TRANSCRIPT OF THE FEDERALIST SOCIETY'S 2012 NATIONAL LAWYERS CONVENTION:

ENVIRONMENTAL LAW, FEDERALISM, AND THE ENERGY REVOLUTION: CAN STATE AND FEDERAL REGULATORS ADAPT TO INNOVATIONS?*

Panelists:

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Professor James R. May, Environmental Law Center, Widener University School of Law

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JUDGE TIMOTHY M. TYMKOVICH: Welcome to this morning's second panel: "Federalism and the Energy Revolution: Can State and Federal Regulators Adapt to Innovations?" Thank you.

Before I introduce this morning's speakers, I must mention two headlines that caught my eye this week as I was preparing to attend The Federalist Society convention here in D.C. The first headline came from Colorado. Incidentally, I'm Judge Tim Tymkovich. I'm a judge on the Tenth Circuit Court of Appeals in Denver, and so in the morning's Denver Post earlier this week, I saw one headline, which was "The Message of the Longmont Vote." The other headline from the Denver Post was "Drill Ban Flames Anti-Frack Forces." Why the headline? The reason for the headline was the City of Longmont, Colorado, on November 6th, just last week, voted to ban oil and gas drilling using hydraulic fracturing, or fracking, within the city limits of the city.

As most of you know, or will know by the end of this morning's presentation, fracking releases natural gas from shale formations by injecting a liquid composed of water, sand, and chemicals into shale under high pressure. This increased pressure fractures the shale surrounding a well and allows the gas to flow from the well and be thereby extracted. Well, the Longmont vote has set off a contentious debate among city, state, and federal regulators in Colorado and raises the question of local control of statewide resources.

The second headline I saw this week was from the Washington Post just a few days ago, and the Post headline was "The New Boom: Shale Gas Fueling an American Industrial Revival. This article explains how cheap natural gas is providing energy options for manufacturing interests in the United States and acting as incentive for many previously offshore operations to consider moving back to the United States because of the availability of cheap energy. The article also tells us that the United States will soon overtake Russia as the world's largest gas producer. It appears our country may have gone from scarcity to abundance of one of our major resources of carbon-based energy. How will state and federal regulators deal with this new energy boom, even as many local voices are expressing concerns about environmental consequences that are yet to be fully understood?

We have an excellent panel this morning to discuss these questions representing a variety of points of view of the respective state and federal perspectives as well as the environmental and business community.

Moving from right to left, our first speaker is Jason Hutt. Mr. Hutt is a partner with Bracewell & Giuliani in their Washington, D.C., office. He advises energy companies, manufacturers, project developers, and others.

He is a graduate of Vermont Law School. A bit of a theme we have this morning, I see.

Our second speaker is James May. Mr. May is a professor of law and co-director of the Environmental Law Center at Widener University. Professor May has published more than fifty book chapters and Law Review articles and is co-author of a forthcoming book, "Environmental Rights and the Constitutional Protections: Implications for Present and Future Generations." Professor May is a graduate of the University of Kansas, out in the Tenth Circuit. Go, Jayhawks.

PROFESSOR JAMES R. MAY: That's right. Thank you. Hear, hear.

JUDGE TIMOTHY M. TYMKOVICH: Our third speaker is Craig Segall. Mr. Segall is a partner in the Environmental Law Program of the Sierra Club. His practice focuses on climate-related regulatory issues, including significant work on any unregulated hydraulic fracturing. He is a graduate of the Stanford Law School. Welcome.

CRAIG SEGALL: Thank you.

JUDGE TIMOTHY M. TYMKOVICH: Our last speaker is Joel Burcat. Mr. Burcat is a partner in the Harrisburg, Pennsylvania office of Saul Ewing and serves as chair of the firm's oil and gas practice. His principal areas of practice are environmental law, oil and gas, natural resources, and environmental litigation. He has both federal and state government experience and is a graduate of Vermont Law School as well. He's also the co-author of a treatise on environmental law, Pennsylvania Environmental Law and Practice, and its 2012 edition will soon be available.

With that, let's turn to our first speaker.

JASON B. HUTT: Thank you. For anyone wondering, the mascot for Vermont Law School is the Fighting Swan.

PANELIST: Intimidating.

JASON B. HUTT: It is quite intimidating.

So good morning, and thanks for the opportunity to speak to you. As sort of the lead-off speaker, I thought it would be helpful to sort of set the landscape, talk a little bit about why is it that this is an important topic of discussion, a little bit about what's driving that debate, and then cover a

little bit of what the federal landscape looks like here in Washington as we head into the second Obama administration, and let some of the other panelists sort of cover the state level and some of the other issues.

So with that sort of overview, this topic has really changed the global energy picture, and I wanted to provide a couple of statistics just to sort of put that in perspective in terms of what it has meant for the global economy, for geopolitics, and for the environment.

On the shale gas side, I think this is sort of a helpful orientation statistic. The EIA's latest Energy Outlook puts the 2010 production of gas at five trillion cubic feet per year, which is twenty-three percent of the total U.S. dry gas production. They project by 2035 for that to be 13.6 trillion cubic feet per year, which will be forty-nine percent of U.S. dry gas production. So by 2035, half of all dry gas production in the United States will be from shale gas.

This is not actually just a discussion about gas. It's also a discussion about oil, because the advent of combining horizontal drilling technology with hydraulic fracturing has led to a much more enhanced production of oil as well. From a statistical standpoint, the U.S. and the IEA's World Energy Outlook, the U.S. is predicted to be the largest global oil producer by 2020 and a net oil exporter by 2030. That's a game-changing set of statistics if you look at where we were ten years ago with respect to a dependence upon foreign oil and a discussion about everyone racing to FERC and the Department of Energy to try to import natural gas into the United States and build natural gas import facilities. That's where I focused my practice for about five years: trying to build those facilities to bring natural gas into the United States.

So, speaking about the economic implications of all this: first of all, low energy cost. In the first eight months of 2012, the average spot price for natural gas was about $2.55 per MBTU. I think that is significant not only just in the price and what it has brought to the marketplace, but it has informed the development of manufacturing facilities, petrochemical facilities, and fuel switching by power generation facilities in the United States with those low prices and the dependability of those low prices going into the future.

From a jobs standpoint, we've all heard a lot about jobs leading up to the beginning of November. Moody's analysts have reported that, since 2002, exploration and drilling for shale gas and oil has added a million jobs to the United States economy. I think folks will remember President Obama's speech to the DNC where he talked about the creation of 600,000 more jobs with shale gas.

From an environmental standpoint, the Department of Energy's study shows that the life cycle of greenhouse gas emissions is fifty-three percent

lower than the life cycle of coal emissions. So there's a dramatic reduction in greenhouse gas emissions associated with that fuel switching and the burning of natural gas instead of coal. It's not a zero-greenhouse-gas-emission technology. Very little energy is free of any environmental impact, but this does reduce our global footprint in terms of greenhouse gas emission cost by fifty-three percent from that perspective.

I am going to talk a little bit about how that statistic—and Craig will probably touch on this, too—may be revised based on some of the rules that are upcoming about air emission reporting. That is sort of why we are talking about this. I mean, this is a game-changing technology, both from a geopolitical perspective and from an economic perspective.

What's driving it? Well, environmental issues in Washington have sort of an arc. The driver to that arc is not just law but also policy and the media and public perception on environmental issues. If you look at climate change, if you look at the MTVE debate, if you look at the shale gas debate, which are sort of national-scale debates that have local consequences, they have an arc where initially the public isn't even aware that it's going on. Then, as the public becomes aware, they start to ask a lot of questions, and there's some suspiciousness about it. Then, the two sides start to bring out information and begin to try to inform the public.

That happened about five or six years ago, I think, with respect to shale gas, and the industry had a difficult time explaining itself to the public at that time. They have gotten better at it. It is a difficult technology to explain in that realm, and the pace at which this evolved was so fast that it was difficult to keep that education process up with that pace.

Once that initial set of education happens, oftentimes initial regulatory decisions are made based upon that. I think we have passed that stage. Then, there's some reengagement and additional education. I think we are probably at this stage, and next there will be revised regulatory approaches. So that is kind of where we see ourselves in that arc, or where I see things in that arc. I think that it's sort of helpful to remember that it's not just legal and policy, which I know we're all here to discuss, but public perception, because public perception ultimately drives politics.

One of the key things about that public debate has been what are the risks associated with shale gas. The two primary risks that have been talked about a lot are the risks to drinking water resources and air quality in areas where there is intensive exploration and production. I think most of that debate has been notwithstanding a lot of credible studies by industry, by universities, by state and federal agencies, which are widely discounted by a lot of the environmental groups as being sort of slanted or artificially narrow in scope. But there is a lot of credible science out there. It is being better and better understood and is being expanded to look at all the

different parameters associated with shale gas, and I can point you to those afterwards if you are interested.

From a public debate standpoint, though, the anti-fracking advocacy groups continue to portray this as something that has dire environmental consequences. The Sierra Club has changed, or evolved, its campaign from beyond coal to add a different plank to that, which is now beyond natural gas. That's very important because they have an initiative to bring a move away from the consumption of natural gas in the country at this same time. That is, in part, driving this public perception.

Hollywood had a toe in this debate with the Gasland documentary by Josh Fox. At the end of this year, they are going to put both feet in with a full cinematic film, which is going to basically portray the natural gas industry going into a local town and will feature Matt Damon as one of the landmen. So, that will again fuel this debate and public perception about how shale gas works, and I think that will be an important moment.

From an elections standpoint, both sides really embraced natural gas. If anyone saw the second presidential debate, it was sort of a competition to see who liked natural gas more, a little bit comical in that respect, but it is an important resource. It was an important resource in key battleground states, so a lot of accolades were paid to the job creation and the benefits associated with it. We'll see where that brings us in the future.

So, what's happening in Washington? Let's just take it from the three-branch perspective and talk about the legislature first. From a congressional standpoint, Congress obviously passes laws, passes budgets, and has an investigative power. While Congress doesn't really pass very many laws anymore and certainly not on the environmental front, there is one bill that was proposed in the 112th Congress called the "FRAC Act." It was proposed by Diana DeGette from Colorado. It never really had much support to begin with, and I don't see its passage before the 112th Congress is gone. From a budget standpoint, we really just extend former budgets. The budgeting decisions with respect to EPA and Department of Energy, however, could obviously play into the amount of monies that are available to study shale gas and some of the studies that are ongoing.

From an investigative standpoint, there have been several investigations by congressional committees into environmental risks associated with shale gas. I would expect that to continue going forward, questions being asked to the different executive branches. It is an interesting statistic because I primarily think about shale gas from an environmental perspective, and I mention the one bill that is sort of worthy of talking about here. There is, however, a CRS report that just came out that looked at how many bills were introduced in the 112th Congress that actually had an effect or would have had an effect on the supply and demand and environmental issues

associated with natural gas. The tally is over 150. So, there are a lot of bills that relate to energy policy that have a direct effect on supply and demand issues, and that in turn has an effect on the environmental issues associated with it.

The executive branch is the deeper discussion. Certainly, EPA is the first agency that one thinks about. There is a lot going on there. From a study standpoint, EPA is working on their hydraulic fracturing study. They have arrived at a scope now. The initial feedback from the study is expected by the end of the year, and the report is expected to be released in 2014. I don't expect to hear a lot in the December 2012 release if it comes out. I think it will better inform where EPA ended up with the scope of its study. I don't expect to hear much about the retroactive and perspective site studies they are doing. I don't think that they have made sufficient progress in the science of doing those studies.

Last week, EPA published in the Federal Register a solicitation of scientific input. They are going to take additional input from industry and environmental groups until, I think, April of 2013. I have to get ready to start saying that. So, they're seeking input. Because I expect they will get a whole lot of information in for the study, they did caution in the Federal Register statement that they are going to be looking for peer-reviewed materials and giving priority to that in terms of what they are going to pay the most attention to.

From an air policy standpoint or an air regulation standpoint, EPA issued a regulation in the last year that is designed to address air emissions from production sites. This is broadly called "green completions," which are required by 2013. They also have a set of regulations that are in place that are going to, for the first time, require reporting associated with greenhouse gas emissions. I think that the reporting will be an important milestone in the discussion about what the air impacts are. I also think, in the context of the federal-state debate, that if you were to pick a media in which there is more of an article for a federal framework for regulation, it is air. This is due to its ubiquitous nature and character as more of a shared resource. It also doesn't historically have the same degree of state focus from a resource standpoint that oil and gas regulations have. So, when you get to the state level, states have always had a greater degree of control over the harvesting of the resources within the state and the protection of the resources that are unique to the state. The geologies are different. The water resources are different. The drinking water below the ground is different. There is a long tradition of leaving that to the states to govern and protect.

Interestingly, there is definitely a different view as to what the cost of the green completions is going to be from an industry and an EPA standpoint. EPA's estimates are about $33,000 per well. Industry estimates

are about $62,000 per well. I don't see those as drivers in where we go with natural gas policy. The price of natural gas is a major driver in where we go with natural gas policy, and so the most important agencies over the next four years are going to be the Department of Energy and FERC at the federal level. I am going to touch on that in a second. I just want to finish up on EPA.

The diesel guidance is probably going to come out by the end of the year. This relates to what does EPA mean with respect to its authority to require Safe Drinking Water Act permits for the use of diesel and hydraulic fracturing. EPA has proposed six different chemical abstract service numbers that they would count within the umbrella of their authority. I think the industry has almost uniformly migrated away from the use of that chemistry and their fracking fluids, and so you won't see a lot of permits obtained in that realm. The question remains whether, between the proposal and the final, there will be an expansion of what EPA has used as their interpretation of diesel.

Now, the last thing that I'll touch on with EPA. EPA's enforcement office has viewed themselves as an engine for change, because they don't need legislative and regulatory authority to get into an enforcement action based on existing law and then seek concessions in those settlements, which we will call "injunctive relief," where industry or the industry player that's before them promises to go beyond compliance, to put something additional into a bilateral agreement between themselves and EPA.

That agreement, while bilateral, is published and made available through the Federal Register and then placed on the DOJ's website, and that becomes a bar over which later settlers in the same industry in an enforcement initiative have to jump over. We saw this with respect to EPA's enforcement initiative in the refining industry. We saw it in the coal-fired power plant industry. We are seeing it in cement and glass manufacturing. Well, in February of 2010, EPA announced an enforcement initiative from 2011 to 2013 with respect to the energy extraction industry. The leading edge of all of that is a series of requests for information that the agency rolls out to different industry players, which require them to respond. This often evolves into an enforcement action, and so we're seeing that in the industry. EPA's Office of Enforcement and Compliance Assurance is certainly viewing themselves as someone who can play a role in changing the regulatory environment for the industry.

I think those are the key agencies. There is Health and Human Services. ATSDR is also looking at that. Within there, the SEC is placing more scrutiny on disclosure requirements. With respect to the Department of Energy, which I think is really just an important agency to spend a little bit of time on, the Natural Gas Act gives it the authority to license and approve

the export of natural gas to non-Free Trade Agreement countries, and the Department needs to take into account the public interest.

So, it will be very important to see what their second report looks like here in December. The first report suggested that four billion cubic feet per day would be a threshold at which there will be implications on the U.S. economy, and that will be very important in looking at the price of natural gas at the federal level.

With that, I will turn it over to Jim May.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Jason. Professor May?

PROFESSOR JAMES R. MAY: Good morning. I don't know if you noticed something that happened just after the election, and I am not from Ohio. I am not from a state that was inundated with political commercials, but there was this great change in the commercials that were on television. Did anyone notice the big shift just on Wednesday, the day after the election? We went from political commercials to commercials advancing natural gas. I kid you not. I mean, it sounds bizarre, but that's what happened. The very next day, there were more than ninety commercials that came out on national television promoting the natural gas industry. I just think that that's very notable, and it speaks to maybe where we are headed, as Jason pointed out.

Now, my name is Jim May, and I teach environmental law and constitutional law and a variety of subjects at Widener University School of Law, where I've been for 25 years. Just to give you my bona fides perhaps in this area, I'm also–as the judge mentioned–from Kansas, and I'm a mechanical engineer. That was my undergraduate degree. Where you're concerned about engineering, you're also concerned about transportation and fuels. So, I learned about hydraulic fracturing three decades ago in engineering. It is not a new technology. It's been around for about 100 years, in fact, and it's been commercial for more than a half a century. What we're talking about really with fracturing is the horizontal fracturing. There is a vertical fracturing where you drill down to get to the natural gas. What the debate today is about, however, is the use of horizontal hydraulic fracturing.

My background also includes fifteen years as a federal litigator, including in the Tenth Circuit. My last case there was in 1992 in the Pacific Mutual case about substantive and procedural due process issues. So, I'm going to talk about five things in ten minutes. Are you ready?

PROFESSOR JAMES R. MAY: All right. I'm going to start with the end of the story, but these five things are: first, what is hydraulic fracturing, because that's part of my charge; second, the environmental effects, also part of my charge; third, how it's regulated; fourth, some constitutional challenges; and last, the future.

Let me begin with the future; first of all, my kids. I have an eleven and a fourteen-year-old, and I'll link this together in a moment. When they come home from school, of course, they don't want to talk. I give them a period of time to have a snack and all that, but they will invariably say something like, "Gosh, Dad, something really troubling happened today at school, and it was really disturbing at school." Immediately, I just want to know the end of the story, that everyone is okay, and that everyone is safe, and then I'll sit down, relax, and listen to the rest of it. Usually, it's about rotten lettuce or something. I don't know. But, here's the end of the story, the future. I see, as Jason mentioned, federal laws concerning disclosure on the way. I see lots of opportunities for lawyering, by the way. I see a revisiting of the Safe Drinking Water Act and the Toxic Substances Control Act concerning disclosure. I see pretreatment standards on the horizon under the Clean Water Act for indirect dischargers. I see Clean Air Act regulations, the ones that EPA is working on, being implemented. I see Congress considering revisiting some exemptions that are in the laws. I see Congress revisiting the Energy Policy Act of 2005 and a revisitation, really, of national energy policy.

We saw that recently in President Obama's remarks, too. He discussed our energy future, an all-of-the-above kind of scenario and with particular emphasis on domestic supplies. And, that's a euphemism, guys. "Domestic supplies" means natural gas, really. Now, yes, of course, there's coal and there's petroleum. But, looking to the future, there's a whole lot of emphasis on the potential for natural gas to fuel our future and to get us out of the Middle East, to save lives, and to secure our national security.

So, first of all, what is hydraulic fracturing? As I mentioned, we're really talking about the horizontal part, but it was invented, if you will, in 1902 in Fort Worth, Texas. It led to a boom, but it involves a pressure. It involves pressure underground where you inject water with chemicals, and you break up shale formation. Shale formations are a little bit permeable, and you can get to the gas inside of them. They are anywhere, depending upon where you are in the country, from a mile to six and a half miles below the surface of the planet.

Now, in between, and much closer to the surface of the planet, is oftentimes drinking water. Drinking water, again depending upon where you are in the United States, might be anywhere from 500 feet to about

1,000 to 1,500 feet below the surface. So, the actual horizontal fracturing goes much deeper than where the drinking water is.

There are "major plays," they're called. Yes, it sounds like something Shakespearian, but that's not what we're talking about. The major shale gas plays are in the United States. You've probably heard of Marcellus shale and Utica. Those are in the eastern part of the country, and there are about two dozen other major plays throughout North America. So, they are ubiquitous and abundant.

Now, there are, secondly, environmental concerns that arise with hydraulic horizontal fracturing. Let me go through six of these in a minute. The first one is about air pollution. With construction and also with the operation of the hydraulic fracturing, there might be volatile organic compounds that need to be burned off or captured and otherwise garden-variety pollution from the generators in the process.

Secondly, there is a brine intrusion potentiality. When you dig down deep, when you get way down to where the shale gas is, you're really digging back into history. You're digging back tens of millions of years. With the shale gas, made up of animals and plants that have long since died—and they're still giving to us, thank you very much—there is also ancient ocean water. It is very, very salty, and so we call that "brine." That's down there, too, and it can contaminate and cause problems elsewhere.

There's sedimentation and erosion on the "well pad," and this is where you actually build the doggone thing. There can be runoff that can cause issues primarily for surface water. There can be spills and leaks. There can be contamination of drinking water, as was mentioned, closer to the surface of the planet.

Lastly, there's an awful lot of water used with hydraulic fracturing. You need a lot, anywhere from one to fifteen million gallons per well. A typical well pad, depending upon where you are and what state you are in, might have as many as six wells. That might be as much as twenty-seven million gallons per day per pad. About seventy percent of that comes from surface water and about thirty percent comes from groundwater. This is one thing, just to point out: with the water that goes in, not all of it comes back. Most of it actually doesn't. It's called "flowback water." Depending upon where you are and what not, it might be between ten, twenty, maybe thirty percent of the water that goes down comes back. That's called "flowback water." The rest of the water stays in the formation, and quite frankly, as engineers, we don't know where it goes. As Woody Allen said about love, it has a mind of its own.

So there are also chemical constituents in that water that is injected, as many as 200 different kinds of chemicals. Not all are injected at the same

time—maybe only a dozen or two different kinds of chemicals to try to help the fracking process. And then there are "proppants." They are called p-r-o, double p, a-n-t-s, "proppants." They are things that prop open the formations to get to the natural gas, and that's usually sand or ceramic material or what have you. So there's an awful lot of water that's in use, consumptively and otherwise, for hydraulic fracturing.

Okay, third. There are federal laws and state laws that address hydraulic fracturing, but the state—and I'm sorry for the pun, but I can't stop myself–but the state of regulation of hydraulic fracturing is, of course?

ATTENDEE: Fracture.

PROFESSOR JAMES R. MAY: Thank you. That's right. Fracture. Okay, you're with me. All right. So, anyway, thank you. I'll be appearing in the lobby later on.

Okay. But largely, hydraulic fracturing is exempted from federal law—largely. Some examples: the Safe Drinking Water Act exempts hydraulic fracturing from laws that concern underground injection. NEPA presumes that certain kinds of activities are federally permitted activities, so therefore you don't need an EIS. It's not a significant impact, and in some instances, you don't even need an environmental assessment. Clean Water Act has exemptions for stormwater discharge. It also has exemptions for certain kinds of reinjection of contaminated water. The Resource Conservation Recovery Act, the nation's hazardous waste law, has exemptions for oil and gas development, including hydraulic fracturing, which are known as the "Bentsen Amendments," named after Lloyd Bentsen, of course, from Texas. The Comprehensive Environmental Response Compensation Liability Act–you know it as CERCLA–also exempts reporting requirements and ultimately liability requirements for releases of certain kinds of chemical constituents associated with hydraulic fracturing, as does the Oil Pollution Act, as does the Clean Air Act for certain kinds of activities. But, EPA is working on, as Jason mentioned, new source performance standards for venting of volatile organic compounds. Now, there's also the Toxic Substances Control Act, which has a requirement or at least the agencies can require health assessments, and there have been petitions to have those health assessments occur to determine the health impacts of hydraulic fracturing.

But really, the game is occurring at the state level where the typical state requirements include requirements about design, requirements to disclose contents of hydraulic fracturing fluid, requirements about where the well pads can be located, when the hours of operation can be, truck traffic, a whole variety of state requirements, insurance bonds, disclosure

requirements, notification requirements for releases and what have you, and guess what else? Bans, moratoriums. As was mentioned, one most recently is, of course, in Longmont, Colorado, but the State of Vermont has banned hydraulic fracturing. Some counties in southeastern Pennsylvania, Bucks County, and portions of Montgomery County have banned hydraulic fracturing. So, nationally, there's a lot going on at the state and local level.

So, last, the constitutional components here. Now, this is a brave new world. Sorry to use that expression, but with hydraulic fracturing, there are loads of issues concerning separation of powers and federalism and individual rights that are on the horizon. If I were to come back here in ten years, there would be panels dedicated to constitutional challenges and opportunities concerning hydraulic fracturing. It would have a skimpier name, but at least something like that.

Now, just two more minutes, on the federalism side of it, primarily two right now: preemption and the Dormant Commerce Clause. There are issues about the extent to which states can regulate, or choose not to, hydraulic fracturing. So at least the way the lay of the land is right now, I doubt that there's much of a federal preemption claim for state action, because there's no express preemption, and it's a really hard claim to make that the federal government is occupying the field of hydraulic fracturing.

On the Dormant Commerce Clause side of it, things get a little dicier. As states get out ahead, and some states are looking into restricting the out-of-state transportation of hydraulic-fracturing-produced natural gas, it's going to run into Dormant Commerce Clause issues, as well as the energy produced from that.

Second, Congress. Now, to the extent that Congress tries to get involved, there will be those Commerce Clause challenges, particularly in light of the *Sebelius* case. Has Congress exceeded its Commerce Clause powers, and regulating its disclosure, requiring disclosure? Is that an exceedance, or would regulations be an exceedance? If we have cooperative federalism and Congress enacts a law that uses spending power, likewise that raises *Sebelius* kind of concerns about whether Congress is in fact coercing the states along.

And last, individual rights. As states and localities and what have you begin to require buffer zones and an effective way that people engage in hydraulic fracturing and other kinds of practices on land, there will be Fifth Amendment issues, of course, along the way, by taking private property for public use without just compensation. But there will also be some other ones, some sleepers, including substantive due process issues about liberty and entering into contracts and rights of contract, that states can't abridge those, and Compact Clause issues to the extent that states try to come up

with means to work together, and lastly procedural due process claims. We'll be seeing a lot of those under *Mathews v. Eldridge*.

So to return to the metaphor, it's a brave new world out there in hydraulic fracturing, and I look forward to the discussion. Thanks for having me here.

JUDGE TIMOTHY M. TYMKOVICH: Thank you.

JUDGE TIMOTHY M. TYMKOVICH: Mr. Segall?

CRAIG SEGALL: Hi. I'm Craig Segall. Thanks for having me.

So, this is an incredibly interesting area because there's so much going on. You just heard I think maybe a third of what's actually going on in the last two presentations. There's just this vast complex. So, I think the place I'd like to start is with International Energy Agency, which is more or less the equivalent of the U.S.'s Energy Information Agency. It's a statistical body not really known for being that out there.

They came out with a report this summer called The Golden Age of Gas, which is a good-sounding title, and which contained a bunch of pretty interesting conclusions. The first that I'll highlight is that an awful lot of what we need to do in engineering to be better on production probably has maybe seventy-eight percent of cost to a lot of production, so they said this is manageable, we can put a lot of these productions in place, we can go forward with lots of gas production. Then, they said on page ninety of the report, but here's the thing. We modeled this, and if you do that, you wind up just from CO2 combustion emissions from all that, not even counting the methane, the amount of which is pretty hotly debated, at around four degrees C. or about six degrees Fahrenheit temperature increases by the end of the century, which is disastrous. That's about as much warmer as it was colder during the Ice Ages. You're talking about catastrophic, civilization ending temperature changes, and climate shifts.

When asked about this, Fatih Birol, who is the Chief Economist of the IEA, said, "Well, yeah, we said it was a golden age of gas, not a golden age for humanity." Oh! So the question I think we face is to what degree those two golden ages are commensurate–in some regards, they are; in some regards, they aren't–and what steps can we take to head off the larger problems, and those really fall into two really big buckets.

The first set of buckets is what we've mostly talked about so far, which is the production side: what can and should we be doing to ensure that this process–to the extent it's going on, and, oh, is it going on–is done well. The second, which we've talked a bit less about and which I think is in many ways a much harder problem is the consumption side: what do we do about

gas as a matter of a natural energy policy. It has some major pluses; it has some major minuses. And how we get at that is going to be I think pretty difficult.

Turning first to the production piece, I am going to suggest this should be, although it may not actually be, the less controversial of the two. When you get right down to it, as Jason and I were talking about before the panel, a lot of this is engineering, not ideology, and a lot of it is engineering, both in serving the small sense of how you design your well and the large sense about appropriate level of regulatory impact, who does it, where do they do it, how does it occur. There, I think what you are really seeing, and that arc that Jason talked about, is a slow reassembly of the usual cooperative federalist structure of environmental law, where over the period before the gas boom occurred, the oil and gas industry was able to procure, for good reasons and bad, a really wide array of exemptions to various major federal statutes, as Professor May outlined. Those are now beginning to either be erased or reconsidered, and I think they will go on being reconsidered and erased over the next 4 years, the next decade.

You have already heard the outline of that. We are finally getting the first really good federal baseline standards for air emissions. They're a start. They cover basically new sources, leaving the vast bulk of emissions uncontrolled in the industry. They don't deal with methane directly. There are various pieces of infrastructure down the distribution and transmission chain they don't touch at.

So, if you run the numbers, they cover–let me make sure I have this right–on the order, I'd say, of twenty-five percent of the volatile organic compound emissions. So VOCs, for those of you who may not play with those regularly, are variously carcinogenic ozone-forming compounds. You come out with the methane, but they leave maybe seventy-five percent of those, a bit more of the methane on the table. But, that's a start. And the states will help implement those. States can help fill in those gaps. To the extent that EPA hasn't touched it, the states can use that data and so on.

Similarly, EPA is developing a lot of information under the reporting rule that Jason mentioned. That is going to be a back-and-forth process due to a lot of industry EPA negotiation. Right now the numbers that are coming in are partial. They don't contain how they calculated them. Essentially, they are emissions engineering equations. Right now, you get the final result, not the numbers used to calculate it, so there will be verification challenges and basically trying to get all this measurement in place the next couple of years. But, those numbers will get better, and help us better understand where the emissions are.

Similarly, on water, you are seeing EPA begin to reassert its water authority. Under the Safe Drinking Water Act, as many of you will know,

fracturing was largely exempted back in 2005. Part of that was a deal that EPA struck that looked pretty good at the time to keep diesel, which is one of the main sources of really troubling carcinogens, out of the fracture loads. Industry and EPA apparently differed over what they thought that meant, whether it covered all fracking or just coalbed methane, which is a pretty small set of it, and continue using quite a lot of diesel for quite a lot of years. But one result of that was the statutory exemption Congress carved out that said fracking is exempt, except for diesel. So EPA is able to use that authority now to say: "Okay. If you are fracking with diesel, which frankly we had thought you would not be doing, here is what you will need." In functionally, this will set (in the form of this guidance) federal baseline standards for casing and cementing, how you keep what you're putting down the well down the well, and make sure that that which is coming up the well does not wind up in the aquifers along the way. And the states can again use that to help develop their own permitting programs, and it will help set the federal baseline.

On land, BLM—I don't think folks have mentioned this yet—is working on a set of rules which are fairly modest—they're less rigorous than rules already in place in some states—around disclosure and waste management, which again may help export some federal standards to the states. The National Park Service and the Forest Service also have rulemakings at earlier stages of development.

And on waste and disclosure, there's thus far less direct federal activity, although EPA is working forward, and an awful lot of petitioning. In the nonprofit community, which I represent, this has been a major focus of our first years of campaigning: trying to identify these gaps in federal authority that can be fixed administratively. I agree that Congress isn't likely to do a lot on this, at least in the next Congress. And petitioning for administrative change, bringing enforcement cases, trying to strengthen the rules we have and moving them along, so that we can rebuild this cooperative federal structure where we finally have the federal baseline standards and better data coming in.

These are, for the most part, classic problems where you need some federal intervention: where trans-state air pollution; watersheds across states; waste problems, where Pennsylvania, for instance, sends an awful lot of its waste to Ohio and tried to do to New Jersey, which New Jersey wasn't happy about, where typically you need some federal environmental law that comes out and says: "Okay, here is how we're going to manage this larger-than-you problem." So all of that is going forward, and we talk more about the particulars of that. But I think, in many ways, it's sort of the standard environmental-industry debate. Industry says it will cost a lot. Environmentalists say it's free. It's probably somewhere in the middle.

EPA does something, not enough, maybe too much. We sort of gamble on in the way that we do with the sort of problem, and with only novel here is that we're lacking many of the authorities we'd usually have, which makes it harder to come to a resolution that helps control this in a fast way, especially given the pace with which industry is changing.

The second part of the puzzle, which will take only a few minutes to talk about, I promise, is consumption. So here we have I think a really thorny, interesting problem. On the one hand, I would much rather live next to a natural gas power plant than a coal power plant. You have far less emissions of sulfur and nitrogen, and mercury, and that's great. You are in a better place. On the other hand, I'd rather now live next to a power plant, and there are big questions about how the natural gas boom is influencing America's power mix and America's emissions mix. So let me highlight a few of those for further discussion on the panel.

The first I'm going to touch on is climate. As I mentioned, if we just switched coal to gas, which is what the IEA was modeling, I noted at the beginning of my talk, you don't wind up where you want to be on climate. You perpetuate the climate crisis. You cut CO2 emissions, but you don't cut them enough to actually get you significant temperature decreases by the end of the century. You're still on a path for catastrophic warming. So that alone, in the absence of other carbon control policies–energy efficiency, possibly CCS, carbon capture–isn't going to get you where you need to go to maintain a safe climate. It may be part of that answer, but the question is how much can you leapfrog it, how much do you avoid basically creating another generation, in our view, of sunk investment in carbon infrastructure as opposed to capturing energy efficiency, capturing wind, capturing solar. And there's an awful lot, I should say, of energy efficiency on the table that we have not captured.

So as we're in this period now where coal plant owners and utilities are trying to decide what we invest in next: they must either retrofit their plants in the next few years, retire them, switch to gas, invest in efficiency, and that range of choices is now proceeding through state public utility commissions, IRPs, and state energy planning processes across the country. That's going to be a big part of the question interacting with these federal rules and federal air rules, like EPA's pending carbon pollution standards for power plants, all of which help—and coal and then create space for what could be gas, could be renewables, could be efficiency, and will actually be some mix of all three, the scope of which will turn a lot on what we decide to do about carbon and how serious we get about it.

The other big question on consumption that I'll highlight is what we do about export, and Jason mentioned this briefly. There is at present a huge amount of export proposed before DOE, which is a radical shift—no one

thought this would happen—on the order, I believe at this point, of forty-sex percent of current U.S. production. Obviously, exporting all that would require major increases in production. Equally obviously, I think, all those terminals won't get built, but some percentage of them will, and the question is what do we do about that. Liquefied natural gas is how one exports gas, and it is actually quite carbon intensive as a form of gas. Depending on who you talk to, it's between thirty and forty percent more carbon intensive than ordinary gas, because it takes a lot of energy to cool and ship it. High-end LNG probably overlaps with low-end coal, but even if it doesn't, it's a lot of carbon we're exporting. Is that a good idea? What will it displace? Will it displace things, or will it just add to more carbon use elsewhere in the world, and how do we control it? There are big questions about DOE's authority and FERC's authority over that process: what they have to analyze before they make that public interest determination, and what degree it's a good idea to give up some amount of our domestic natural gas resources into this international market, which turns both on how we export carbon and how we reshape our utilities at home.

So having said all those questions, I'll say this. The natural gas boom is mainly an exceptionally mixed blessing. On the one hand, we have this resource to manage, which creates all sorts of fairly pressing production questions, but it also means that although we have an opportunity to depart coal, we face this risk of essentially doubling down on gas and missing climate targets that will cause enormous trouble over the next 50 years, century, two centuries. So I think that's the question we'll be talking about. Thanks.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Craig. Mr. Burcat.

JOEL R. BURCAT: Well, good morning, everyone. The other speakers have spoken largely about federal issues and overall issues, constitutional issues. What I thought I would do is focus a little bit more on state issues and a little bit more on why I as a person, who has been an environmental lawyer now for thirty-two years and someone who considers himself an environmentalist, why I feel very strongly that the proper place for the majority of regulation of natural gas development in the United States is with the states.

And I'm going to start out with a quote from a person I think very highly of, a great American and a great Secretary of DEP in Pennsylvania, Michael Krancer. Mike Krancer, in testimony to Congress in May of this year stated, as follows. He said, "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 already light-years ahead of the federal government in terms of experience and knowhow about their own individual states and about the science and technique of hydraulic fracturing." He goes on to say a little bit later on, he says, "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." And I feel very strongly that I agree with Secretary Krancer on his remarks, and his remarks, by the way, are quite lengthy. He goes into lots and lots of detail in those remarks to Congress.

But there are a number of points that I think that we need to talk about as to why this is important and why the proper place for the majority of regulations is the states. And we certainly have already heard why it is that there are certain federal issues and probably issues that ought to be federal issues, as Jason pointed out, certain constitutional limitations, certain concerns, as were raised by Craig.

To me, the number-one issue that we are facing right now, I believe, is North American energy independence, and you look at the ongoing tragedies that are going on right now in the Middle East, and you see the necessity for the United States being absolutely disconnected from Middle Eastern fossil fuels. The fact of the matter is, with any turmoil in the Middle East, what we need to do is we need to avoid the situation of having us be dependent, as we are so dependent right now, on Middle Eastern sources of fuel.

It's interesting for those of us with gray hair in the room or maybe no hair in the room. When we had the alternate day rationing that was taking place in New Jersey and New York as a result of the tragedy of the hurricane, it reminded many people–and in fact commentators said this on television–that it was reminiscent of 1973. And I remember that very well.

You probably weren't born, so I'm not even going to look at you on that one.

But I remember it quite well. I was a sophomore in college at the time, and I remember the long lines of cars across the United States. You saw this on television day in and day out while that was going on as a result of the oil embargo that took place. While certainly we don't want to have a repeat of what recently occurred and we certainly don't want to see that ever happen again, because of the turmoil that exists in the Middle East, the constant turmoil apparently, plus the threat to this country's national

security, it certainly seems to me that one thing we want to do is become energy independent. And while we're focused right now on natural gas, bear in mind that places like the Bakken shale, including Pennsylvania and Ohio, there are other places where oil is also accessible as a result of hydraulic fracturing. So I think that one thing we want to do is we want to move away from our dependence on Middle Eastern sources and foreign sources, and we want to really achieve North American energy independence.

It's been reported that the United States will become the biggest producer of oil within the next five' years That's been reported in the past week, and that's certainly to me a great change and should make a huge change to national security in this country, if nothing else.

I think that we would all agree that it would be great if we could see increasing amounts of the use of natural gas vehicles. I think we would like to see larger gas uses of automobiles, and I think that one of the things we need to do is that we need to be wary of the situation where I think the administration is attempting to assert increased regulation. And we really want to get away from that, I believe, and avoid the situation where the states, which are already doing an excellent job of regulating, are forced out of the field that they know so well.

We have two tragic situations that have occurred, one within the past couple of years and one just this week, where we've seen what's happened when the federal government has had sole regulation, such as in the Gulf of Mexico, and we know that that hasn't worked out too well in the BP Deepwater Horizon situation. There was no state involvement in that, and likewise, just the other day, the Black Elk Energy platform. While we of course pray for the safety of the workers and the responders in that situation and hope that everyone there is going to be safe and there aren't going to be any additional injuries, at the same time we see that the federal government is not a panacea when it comes to the regulation of energy production.

So, clearly, what we see now, with the discussion that we have had today and with the many, many federal initiatives that are going on, is that there is currently an ongoing charge by the current administration to have a usurpation of state regulatory authority, and one thing I think we want to do is we want to try to avoid that.

Let me give you a couple reasons why we ought to avoid that, and I have alluded to one of them, but let's start out with this. And that is, that unfortunately, when it comes to regulation within the United States, the federal government often takes a one-size-fits-all approach. Secretary Krancer stated that in his comments, it's been stated numerous times, whereas the states on the one hand are very, very familiar with the varying topography, the varying geology, the varying conditions that exist in their

individual states, and they can adapt to those individual conditions, it's a much more complicated process when you are issuing a nationwide regulation, even when that regulation attempts to exert a certain amount of flexibility. It's really an almost impossible task, and so, consequently, because there are such differences really from one region of a state to the next, it is very difficult I think to abide by the one-size-fits-all approach that the federal government often finds itself having to perform.

Another concern is that the reasons that a federal program might be established would be a situation where there is a perception that the federal government can regulate an industry better. And as I mentioned a few minutes ago, there are certainly legions of examples where that clearly has not occurred, even though there is that perception that they can regulate the industry better.

Another is a need to regulate. Another reason that the federal program might be established is a need to regulate on a regional basis as an environmental condition as regional impact, for example, such as air pollution or regional issues associated with the watershed. And as Jason pointed out a few minutes ago, there certainly I think will be a significant role for EPA and for other agencies in air issues, as air does not adhere to state and regional boundaries. Likewise where you do have regional watershed issues, I think we will see an increase in regulation, and I think there's an increase in justification for that.

But, you know, in places like Pennsylvania and in other places, we already have river basin commissions. For example, in Pennsylvania, we have the Susquehanna River Basin Commission, and the Susquehanna River Basin Commission covers large sections of Pennsylvania, New York, Maryland, and into the Chesapeake Bay. And that River Basin Commission exerts regulatory authority over hydraulic fracturing, over drilling, and over the use and discharge of water. Likewise, on the eastern part of Pennsylvania going up into New York, we have the Delaware River Basin Commission, and the Delaware River Basin Commission covers, again, New York, Pennsylvania, but also New Jersey and Delaware. And the federal government plays a role in this, as well. Professor May alluded to the Compact Clause. Those commissions are formed as a result of the Compact Clause in the Constitution, and those commissions have been in existence and actually right now I think are probably exerting authority that was written into those compacts some fifty years ago or so, that to a large extent, they have never really utilized in the past. But those authorities already exist in many instances to cover regional issues. And I think we'll see perhaps a greater push on the federal side to establish regional regulatory bodies like that.

Another reason why state regulations are preferable federal regulation is that it may be necessary for the full-scale development of a regulatory program to regulate an industry. But the problem with that is that it would require an enormous bureaucracy to do that and I think with literally thousands of employees. So if we had a situation where there was no regulation, we had a new industry that had no regulatory structure in place today, you could say, well, gee, we need a federal program to come in and to take over and to be responsible for this. But what we have seen, for example, with oil and gas is that the states have been regulating oil and gas development within their boundaries since there's been the extraction of oil and gas in those states.

Pennsylvania, first law in the books is in the 1850s. That's over 150 years ago that we've had laws on the books, and we've had a regulatory structure in place. Pennsylvania over the past four years has doubled the size of the bureaucracy within Pennsylvania DEP that deals with oil and gas regulation. There are over 200 employees today dealing with permitting and enforcement issues, when just a few years ago we had 100 and a few years before that perhaps forty or fifty employees to deal with the much larger needs of regulating this industry, which has been growing so quickly. But if we were to have a federal overlay, we would need a much larger bureaucracy either within EPA or the Department of Interior or perhaps within both, and we don't need another large federal bureaucracy. Even utilizing programs like the Primacy Program, which we see in NPDES permits and other permits as well, even with that kind of an overlay, you still need a federal bureaucracy to manage and to have oversight over these state programs, and to me, that's just an unnecessary expense at this point.

Finally, I just want to touch base on a couple of issues. There are some main concerns I think that states have, and I think the states are handling these, I'm going to say, either reasonably well or very, very well. And these issues would be issues such as well construction. I think that that's an important issue that you have to understand: that every state–if it doesn't have actual construction requirements regarding the actual drilling of the well–has requirements regarding the casing and cementing of these wells, and these are requirements in fact have been growing stronger and stronger. Pennsylvania's new Act 13 actually came into effect after a stronger regulation went into effect, and I know that Pennsylvania will be promulgating stronger regulations yet on well construction.

Chemical disclosure. I think one of the mistakes that industry made a few years ago was vigorously challenging and pushing off chemical disclosure, but now what we've seen is that eighteen states have mandatory disclosure requirements, and these disclosure requirements are easy enough for any of us to find. There is an organization called FracFocus.org. You go

onto their website, and you can see what has been utilized at any well site in those eighteen states, and others are doing it, even where they're not in those states, on a voluntary basis.

I think the states also have a concern regarding protection of water quality. I know that Pennsylvania has taken this role very seriously. There have been cases that have been referred criminally, so that we now have criminal prosecutions relating to the oil and gas industry. We have had criminal prosecutions in water quality issues for many years, but we also have extensive water quality investigations and extensive water quality enforcement actions that have been taking place in Pennsylvania and at other states as well.

Another concern at the state level I think is transparency of state programs. One of the things we've seen–and I focus again on Pennsylvania, which is where I am from–is that compliance and inspection in Pennsylvania is now, I would say, at an all-time high in terms of information being transparent. There was a time in Pennsylvania way, way before the oil and gas boom, the Marcellus boom, when it was much more difficult to obtain government documents. In fact, the law which is called, and still is called, the Right to Know Act, sometimes we refer to as the "Right Not to Know Act," but the Right to Know Act has been improved over the past five or six years, and the Right to Know Act in fact requires disclosure of virtually all government documents with a relatively small number of government documents that do not have to be disclosed. And the burden is now on the government to be able to show that a document should not be disclosed, rather than on the person seeking disclosure. And there is a Pennsylvania Office of Open Records, and what we're finding is that there's just a gigantic number of requests and a gigantic release of documents. So we have a lot of transparency in our state programs.

Just one last point and I'll make this to instill a little bit more controversy into our program today, and that's the position of NGOs such as the Sierra Club. Understand that the debate, I don't believe is about how much natural gas use should we allow between industry and NGOs, but there is a document that the Sierra Club has released back in May called Beyond Natural Gas, and their executive director–this is Michael Brune–said, "We are going to be preventing new gas plants from being built wherever we can. The closer we look at natural gas, the dirtier it appears, and the less of it we burn, and the better off we will be." Clearly, the goal of NGOs is to stop the use of natural gas, and certainly we all applaud energy efficiency. I think there's a huge role for wind. There's a huge role for solar, but I think we have to recognize that there is also going to be a huge role for natural gas. And that natural gas has been able to do what years and years of politicians talking and legislation coming on the horizon trying to

reduce the amount of dependence on coal and other forces and other sources of hydrocarbon-based energy, natural gas has been able to do what all that legislating and all that discussion hasn't been able to do, and that has been to displace coal in particular as a source. And we're seeing a greater and greater reduction in the use of coal across the United States today, specifically as a result of natural gas.

Just one last point that I just have to make because it's relevant to last night's discussion. Last night when we heard a very interesting presentation from Mr. Thiel, he was talking about the fact, he was saying very little innovation, not a whole lot of innovation over the past decade or so; in fact, I think he said the past forty years that level of innovation has been way, way down. I think I could argue with him on a number of different points regarding that, but certainly when you take a look at natural gas and oil production in the United States, who would have thought ten years ago when they were talking about peak oil and peak natural gas in the United States, who would have thought that today we'd be sitting on—in Pennsylvania, for example–a reserve of natural gas that's the second largest in the world. Who would have thought that the cost of natural gas would be so low that it's actually driving coal out of business? Who would have thought with natural gas today, with the innovation and the combination of horizontal drilling and hydraulic fracturing, who would have thought that the innovation that's involved in that very, very technical use of science, who would have thought that we'd be seeing today these great, great possibilities on the horizon? And not just on the distant horizon. They're right here.

So I'm all in favor of it. I think we've got great, great innovation that's going on right now, and I'm hopeful that the states will be allowed to do what the states can do best. Thank you.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Joel. Thank you, panel.

What we're going to do next, I'm going to allow some responses by the panelists, and then we will take questions from the audience. As we get started here with this round, if you have a question, go ahead and move up to the microphone in the center there, and I will get to you.

I think I will turn first back to Craig. Joel made I think two points that I'd be interested in your response to. First was this overall question that natural gas, of course, is a fossil fuel, and to the extent fossil fuels are contributing to global warming, that even a little use of natural gas can get in the way of a larger goal, first point.

The second point is he made a spirited argument that the best regulation is state and local regulation in this area, and I wonder if you agree with that or you have a different point of view.

CRAIG SEGALL: I do have a different point of view. So let me take the second point first, and I think what's striking is what Joel just outlined bears basically no resemblance to what the federal government is actually doing. No one is talking about EPA issuing permits for every gas well in the country. No one is talking about a bureaucracy of that size, and it's certainly not what EPA is talking about. Lisa Jackson herself has said that.

What we are talking about is the reestablishment of the federal baseline standards that apply to virtually every other industry in this country. Yes, it's true. Conditions vary from state to state. They vary from locality to locality, but that's true basically for everyone else. The oil and gas industry is not such a special snowflake that it cannot be regulated by federal standards, so what are the feds actually doing? They are applying mostly industry's own best practices through EPA's air rules as a baseline across all the states. Many of those states did not have those rules, and it's cleaned that up. They are providing extremely basic and quite general standards around casing and cementing. They will hopefully do the same around waste and disclosure. These are not, and I don't think should be, either controversial or particularly overreaching. The states will remain as they have remained under all federal environmental statutes, the arbiters of individual permits and most enforcement. That's just a true thing.

So I think the specter of some sort of looming federal regulatory rush that will profoundly change the industry just isn't so. You see that in the actual cost estimates for these regulations, which are small, small percentages of not actually cost-positive, but you get to capture the gas you don't emit. You see that in the ongoing expansion of the boom. There is just not a real threat from federal regulation of the sort we are talking about, which is largely focused around waste, water, and air quality standards, to either displace the states in a meaningful way or to slow the boom. It just will not happen. That is not what the government is about, and if you paid attention to the President during the debate, you will know that's not where he's focused. If anything, we think the administration is often too positive on natural gas. This is not an area where the feds are rushing in to block the industry. They are trying to catch up and get the baseline standards in place they didn't have in place, because the industry sought exemptions for years that have in many cases result in serious accidents.

And I will just add, I think describing the Macondo disaster as a fail as an indication by state regulation is better than federal is really disingenuous. I tend to think the worst environmental disaster in American history for

which BP just pled guilty to counts of manslaughter and criminal destruction of Congress is actually a better indication that this industry, like any other industry, has serious problems or can have them and warrants close watching. They have done real damage, and it makes sense to get baseline standards.

Now, as to the climate question, look, we've run these numbers, and, you know, one of the real tragedies of where we are and how slow our climate response has been is the atmosphere is seriously out of balance. We are way over where we need to be in terms of CO concentration and methane concentrations, and one of the consequences of that is the sort of emissions reductions that natural gas offers, while substantial with regard to criteria pollutants–and there I think that is really something we ought to be talking about–are not substantial enough in terms of carbon reductions to get us where we need to go. They don't reduce temperatures fast enough or enough. Does that mean we use no natural gas? No. But it does mean that when utilities are making these decisions, they have often left huge amounts of efficiency on the table. Your first response shouldn't be to increase your emissions. Your first response should be to figure out how to reduce demand and load. It's cheaper, often by billions of dollars, in terms of net present value as you look across the decades, and it's more effective. It's also often a better source of jobs, because you are talking about large-scale energy efficiency retrofits and industrial changes. So that's where we want to go, I think.

JUDGE TIMOTHY M. TYMKOVICH: Thank you. Professor May.

PROFESSOR JAMES R. MAY: Do you have a question, or would you like me to—

JUDGE TIMOTHY M. TYMKOVICH: Comment on what you just heard.

PROFESSOR JAMES R. MAY: Sure. Okay. Look, I think this is really a fascinating topic, and it's been a terrific panel to be a part of, so, again, I want to thank you.

There are certain dichotomies going on here. We have these sort of cognitive dissidents. Now, for folks who think that the federal government is poised to usurp local control, I just see it differently. I don't think the federal government right now or in any time in the near future is poised to displace state and local control over something that's been controlled that you'll mention since the 1850s.

I do see interest in federal involvement at the margins for things that involve interstate commerce, for things that involve national security and

safety, and I think that's the role that the federal government should be considering with these kinds of issues, but we all can't have it both ways. Concerning states' rights, the other part here to consider is for folks who are proponents of state regulation from stem to stern of oil and gas and particularly hydraulic fracturing, then why the push through state legislatures around the country, including in places like Harrisburg and in Albany, to preclude local control, local land use control? So, it just seems to be inconsistent to tell the federal government to stay out because it's a state matter, and then to tell the subnational units that they can't do it, either. I mean, that just seems to invite capture, and so I think under our constitutional system, it needs to be avoided.

The second thing is about national control. Folks who are pushing for national control, again, there's dissidence there because–Joel is right–oil and gas has traditionally been a matter reserved for state control, and it's been recognized under the Tenth Amendment, all the way back to Justice Holmes's remarks Pennsylvania Coal v. Mahon. It has been recognized, is recognized as traditionally a state function under state police power. So to get involved in that arena, it raises constitutional friction.

And last, concerning the remarks about NGOs, first of all, not all NGOs are opposed to horizontal gas drilling. A lot of NGOs are proponents of it, including environmental public interest groups. So picking out Sierra Club, that's one, right. But there is, again, cognitive dissidence. For the NGOs who were opposed to horizontal gas drilling and domestic production of natural gas–and this is a question that sometimes doesn't make me the most popular person in the room when I talk to my friends on the NGO side of things—as opposed to what? What are you going to replace it with? Nuclear power or–those of you from Texas, my apologies–nuclear power? You know, what else are you going to do? So, this is a domestic supply that's available, and if the engineering can be accomplished, then it can help to provide for a sustainable energy future for you, for my kids, for your grandkids, and so on. It can help. It can be a bridge fuel to conservation and some other renewable energies and engineering that can be used in the future.

Last thing is along the lines of making, but I think the bottom line is it has to be done safely, and the engineering exists. That's my opinion. You might disagree with me, but I think at least on this panel, I have heard agreement about that. The engineering exists to make it safe, but that's first. Second, some places in this country–again, I might disagree with some remarks you've heard–it isn't safe yet. There are problems. There's water contamination. There's surface water contamination. There are air pollution issues. There are issues about the casement, where the casement standards are different from state to state. It's the "Wild West," some people have

described it. So, as an engineer and as a lawyer, how do you advise your clients, and how do you meet design requirements? That's where the federal government, that's where I see a niche for the federal government to come in concerning casing and cementing and monitoring and disclosure requirements, to level the playing field across the country so that we don't have this feeling of a huge gap between what's being done from state to state to state.

JUDGE TIMOTHY M. TYMKOVICH: Thank you. Jason?

JASON B. HUTT: Well, I agree with Jim that natural gas is a glidepath to a low-carbon economy, and I don't think it's realistic to think that you can leapfrog yourself to a low-carbon economy. I just don't think that's realistic, and I think this is a gift in that sense, that it is domestic to get there as opposed to a dependence on foreign natural gas.

With respect to the engineering, I want to go back to the discussion about the diesel guidance, because that's coming out here in December. This is an excellent example, because I talked about the fact that the industry is not using the diesel anymore. So, why is EPA spending so much time and energy on issuing the guidance? Well, the guidance is about the design, casing, and cementing standards associated with a well in order to keep what's inside the pipe, the diesel, from going outside the pipe to the environment. What EPA will say and what the states will have to take notice of is that these standards that are designed to keep one fluid from inside the pipe from getting outside the pipe need to be seriously considered for every other type of chemistry that's inside the pipe that you don't want to go outside the pipe So, this isn't really about the use of diesel at the federal level and bringing those standards to bear. It's about what the engineering standard should be, and this is going to be the way in which EPA uses its existing authority from Congress to begin to explore that realm.

With respect to these local moratoriums and bans, I would be more impressed and take more note if a locality or a municipality or a city banned the use of natural gas that came from hydraulic fracturing as opposed to banning hydraulic fracturing within their jurisdiction, because that actually takes recognition of what their dependence is on the fuel source and what it means to their economy.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Jason.

Let's go ahead and take questions from the audience. Go ahead and identify yourself and also direct to whom your question is presented, and please keep your questions relatively brief. Thank you.

JOHN R. HAYS JR.: Sure. I am John Hays. I am one of, I guess, that sorry cast of characters. I happen to be both from Texas and an oil and gas lawyer, and I teach a course called Energy Law and Policy at the University of Texas Law School.

My question concerns the federalism issue, since this is The Federalist Society, and I guess the question would be, in the first instance, directed to Professor May. I certainly have not seen a hue and cry to have uniform federal standards for drilling and casing, and indeed, there are a lot of localized issues dealing with formations in particular circumstances. That's one of the reasons why we are working with folks to file comments on Railroad Commission rulemaking, updating the casing rule this coming Tuesday. It's being very actively looked at.

I can't resist, and I am not going to speechify here, but I want to throw out a few facts. People talk about water as if fracking is a huge problem. The average frack job uses about 4.5 million gallons of water. That's the amount of water used to irrigate a golf course for twenty two days, to grow 6.75 acres of corn a season, or to run 1,000-megawatt coal plant for eleven hours. So, we need, and I guess the other question, perhaps Mr. Hutt, is how we can bring honest factual knowledge to these discussions. Knowledge, such that when we talk about the impact on global climate, assuming it's having that impact—and I don't even get into that—we tend to forget that China is bringing on one new coal plant every week.

JUDGE TIMOTHY M. TYMKOVICH: Okay. Let's go ahead and get to the question, one for Professor May and then one for Mr. Hutt.

JOHN R. HAYS JR.: Sure, sure.

JUDGE TIMOTHY M. TYMKOVICH: Thank you.

PROFESSOR JAMES R. MAY: Okay. Well, I'm going to just start, if you don't mind.

JUDGE TIMOTHY M. TYMKOVICH: Go ahead, Jason.

JASON B. HUTT: I mean, how we bring it is better information. I agree with your point. It's about water efficiency, and the troubling part for the industry is that they are the late comer. So, if you have a finite pool of water

in a jurisdiction, you're the marginal user if you're the last comer to that jurisdiction. So, when you talk about it in sheer volume, it is very dramatic, but when you talk about it in terms of water efficiency, natural gas is a highly efficient fuel.

How do you accomplish educating the public? I am putting on a suit and tie on Saturday and coming out here and talking about it, and I am going to keep talking about it until we clear it up.

JUDGE TIMOTHY M. TYMKOVICH: Thank you.

PROFESSOR JAMES R. MAY: To second that, I was at a National Judicial College conference last week trying to talk facts and what have you, as well, but facts are facts, right? And then there is disagreement about what those are from place to place and what have you.

Now, concerning your remark about casing and cementing and there is not a hue and a cry, maybe this is a west-of-the-Mississippi/east-of-the-Mississippi kind of thing. But there is discussion, and a hue and cry is over, I don't want to exaggerate, but there's a lot of discussion about trying to standardize–including from industry, from my friends in industry, from engineering friends in industry–cementing and casing requirements somehow, including to reflect local geography and what have you from the national level. So, I do see that occurring at least on the East Coast right now.

I don't know if, Joel, you have been hearing any of that kind of a push for federal standards for casing and cementing?

JOEL R. BURCAT: In Pennsylvania, we've got pretty strict standards for casing and cementing, and the whole notion of casing and cementing to me, though, really belies the whole concept that there is no push to have a massive federal program. You can't simply say as the federal government, we're going to have a casing and cementing requirement and then just throw it out there. There has got to be a mechanism for making sure that the states in fact are enforcing that program, and there has got to be a mechanism of oversight. Ultimately, I think there could be a permitting mechanism. So, I think that we could very well see the elephant's nose under the tent before too long.

JUDGE TIMOTHY M. TYMKOVICH: Let's take the next question, please. Thank you.

TYLER WARD: Hi. My name is Tyler Ward. I'm a 3L at Vermont Law School, but I'm from Kentucky where we produce both coal and natural gas.

JOEL R. BURCAT: By the way, this just goes to prove that Vermont is in fact taking over D.C., so welcome.

TYLER WARD: My question is both to Professor May and to Mr. Burcat. I think recently, arguably, there's been no usurpation by the federal government, except recently the EPA vetoed thirty six 402 permits, because the 404 permits were already issued. It was unprecedented in vetoing the thirty-six 402 permits for coal mining operations.

So, in doing that, are you worried that this type of power grab by the federal government of properly issued permits by states is something to be concerned about?

PROFESSOR JAMES R. MAY: Okay, a couple things. First of all, you are from Vermont, and so just for whatever it's worth, Vermont is the only state in the United States that has banned hydraulic fracturing. Now, other states have in Australia, New South Wales, and Victoria. Provinces in Canada are looking into it, but Vermont has banned hydraulic fracturing.

Now, the sideline to that, I'm told anyway, I am told it doesn't have any shale gas.

PROFESSOR JAMES R. MAY: Oh, there's that.

JUDGE TIMOTHY M. TYMKOVICH: They didn't make it easier, but they won't get the gas next either, under your previous point.

PROFESSOR JAMES R. MAY: Right.

ATTENDEE: Ban surfing.

PROFESSOR JAMES R. MAY: What? I'm sorry?

ATTENDEE: Ban surfing.

PROFESSOR JAMES R. MAY: Ban surfing, that's right.

JUDGE TIMOTHY M. TYMKOVICH: Actually, Lake Champlain has great waves.

PROFESSOR JAMES R. MAY: So, concerning the question regarding federal involvement, again, maybe my alarm clock hasn't gone off yet concerning horizontal shale gas drilling and federal involvement, but I don't see it yet. Not that the yet means that it's imminent. Yes, it has EPA's attention. EPA is more and more involved. There are some examples where EPA gets involved and vetoes permits, including concerning surface mining runoff and coal excavation, but come on, you know, we've had a Clean Water Act for forty years, and you can count the number of permits that EPA has vetoed coming out of the 404 program on your fingers and toes and if you have a couple of kids, theirs too. Over forty years, that's it. So I don't see it.

JUDGE TIMOTHY M. TYMKOVICH: Joel?

JOEL R. BURCAT: Just the only thing I will add to that is I think that based on the proposed regulations, based on the discussion out of Washington, and certainly based on the investigations that EPA is currently involved in, it certainly has all the indications of a federal program on the verge. And, I'm sure you've taken Professor Firestone's environmental law class, which I believe he's still teaching and was teaching when I was there many, many years ago. One of the things that you learn, of course, is that federal programs don't start out, generally speaking, with a gigantic program. They start out small, and often there may just be an investigation that's undertaken by Congress or by a government agency, and then over time, that program grows and grows and ultimately develops into a larger program.

So, I believe that we are seeing an effort being made right now. We're seeing the forward edge of a potentially very large regulatory program.

CRAIG SEGALL: And, if I could just add, you know, you would want the federal government to pay attention to this, regardless of how you happen to feel about fracking and natural gas use. You are talking about tens of thousands of wells and a major expansion of the industry that has been, as everyone has observed, fundamentally shifting international energy landscape and a lot of the basic pollution control priorities EPA has. It would be startling if the feds were not trying to better understand this, and I'd say racing forward with a study that won't be out until 2014 and air rules that were last updated in 1982 does not to me strike one as a rush to regulation.

PROFESSOR JAMES R. MAY: If I could, Joel, the framers of the Constitution, this is what again troubles me. Again, we're all making this

up as we go along. It's a brand new area, right? That's what makes it so fun. We have a republic where we split the atom of sovereignty. We leave some degree of control to the federal government in so many facets of regulation. We also have the 10th Amendment that ensures that the states have certain reserve powers, but at the federal level, the Supreme Court has long recognized and in the Federalist papers that there is a role for the federal government in certain–and there, I'm going to get myself in trouble because I'm at The Federalist Society–areas of society. So, if not a matter that concerns national security, climate change, safety, and 1.5 million facilities across the country, I mean this rhetorically, but then what? I am not making a pitch for federal control. I just mean it seems like questioning whether Congress has the authority to get involved and EPA has the authority to get involved, again, I just wonder about that.

JUDGE TIMOTHY M. TYMKOVICH: Question.

ROD SULLIVAN: Yeah. I'm Rod Sullivan from Florida Coastal School of Law. You know, we are in an energy global climate change problem now. Our global footprint is bad because of our use of coal, but we tend to forget that our use of coal was brought about by the 1973 federal policy of subsidizing coal plants. Now, we're going to embark upon a policy of subsidizing or approving the use of natural gas, and I wonder whether or not twenty years from now, maybe not myself, but other people in this room may be meeting to discuss the incidental releases of natural gas that are talked about in movies like Gasland and Promise Land, and natural gas having a CO2 equivalency that's fourteen times more potent than CO2, whether we might not be exacerbating the problem of global climate change.

The last question and the most controversial, I guess, is this: If you're an environmentalist who is truly concerned about global climate change, isn't the overall solution nuclear power as opposed to natural gas or wind or solar?

JUDGE TIMOTHY M. TYMKOVICH: Is that for Craig?

CRAIG SEGALL: I'll take it. So, two points. First, as to gas, I mean, I think that's the right question, and let me talk a little more concretely, both as to that and as to the nuclear question about where I think it's actually going.

So, gas plants are fairly unlikely to be limited by most of the current federal air quality standards. They just aren't big emitters of mercury or of SO2. They do with some NO2 issues. What that means is that the gas plant

discussion will take place in two contexts. The first is in the context of federal carbon policy where we have EPA now beginning to get carbon standards for new plants, and one thing we have really pushed them on is to make sure that the standards they're setting for new gas plants keep those plants as efficient as possible, and that on the upstream side, they are both measuring and controlling methane leaks as much as possible, the idea being if you are going to burn gas at all, you shouldn't be doing it with little combustion turbines. You should be doing it at basically top-flight efficiency, and you should be moving toward carbon capture to the extent that's possible.

Now, the question of nuclear, you know, nuclear may wind up having a role here. The Club's formal position is not one of opposition, but they are really concerned, one, about the waste and, two, about the relative capital cost. In the near term, we are looking at two to three years from which a large chunk of national coal capacity will be retired, on the order of a third perhaps. Now, that's capacity, not use, most of the older, less-used plants going down. So, our first wave of policy priority at the Sierra Club–and this goes to the question of what does the bridge mean and how do you actually wind up with a bridge rather than a cul-de-sac towards something that's really low-carbon–is, okay, every time one of those plants goes down, let's get involved in the IRP, the integrated proceeding for that utility, and figure out what is the efficiency potential, what can they do with purchase power for renewables, what do you need to make up in terms of maybe increased gas use of existing as plants, if you need to build new, what's cheap and relatively low-carbon. Nukes for the most part show up just in the Southeast as realistic possibilities of new plants. There are a few that TVA is considering. There is one plant, Levy, that Progress is considering in Florida. Right now, they're pretty far off in the horizon. So, right now, in those two to three year windows, our priority has really been trying to leverage energy efficiency up.

And just one last point on that. In a lot of especially the Southeast, where nukes are the biggest possibility and we also have a lot of existing coal, utilities are not doing well in efficiency. It's around 0.3 percent savings a year, 0.5 percent savings a year. National lead represent around two percent savings as year, and I would say show me a business that can't get one percent better a year, which is what you need in most cases to replace a lot of these coal plants. We just did this for TVA. They can take 1,500 megawatts of coal offline, save the money that they spend over, I think it's $10 billion on scrubbers, if they spend about half that on efficiency. They just haven't done it, just to get to one percent. So, that's where we're building our house for this next five years. You just get a lot out, and then the next wave, you know, the next two-thirds of coal plants,

that's where you start getting interesting questions about baseload; how well can you engineer the grid to balance renewables and have better energy storage? So, you don't need big baseload capacity like nuclear or new gas, but it's this engineering problem, how do you reengineer the grid as you move? And the first tranche of that is getting the oldest, dirtiest coal off and replacing it as much as possible with zero-carbon options and then looking to the next tranche where it gets harder is the problem, gets more and more interesting and considerably harder the deeper you go in changing the grid.

JUDGE TIMOTHY M. TYMKOVICH: Good question, and unlike many Federalist Society presentations, we will let the Sierra Club have the last word.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, panel.