 billion to $35 billion over five years. I await an official score from the Congressional Budget Office. But I point out, that doing nothing to solve this problem may cost us more: more money, more health and access problems, and more physicians leaving the profession. Although this legislation provides for a two year update, we must develop a long range mechanism to pay physicians appropriately.

I am grateful for the support of this legislation by my colleague, Senator

MATTHEW H. MEAD
GOVERNOR

THE STATE OF WYOMING

STATE CAPITOL
CHEYENNE, WY 82002

Office of the Governor

April 12, 2012

The Honorable Ken Salazar
Secretary of the U.S. Department of the Interior
U.S. Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

Dear Secretary Salazar,

In 2010, Wyoming became the first state in the nation to develop and adopt rules pertaining to hydraulic fracturing. Wyoming's rules address well-bore integrity and flowback water, require disclosure of hydraulic fracturing constituents, and apply on federal, private and state lands. These rules were developed based on sound science and a thorough public process. They are intended to protect public health, safety, and the environment while allowing economic growth.

I have heard no concern from the Bureau of Land Management (BLM) about the adequacy of Wyoming's regulatory structure. It is troubling, then, to learn that the BLM has drafted similar rules pertaining to hydraulic fracturing for oil and natural gas production on federal land, including land where mineral interests are federal. I am concerned that the proposed rules will duplicate and possibly be sequential to Wyoming's rules. Such layering of federal rules on top of existing state rules is unnecessary, burdensome, and unreasonable. Such redundancy will add cost and delay to a process that is already efficiently, effectively regulated by the State of Wyoming.

BLM's rulemaking effort here appears to go against Executive Order 13563, "Improving Regulation and Regulatory Review", in which the President ordered the least burdensome tools for achieving regulatory ends and the promotion of predictability and certainty. That Order also required taking into account benefits and costs. The BLM's exercise to regulate what is already state-regulated does not meet the letter or the spirit of the President's Order. For example, the proposed rules will create unpredictability and increase uncertainty not only for operators developing the resource but also for states like Wyoming that are proactively and responsibly regulating hydraulic fracturing right now. And, given the added delay and other burdens

PHONE: (307) 777-7434 FAX (307) 632-3909

associated with the proposed rules, a cost-benefit accounting appears missing or flawed.

I respectfully request that the BLM not duplicate Wyoming's regulations or impose duplicate regulations on Wyoming. I further request that BLM defer to states, like Wyoming, that adequately and effectively manage hydraulic fracturing. I appreciate your consideration of my comments and look forward to hearing back from you.

Sincerely,

Matthew H. Mead
Governor

MHM:tt

cc: The Honorable Mike Enzi, U.S. Senate
The Honorable John Barrasso, U.S. Senate
The Honorable Cynthia Lummis, House of Representatives

DARRELL E. ISSA, CALIFORNIA
CHAIRMAN

DAN BURTON, INDIANA
JOHN L. MICA, FLORIDA
TODD RUSSELL PLATTS, PENNSYLVANIA
MICHAEL R. TURNER, OHIO
PATRICK MCHENRY, NORTH CAROLINA
JIM JORDAN, OHIO
JASON CHAFFETZ, UTAH
CONNIE MACK, FLORIDA
TIM WALBERG, MICHIGAN
JAMES LANKFORD, OKLAHOMA
JUSTIN AMASH, MICHIGAN
ANN MARIE BUERKLE, NEW YORK
PAUL A. GOSAR, D.D.S., ARIZONA
RAUL R. LABRADOR, IDAHO
PATRICK MEEHAN, PENNSYLVANIA
SCOTT DESJARLAIS, M.D., TENNESSEE
JOE WALSH, ILLINOIS
TREY GOWDY, SOUTH CAROLINA
DENNIS A. ROSS, FLORIDA
FRANK C. GUINTA, NEW HAMPSHIRE
BLAKE FARENTHOLD, TEXAS
MIKE KELLY, PENNSYLVANIA

LAWRENCE J. BRADY
STAFF DIRECTOR

ONE HUNDRED TWELFTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

2157 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6143

MAJORITY (202) 225-5074
FACSIMILE (202) 225-3974
MINORITY (202) 225-5051

ELIJAH E. CUMMINGS, MARYLAND
RANKING MINORITY MEMBER

EDOLPHUS TOWNS, NEW YORK
CAROLYN B. MALONEY, NEW YORK
ELEANOR HOLMES NORTON,
DISTRICT OF COLUMBIA
DENNIS J. KUCINICH, OHIO
JOHN F. TIERNEY, MASSACHUSETTS
WM. LACY CLAY, MISSOURI
STEPHEN F. LYNCH, MASSACHUSETTS
JIM COOPER, TENNESSEE
GERALD E. CONNOLLY, VIRGINIA
MIKE QUIGLEY, ILLINOIS
DANNY K. DAVIS, ILLINOIS
BRUCE L. BRALEY, IOWA
PETER WELCH, VERMONT
JOHN A. YARMUTH, KENTUCKY
CHRISTOPHER S. MURPHY, CONNECTICUT
JACKIE SPEIER, CALIFORNIA

Opening Statement
Rep. Elijah E. Cummings, Ranking Member
Committee on Oversight and Government Reform

Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform
Hearing on "Rhetoric vs. Reality, Part II: Assessing The Impact of New Federal Red Tape on Hydraulic Fracturing and American Energy Independence"

May 31, 2012

Mr. Chairman, thank you for calling today's hearing.

Hydraulic fracturing, commonly known as "fracking," is a technique that was originally developed to increase oil production from deep wells with declining supply. More recently, this technique has been used to extract oil and gas reserves that were previously inaccessible or cost-prohibitive. In the past three years, natural gas production in the United States has reached record levels, causing the price of natural gas to fall. This helps the economy and supports our critical effort to achieve energy independence.

However, fracking often involves the underground injection of highly toxic chemicals. An investigation by Democrats on the House Energy and Commerce Committee found that between 2005 and 2009, 12 companies pumped more than 32 million gallons of diesel fuel or fluids containing diesel fuel into fracking wells in 20 states.

The use of diesel fuel as a fracking fluid is regulated under federal law. The Energy and Commerce Committee investigation found that none of the companies using diesel fuel in their hydraulic fracturing operations had received permits to do so, which is required by federal law. The investigation also found that state regulators did not fully understand the extent to which diesel fuel was being used by hydraulic fracturing operators.

Fracking companies also inject other chemicals, such as benzene, which are known human carcinogens. Nevertheless, hydraulic fracking is not generally regulated under federal law. The so-called "Halliburton Loophole," which was passed as part of the Energy Policy Act of 2005, specifically exempts hydraulic fracturing from the requirements of the Safe Drinking Water Act that otherwise apply to underground drilling and injection.

Fracking has also been associated with adverse environmental events. In April of last year, a well blowout in Pennsylvania allowed thousands of gallons of fracking fluid to flow into the Susquehanna River and subsequently into the Chesapeake Bay.

Douglas Gansler, the Attorney General of my home state of Maryland, notified Chesapeake Energy Corporation on May 2 that Maryland intends to sue the company for violations of the Clean Water Act and the Federal Resource Conservation and Recovery Act.

While hydraulic fracturing offers great promise to increase our nation's natural gas production, reduce energy prices, and promote energy independence, we should ensure that we are able to reap these benefits while ensuring that adequate controls are in place to protect the health and safety of the American people.

For these reasons, I commend the EPA for coming forward with its draft diesel fuel guidance, which clarifies existing law. To be clear, it does not impose any new duties on private parties or state environmental protection agencies.

In addition, I believe we must thoroughly evaluate the human health and environmental concerns associated with fracking. The robust development of our nation's natural gas resources should never contaminate the drinking water we need to survive.

Contact: Ashley Etienne, Communications Director, (202) 226-5181.

Bloomberg Businessweek

News From Bloomberg

EPA Says Water Near Pennsylvania Frack Site Safe to Drink

By Mark Drajem on May 11, 2012

Tests of water wells in Dimock, Pennsylvania, found none with unsafe levels of contamination tied to hydraulic fracturing, the U.S. Environmental Protection Agency said after a final round of testing.

The agency, responding to complaints from homeowners about murky water and water that could be ignited, tested 61 wells. In results released today, it found none of the wells had contamination exceeding federal safe drinking-water standards. Results at one home had elevated levels of methane, according to the agency, which doesn't set maximum limits for the gas.

The EPA, which completed four rounds of tests in Dimock, said it will re-test four wells where earlier results had found contaminants that were a health risk.

Dimock, where actor Mark Ruffalo delivered bottled water to residents last year, has become a closely watched community after residents said water was harmed by nearby fracturing, or fracking, by Cabot Oil & Gas Corp. (COG) (COG) In fracking, water, sand and chemicals are injected into deep shale formations to crack the rock and free trapped natural gas.

"Cabot is pleased that EPA has now reached the same conclusion of Cabot and state and local authorities resulting from the collection of more than 10,000 pages of hard data -- that the water in Dimock meets all regulatory standards," George Stark, a company spokesman, said in an e-mail. Contaminants found in the water occur naturally and are not tied to gas drilling, he said.

Methane Levels

Results from the first 11 wells the EPA tested found one with a methane level of 52 parts per million, which could be explosive, and at least three where methane exceeded the state standard of 7 parts per million. The agency says methane doesn't impair the smell, taste or color of water, and the U.S. doesn't set a limit on the gas's levels.

The EPA found traces of barium, arsenic, oil and manganese, which can be harmful even at low doses, said Ana Tinsly, a spokeswoman for Water Defense, a New York-based group campaigning against fracking.

"EPA's own tests have already vindicated the long-standing allegations of water contamination and clearly shows that the water of the affected residents is unfit for human consumption," Tinsly said.

One third of the wells tested have elevated methane levels.

Methane, the key constituent of natural gas, and fracking gained prominence after a scene in the Academy Award-nominated documentary "Gasland" in which a resident near a gas-drilling site in Colorado ignited the water coming out of a tap. State officials later issued a report saying that the gas was not linked to drilling.

Separately, residents of Dimock suing Cabot are now in settlement talks with the company, said Tate Kunkle, the residents' lawyer. He declined to provide further information about those talks.

To contact the reporter on this story: Mark Drajem in Washington at mdrajem@bloomberg.net

To contact the editor responsible for this story: Jon Morgan at jmorgan97@bloomberg.net

@2012 Bloomberg L.P. All Rights Reserved. Made in NYC Ad Choices