S. HRG. 110–1114

A PERSPECTIVE ON THE ENDANGERED SPECIES ACT'S IMPACTS ON THE OIL AND GAS INDUSTRY

FIELD HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

AUGUST 23, 2007—TULSA, OK

Printed for the use of the Committee on Environment and Public Works

Available via the World Wide Web: http://www.access.gpo.gov/congress.senate

U.S. GOVERNMENT PRINTING OFFICE

61–983 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 ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED TENTH CONGRESS
FIRST SESSION

BARBARA BOXER, California, *Chairman*

MAX BAUCUS, Montana	JAMES M. INHOFE, Oklahoma
JOSEPH I. LIEBERMAN, Connecticut	JOHN W. WARNER, Virginia
THOMAS R. CARPER, Delaware	GEORGE V. VOINOVICH, Ohio
HILLARY RODHAM CLINTON, New York	JOHNNY ISAKSON, Georgia
FRANK R. LAUTENBERG, New Jersey	DAVID VITTER, Louisiana
BENJAMIN L. CARDIN, Maryland	JOHN BARRASSO, Wyoming[1]
BERNARD SANDERS, Vermont	LARRY E. CRAIG, Idaho
AMY KLOBUCHAR, Minnesota	LAMAR ALEXANDER, Tennessee
SHELDON WHITEHOUSE, Rhode Island	CHRISTOPHER S. BOND, Missouri

BETTINA POIRIER, *Majority Staff Director and Chief Counsel*
ANDREW WHEELER, *Minority Staff Director*

---

[1]Note: During the 110th Congress, Senator Craig Thomas, of Wyoming, passed away on June 4, 2007. Senator John Barrasso, of Wyoming, joined the committee on July 10, 2007.

C O N T E N T S

A PERSPECTIVE ON THE ENDANGERED SPECIES ACT'S IMPACTS ON THE OIL AND GAS INDUSTRY

Thursday, August 23, 2007

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 10 o'clock a.m. in Courtroom 1, U.S. District Court, 333 West 4th Street, Tulsa, OK, Hon. Barbara Boxer (chairman of the committee) presiding.

Present: Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator INHOFE. The hearing will come to order. And first of all, today's hearing is about the oil and gas industry, an industry that's absolutely essential to Oklahoma.

The oil and gas industry represents 10 percent of our gross State product and employs more than 55,000 Oklahomans. For the past 15 years, Oklahoma's oil and gas producers have paid production taxes in excess of $400 million annually. This money funds schools and roads and health services and other services. So a healthy oil and gas industry is critical, not only to the livelihood of Oklahomans, but to the Nation's overall energy security. For example, 10 percent of the Nation's natural gas reserves are in Oklahoma, and for the past 2 years, the industry has produced energy valued in excess of $10 billion.

Now some of our witnesses may not be aware of this, but I actually started out in the business, I think, Mr. Sullivan, you're aware of this. Since I'm older than everybody in this room, some of you won't know what I'm talking about when I tell you that I was a tool dresser on a cable tool rig, and that is in the Osage field up there, so I drilled an awful lot of that shallow stuff up there, and that's hard work, but it's certainly essential to our economy, and you can see some rebound taking place right now.

It's more important than ever to foster the domestic development of oil and gas resources. Today we'll hear from witnesses about how the Endangered Species Act has impacted that production.

Enacted in 1973, the ESA, Endangered Species Act, remains one of our most celebrated environmental laws despite the fact that it has not reached many of its stated objectives and has cost the country billions in the process.

For example, a 2004 Department of Energy report on natural gas, and without objection, that will be a part of the record, stated that "Critical habitat designations and section 7 consultations under ESA have caused enormous delays to natural gas projects with an estimated cost to the economy of $261 to $979 million over the past 30 years." And that's a lot. In Oklahoma, the ESA protection of the American Burying Beetle has proven a formidable barrier to oil and gas exploration, production and distribution. The American Burying Beetle was listed in 1989 based on museum collectors' data. Nearly 20 years later, actual field data showed that the populations of the beetle were and are very extensive.

According to the Fish and Wildlife Ecological Service, there may be more than 72,000 beetles in Oklahoma alone. And this doesn't sound like they're endangered of extinction to me.

But the lack of robust science in the listing process is not the only issue. The conservation policies have also taken their toll on the energy industry. As we will hear from one of our producers today, a long-standing policy for winter oil and gas construction activities in Oklahoma was suddenly changed without notice to the industry, costing millions of dollars, and unfortunately, changing the rules in the middle of the game; it's become more of a rule than an exception.

Earlier this year we got a bit of good news. The Service announced it would begin a status review of the American Burying Beetle, something the ESA requires the Service do every 5 years. The beetle has been waiting for 13 years. And I hope the Service will have some answers for us today about what they have learned and when we can expect some decisions.

The problem goes beyond the oil and gas industry to the consumer, who ultimately pays the price. For example, over regulation drives up natural gas prices for farmers and ranchers, another industry critical to Oklahoma.

Natural gas accounts for 90 percent of the total—actual total costs of manufacturing fertilizer, an obviously important component for farming. And we'll hear today from the Farm Bureau. We've discussed this many times, that people are not aware of the connection between natural gas and our Ag community.

Since 2000, 24 nitrogen fertilizer plants have shut down, and that leaves only six remaining. Some people are not aware of this, but two of those six are located here in Oklahoma.

Oklahoma's farmers get hit more than once. They not only face increasing natural gas prices, but have ESA issues of their own.

In an attempt to be good stewards and to avoid the burdensome designation of the critical habitat of the Arkansas River Shiner, the Oklahoma Farm Bureau created a voluntary species management plan. Today we'll hear how that project is going.

You know, I always remember, when we were talking about that, we had—the Ag leadership happened to come in the room and hear what we're up against there in Washington, I say to you Tom, and so I want you not to be shy in your testimony today.

Sadly the ESA is just one of a host of laws, although well intended, frustrate domestic energy production in this country.

After decades of activist judges and lawsuits by anti—energy special interests, environmental laws are not used to ensure that

human actions do not harm the environment, but are used to stop human activity altogether.

These interests don't believe what all Oklahomans know to be true, and that is that we can develop our energy resources without sacrificing the environment.

I'm proud that Oklahoma leads the rest of the country in so many ways when it comes to energy exploration, production, and research as well as the protection of the environment. The Oklahoma Energy Research Board, for example, is a model for many other States.

The fact of the matter is that this engine we call "America needs energy to run." If our domestic oil and gas producers are prevented from producing that energy, then businesses are hurt and people lose their jobs.

Here are just a couple of examples: According to the American Chemistry Council, one out of every ten chemical—related jobs has vanished in the last 5 years.

The first—the America forest and paper industry has lost more than 120,000 high paying manufacturing jobs and closed more than 220 plants.

In fact, the Pacific Northwest timber industry was essentially shut down some 10 to 15 years ago to protect the Northern Spotted Owl. And it's now thought that many of the spotted owl's problems were not from logging, but due to competition for food and habitat from other owls.

The obstacles to efficient development of our natural resources are many. Most of them have nothing to do with scarcity of resources, but are created by those in Washington DC who say they dislike relying on foreign oil but do everything to prevent domestic production.

You know, that's one of the greatest frustrations I have coming from an oil State, to be there serving with some of the people in Congress, listening to individuals talk about how bad it is to be relying on foreign resources, then turn around and do everything they can to keep us from producing. And this is something that we face every day.

When Congress resumes in September, we'll have a conference committee to reconcile the differences between the Senate and the House energy bills.

And I say "energy bills," even though they're not energy bills. The House Energy Bill is a lousy bill, the Senate Energy Bill is a lousy bill, and I don't know how we can expect anything out of conference because of the rules that we have. They can't go beyond the purview of the House and the Senate, but we're going to try to do better in the years to come.

And I want to welcome all the witnesses and look forward to sharing your wisdom with my colleagues and Congress on both sides of the aisle.

As I said to you before we started, the value of these hearings is, we are able to get testimony and get it into the record and heighten the visibility of this problem that we have right now.

We have a number of great witnesses today. We start off with Dr. Ben Tuggle who's the Regional Director of the U.S. Fish and

Wildlife, took the place of Dale Hall, who's been a good friend of ours for many times.

We have Tom Buchanan on behalf of the Farm Bureau. Bob Sullivan, a very good friend with the independent producers. Dru Bower-Moore, the Regulatory Advisor, Western Division of Devon. And as I told Dru, I was in Devon on Monday and enjoyed visiting with probably 200 or 300 of their employees. And Jim Haught, the manager of ONEOK.

Well, let's start off—and what I'd like to do is have each person, if you would, take one panel at a time starting with Dr. Tuggle. If you'd try to restrict your opening remarks to 5 minutes, and we'll have a timer up here, that would probably help us.

Your entire opening remarks will be made a part of the record. And we'll recognize you at this time, Dr. Tuggle.

[The prepared statement of Senator Boxer follows:]

STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Good morning. Today's hearing is about the oil and gas industry, an industry that is absolutely critical to Oklahoma.

The oil and gas industry represents 10 percent of our gross State product and employs more than 55,000 Oklahomans. For the past 15 years, Oklahoma's oil and gas producers paid production taxes in excess of $400 million annually. This money funds schools, roads, health care and other services. A healthy oil and gas industry is critical not only to the livelihood of Oklahomans but to the Nation's overall energy security. For example, 10 percent of the Nation's natural gas reserves are in Oklahoma and for the past 2 years, the industry has produced energy valued in excess of $10 billion.

It is more important than ever to foster the domestic development of oil and gas resources. Today, we will hear from witnesses about how the Endangered Species Act has impacted that production.

Enacted in 1973, the Endangered Species Act remains one of our most celebrated environmental laws despite the fact that it has not reached many of its stated objectives and has cost the country billions in the process. For example, a 2004 Department of Energy report on natural gas (insert into the record), stated that critical habitat designations and section 7 consultations under ESA have caused enormous delays to natural gas projects with an estimated cost to the economy of $261 to $979 million over the past 30 years.

In Oklahoma, the ESA protection of the American Burying Beetle has proven a formidable barrier to oil and gas exploration, production and distribution. The American Burying Beetle was listed in 1989 based on museum collector's data. Nearly 20 years later, actual field data show that the populations of the beetle were and are very extensive. According to the Fish and Wildlife Ecological Service, there may be more than 72,000 beetles in Oklahoma alone. This doesn't sound like a species that is "in danger of extinction."

But the lack of robust science in the listing process is not the only issue. The conservation policies have also taken their toll on the energy industry. As we will hear from one of our producers today, the long-standing policy for winter oil and gas construction activities in Oklahoma was suddenly changed without notice to the industry, costing millions of dollars. Unfortunately, changing the rules in the middle of the game is the rule rather than the exception when implementing ESA.

Earlier this year, we got a bit of good news. The Service announced it would begin a status review of the American Burying Beetle; something the ESA requires the Service to do every 5 years. The beetle has been waiting for 13 years. I hope the Service will have some answers for us today about what they have learned and when we can expect some decisions.

The problem goes beyond the oil and gas industry to the consumer, who ultimately pays the price. For example, overregulation drives up natural gas prices for farmers and ranchers, another industry critical to Oklahoma. Natural gas accounts for up to 90 percent of the total costs of manufacturing fertilizer, an obviously important component of farming. Since 2000, 24 nitrogen fertilizer plants have shut down. Only 6 U.S. plants remain, three of which are in Oklahoma.

And Oklahoma's farmers get hit more than once. They not only face increased natural gas prices but have ESA issues of their own. In an attempt to be good stewards and to avoid the burdensome designation of critical habitat for the Arkansas River Shiner, the Oklahoma Farm Bureau created a voluntary species management plan. Today we will hear how this project is going.

Sadly, the ESA is just one of a host of laws that, although well intended, frustrate domestic energy production in this country. After decades of activist judges and lawsuits by anti-energy special interests, environmental laws are not used to ensure that human actions do not harm the environment but are used to stop human activity all together. These interests don't believe what all Oklahomans know to be true—that we can develop our energy resources without sacrificing the environment. I am proud that Oklahoma leads the rest of the country in so many ways when it comes to energy exploration, production, and research, as well as protection of the environment. The Oklahoma Energy Research Board, for example, is a model for many other States.

The fact of the matter is that this engine we call America needs energy to run. If our domestic oil and gas producers are prevented from obtaining that energy, then businesses are hurt and people lose their jobs. Here are just a couple of examples. According to the American Chemistry Council, "one in every 10 chemical-related jobs has vanished in the past 5 years." The American Forest & Paper Industry "has lost more than 120,000 high paying manufacturing jobs and closed more than 220 plants." In fact, the Pacific Northwest timber industry was essentially shut down 10—15 years ago to protect the Northern Spotted Owl. It is now thought that many of the spotted owl's problems were not from logging but due to competition for food and habitat from other owls.

The obstacles to efficient development of our natural resources are many. Most of them have nothing to do with scarcity of resources, but are created by those in Washington DC who say they dislike "relying on foreign oil" but do everything they can to prevent domestic production. When Congress resumes in September, we will have a conference committee to reconcile differences between the Senate and House energy bills. If the goal is to actually improve U.S. energy security, these bills not only fail to meet the mark but they also put in place a new set of roadblocks. I had hoped we could do better. I want to welcome all the witnesses and I look forward to sharing your wisdom with my colleagues in Congress on both sides of the aisle.

OPENING STATEMENT OF BENJAMIN TUGGLE, REGIONAL DIRECTOR, U.S. FISH AND WILDLIFE SERVICE

Dr. TUGGLE. Thank you, Senator. I certainly appreciate the opportunity to be here.

Senator INHOFE. Now can you move your microphone up close because we want to make sure we get an accurate record of this proceeding.

Dr. TUGGLE. OK. How is that?

Senator INHOFE. That's better.

Dr. TUGGLE. I'm often told I have a soft voice by everybody except my staff.

Senator INHOFE. But carry a big stick, is that it?

Dr. TUGGLE. That's the idea. Good morning. I am Dr. Benjamin Tuggle. I'm the Regional Director for the U.S. Fish and Wildlife Service in the Southwest Region, which includes the great State of Oklahoma, Texas, New Mexico, Arizona.

Before providing my testimony, Senator, I'd like to thank you for allowing me the opportunity to appear before you today for this field hearing.

As a regional director, I oversee the Service's role in the administration of the Endangered Species Act, as well as a number of other Federal responsibilities related to the Act in this region.

My formal testimony, which has been provided for the record, discusses the history, biology, and extensive conservation efforts that have been taken on the part of the Service for the American Burying Beetle and the Arkansas River Shiner. However, I would

like to focus my oral remarks today on the efforts being taken by the Service to work with industries inherently involved in the conservation of these species through their compliance with the Endangered Species Act. And I refer specifically to the industries that are associated with oil and gas and agriculture.

The cooperative activities I will mention today represent but a snapshot of the extent of our extensive efforts to streamline endangered species compliance while also ensuring protection and conservation of endangered species.

As you know, Senator, the mission of the Fish and Wildlife Service is to work with others to conserve, protect and enhance fish and wildlife and plants and their habitats for the continued enjoyment of the American people.

Our role regarding energy development is multifaceted. For example, the Service facilitates the environmentally sound exploration and production of privately held minerals on the national wildlife refuge system lands in order to minimize impacts to other resources.

We work in partnership with the oil and gas operators to streamline this process so that the financial and operational needs of the operators are met while fulfilling our role and responsibility to protect species and environment for the American people.

We also work closely with other entities such as the BLM, Environment Protection Agency, and the Corps of Engineers in the assessment of potential impacts to natural resources where the requirement of the National Environmental Policy Act, or NEPA applies. And we consult with States and local agencies to ensure their regulatory requirements are also met.

The Service participates in the necessary clearances for protecting resources, such as the Endangered Species Act consultation for threatening endangered species, monitoring, and compliance activities and establishing mitigation and reclamation standards for individual species.

It's important to note that neither the American Burying Beetle nor the Arkansas River Shiner consultations have ever stopped a project from going forward. This is not to say that some of the projects haven't experienced delays in the past due to the compliance with the ESA. However when operators coordinate with us early and frequently in projects, they are much more likely to experience no delays in ESA consultation as we move forward with their schedule.

When endangered species consultation is required of the Service on a particular activity, the Service works to expedite these actions as quickly as possible and to identify steps that would be taken to minimize the impacts, not only to the schedule, but also to the species.

Furthermore, the Service has taken proactive steps to ensure the mission priorities are met while also streamlining the consultation process so that the financial and operational needs of oil and gas and agriculture operations are met.

I will spend the remainder of my time to just identify some of the examples of these proactive means that I've been speaking about earlier.

In 2004, the Service worked on and completed a Memorandum of Understanding with five major oil and gas companies in Eastern Oklahoma, operating within the range of the American Burying Beetle. By signing the MOU, the oil and gas operators voluntarily agreed to implement agreed upon Best Management Practices to proactively conserve the beetle.

As a result, the Service does not anticipate their operations negatively impacting the beetle or its habitat.

Similarly, we have also finalized an MOU with a seismic exploration company operating within the range of the American Burying Beetle in Eastern Oklahoma.

Furthermore, we have worked with the Oklahoma Corporation Commission to assist operators and the Commission in operating—in addressing rather, the American Burying Beetle during the seismic operation permit application process.

The Service is working with the Oklahoma Department of Transportation and the Federal Highway Administration on a programmatic biological opinion for the American Burying Beetle.

This programmatic opinion will facilitate implementation of Federal, State and county projects funded by the Federal Highway Administration by——

Senator INHOFE. Let me interrupt you just a moment. This is a little awkward for me because I can't see the timing here. In Washington we have the timing where everyone can see it. How are we doing there?

Senator CLERK. We're out of time.

Senator INHOFE. We're out of time. Try to wrap up if you would, Dr. Tuggle.

Dr. TUGGLE. I will and I apologize for taking much longer.

Senator INHOFE. That's fine.

Dr. TUGGLE. I would like to highlight in summary just the fact that we have used virtually every tool at our disposal to be able to streamline this process.

One of the things that I would like to highlight before my time is through, is, we've used nonprograms, such as the Partners for Fish and Wildlife to work with landowners to try to provide funds to be able to work with those landowners so they can put conservation measures in place. And we also want to thank you for spearheading the legislation that gave us organic legislation in that regard.

Senator INHOFE. That was very successful. In fact, we had a hearing with some of the—I think, one of the same witnesses on that legislation.

Dr. TUGGLE. In closing, the Service remains committed to successfully conserving and recovering endangered species while working with the industry that's impacted by these regulatory activities.

We recognize the species conservation must not come at the cost of diminishing the ability of the United States to ensure its energy future. And only by working together can we achieve our goals.

I want to also thank you for showing the leadership to bring this meeting, this field hearing today. And also I'd like to answer any questions that you have for me.

[The prepared statement of Dr. Tuggle follows:]

STATEMENT OF BENJAMIN TUGGLE, REGIONAL DIRECTOR,
U.S. FISH AND WILDLIFE SERVICE

Good afternoon, I am Dr. Benjamin Tuggle, Regional Director of the U.S. Fish and Wildlife Service's (Service) Southwest Region, which includes the States of Texas, New Mexico, Arizona and Oklahoma. Before presenting my testimony, I would like to thank Senator Inhofe for the opportunity to appear here today and participate in this oversight hearing. As Regional Director, I oversee the Service's role in the administration of the Endangered Species Act, as well as a number of our other Federal responsibilities related to the Act, in the region.

My statement today will focus on the Southwest Region's role in the conservation and recovery of two Governmentally listed species: the American burying beetle and Arkansas River shiner, as well as the Service's efforts to streamline Endangered Species Act compliance for these two species in Oklahoma.

AMERICAN BURYING BEETLE

The American burying beetle was listed as endangered under the Endangered Species Act in 1989 and the Final Recovery Plan was signed in 1991. Once found throughout the eastern United States, the American burying beetle is now only found in nine States: South Dakota, Nebraska, Michigan, Ohio, Oklahoma, Texas, Arkansas, Rhode Island, and Massachusetts. The beetle's current range represents a 95 percent reduction from its estimated historic range. Within Oklahoma, the species is known or believed to occur in 34 counties in the eastern part of the State.

Numerous American burying beetle surveys have been conducted by private and Governmental entities within the eastern third of Oklahoma over the past several years, including a large number of surveys conducted by the oil and gas industry. These surveys vary annually with regard to where they are conducted and during what time of year, but indicate, on average, relative population stability from 1992 to 2006. In contrast, survey population data from other States within the species' historic range vary widely.

In late 2003 and early 2004, the Service worked on and completed a Memorandum of Understanding (MOU) with five major oil and gas companies in eastern Oklahoma operating within the range of the American burying beetle. The MOU provided best management practices for avoiding or minimizing adverse impacts to the beetle from oil and gas-related activities. By signing the MOU, the oil and gas operators voluntarily agreed to implement the best management practices to proactively conserve the beetle.

As a result, the Service does not anticipate their operations will result in take, which is prohibited under section 9 of the Endangered Species Act.

Similarly, we are also finalizing an MOU with a seismic exploration company operating within the range of the American burying beetle in eastern Oklahoma. This MOU provides best management practices for avoiding or minimizing adverse impacts to American burying beetles from non-Federal oil and gas seismic activities. Furthermore, we are working with the Oklahoma Corporation Commission to assist operators and the Commission in addressing the American burying beetle during the seismic operations permit application process.

In May 2005, the Service completed a Programmatic Biological Opinion for the American burying beetle with the Environmental Protection Agency (EPA) concerning oil and gas-related activities in eastern Oklahoma that required a Clean Water Act storm water construction permit. The Service's Biological Opinion streamlined the consultation process so that the permits could be issued to oil and gas operators in only 7 days. The Energy Policy Act of 2005, however, negated the need for permitting of most oil and gas activities. Consequently, the Biological Opinion is no longer applicable and consultation with the Service in regard to storm water permits for oil and gas activities is rare.

In September 2005, the St. Louis Zoo hosted an American burying beetle conservation conference in St. Louis, Missouri. The conferees identified a need for a species-specific working group, along with a 5-year status review for the species and an updated and revised recovery plan. In May 2007, the Service hosted a follow-up conference in Tahlequah, OK to present new research on the American burying beetle and similar species. The event was open to the public and staff from the U.S. Senate Environment and Public Works Committee attended. The 5-year review of the status of the American burying beetle should be finalized in early 2008. After the 5-year review is completed the Service will begin working on the revised recovery plan for the beetle.

The Service is also working with Northeastern State University, the University of Oklahoma, the Oklahoma Department of Wildlife Conservation, and Camp

Gruber National Guard Training Center to determine the reproductive habitat preferences of the American burying beetle. The results from this research have the potential to identify specific geographic areas of suitable habitat for American burying beetle reproduction. The Oklahoma Department of Wildlife Conservation plans on using roughly $30,000 of the Cooperative Endangered Species Fund dollars in fiscal year for an American burying beetle microhabitat reproductive study.

The Service is in the preliminary stages of discussing development of an umbrella Habitat Conservation Plan (HCP) for the American burying beetle within the State of Oklahoma. The goal of this umbrella HCP is to authorize incidental take under the Endangered Species Act and allow both State and private entities to continue their otherwise legal activities while also providing for conservation of the species and its habitat. We will keep Congress apprised of our progress.

Last, the Service is also currently working with the Oklahoma Department of Transportation and the Federal Highway Administration on a programmatic Biological Opinion for the American burying beetle in eastern Oklahoma. This programmatic opinion will facilitate implementation of Federal, State and county projects, funded by the Federal Highway Administration, by streamlining traditional individual section 7 consultation requirements related to the American burying beetle by condensing it into one consultation. We expect this streamlined process to simplify project scheduling.

ARKANSAS RIVER SHINER

The Arkansas River shiner has disappeared from more than 80 percent of its estimated historical range and is now almost entirely restricted to about 508 miles of the Canadian River in Oklahoma, Texas, and New Mexico. An extremely small population may also exist in the Cimarron River in Oklahoma and Kansas, based on the collection of 16 individuals from 1985 to 1992. The Arkansas River Basin population of the Arkansas River shiner was listed as a threatened species in 1998 due to habitat loss. A final decision on critical habitat designation was promulgated on April 4, 2001. On April 25, 2002, the New Mexico Cattle Growers Association and 16 other plaintiffs challenged the designation in court. A memorandum opinion from the U.S. District Court for the District of New Mexico was issued in that case. In accordance with the court's opinion, the Service completed a new final rule designating critical habitat for the Arkansas River shiner on October 13, 2005.

The Service has conducted surveys for Arkansas River shiner populations since 2004 and recently implemented a more intensive sampling effort to gather additional information on the status of the species in both the Canadian and Cimarron rivers. Further research on the species is necessary before a number of recovery actions can be designed and implemented. We are currently developing proposals to fill these research gaps, which will likely include additional monitoring, research on competition with other species, effects on the species from changing water quality, and habitat assessments.

Despite these data gaps, the Service continues to conduct proactive species recovery efforts. For example, we are working with the Service's Partners for Fish and Wildlife Program and are implementing a salt cedar task force to address the encroachment of non-native, invasive species which negatively impacts the Arkansas River Shiner by reducing the amount of water for the species to thrive.

In Fiscal Year 2006, the Service awarded a private stewardship grant to the Oklahoma Farm Bureau for over $160,000 for landowners to control invasive salt cedar along portions of the South Canadian River in Oklahoma. The Nature Conservancy also received a grant of $195,000 to benefit the Arkansas River shiner and its habitat, as well as other listed and candidate species.

In addition, we are working with the Oklahoma Farm Bureau to develop a conservation plan for the Arkansas River shiner in Oklahoma, based on a plan developed in 2004 by the Canadian River Municipal Water Authority in the Texas panhandle. The plan identifies conservation actions that landowners may voluntarily complete for the benefit of the shiner and its habitat. The development and implementation of these two plans will provide an excellent mechanism for landowner involvement in our efforts to conserve the Arkansas River shiner and its habitat.

The Service is also conducting a formal consultation with the Federal Highway Administration and the Oklahoma Department of Transportation on a proposed bridge replacement over the Canadian River. Reasonable and prudent measures to minimize impacts to the Arkansas River shiner, while not significantly impacting bridge construction activities, have been discussed with the Federal Highway Administration and the Oklahoma Department of Transportation. These include revegetating impacted areas with native grasses, maintaining flows by using multiple

work roads, working outside of the Arkansas River shiner's spawning season, and limiting work within the actual river.

Consultations on oil and gas operations with potential impacts to the Arkansas River shiner have been limited. Typically, the Service recommends directional drilling for pipelines crossing within occupied Arkansas River shiner habitat, as well as implementation of best management practices for spill prevention on new oil and gas operations. As mentioned above, most oil and gas-related activities are now excluded from the need to obtain storm water construction permits. Therefore, we anticipate that the number of informal consultations with the Service related to the Arkansas River shiner and oil and gas-related activities will be lower than in the past.

CONCLUSION

In closing, the Service remains committed to successfully conserving and recovering endangered and listed species, such as the American burying beetle and Arkansas River shiner. We also remain strongly committed to working cooperatively with our partners and other stakeholders.

Thank you again for the opportunity to participate in the hearing today. This concludes my statement and I would be happy to answer any questions you may have.

Senator INHOFE. Thank you, Dr. Tuggle. I wasn't going to say anything about the Partnership Act, but it was very, very successful. What I like about that is, it lets the Government work with the people, with the property owners. And if left to manage their own resources in a very environmentally sound way, conservation way, they will do it. So I think that's been a very successful program. We're glad to get it expanded.

You said something just a minute ago that I had not picked up before. You said that these consultations had never—or I guess section 7 never stopped a project, had delay, but not stopped; is that accurate?

Dr. TUGGLE. Yes, sir.

Senator INHOFE. Let me ask you this question also: Will your schedule allow to you stay for the remainder of it, for the second panel, so that you would be here?

Dr. TUGGLE. Yes, sir.

Senator INHOFE. That would be very helpful. Now, Dr. Tuggle, you heard me in my opening remarks, I talked about the 5-year status review of the American Burying Beetle. I'd like to know when you think that would be completed and what kind of conclusions do you think we might anticipate from that, and what kind of actions do you think the Service may be taking?

Dr. TUGGLE. Well, that 5-year review is due for completion sometime within the next couple of months. The lead region for that is our northeast region. And we've had several conversations with them on the content of that 5-year review. But the 5-year review will focus on surveying techniques, will focus on the latest information, scientific information that we have regarding the status of those populations. And we anticipate after that 5-year review will give us enough information to not only talk about the recovery plan, but whether that species is in better shape than we thought it was in when we originally had it listed.

Senator INHOFE. You said it's a different region is going to be the lead. What does the lead do that you would not be involved in? How does that change——

Dr. TUGGLE. Well, there's a cooperation that would take place. The difference, when we say a "lead," they're responsible for actu-

ally writing the document, but we have a great deal of input in terms of the content of that document.

Senator INHOFE. Because we're addressing the beetle right now, and I don't know whether that's as prevalent in that region as it is here.

Dr. TUGGLE. Right. Exactly.

Senator INHOFE. March 16 of 2007, the Solicitor with the U.S. Department of Interior issued a memorandum on the meaning of—and I'm quoting now, "In danger of extinction throughout all or a significant portion of its range," the statutory threshold of an endangered species. And I want to make that a part of the record also without objection.

Now as I mentioned in my opening statement, the population of the American Burying Beetle have been found to be very wide spread, and would suggest to me that the beetle is not in danger of extinction in Oklahoma.

I ask you, how is this memorandum going to be incorporated into the 5-year review, or will it be considered as part of the evidence to be entered into the record?.

Dr. TUGGLE. Well, I think in the 5-year review, when we get the census in terms of the monitoring information, we will be able to use the significant portion of the range as we talk about downlisting and de-listing a species. And, therefore, if we talk about it from a standpoint of a significant portion of the range in Oklahoma, and we have a robust population, then we would be able to apply that principle in terms of how that species, the burying beetle, would be affected in Oklahoma.

Senator INHOFE. I see. Dr. Tuggle, the recovery plan for the American Burying Beetle was finalized in 1991, and based on little data as I understand it, and millions of dollars have been spent on research, beetle surveys, conservations and species protection.

Do you think the recovery plan, a 16-year old document based on 20-year old data should be updated at the end of this five-year review?

Dr. TUGGLE. Absolutely, sir. In fact, the essence of the 5-year review will give us a great deal of information in terms of how that recovery plan should look, and also whether we've reached a point with the population standards if we would should downlist or delist the species.

Senator INHOFE. That's good. On May 18 of 2001, the President issued Executive Order No. 13211 that requires agencies to prepare statements of energy effects for any regulation that significantly affects energy supply or its distribution and its use.

In proposing to list the polar bear, the Fish and Wildlife Service did not prepare such a statement but rather issued a blanket statement that—and I'm quoting now—"This rule does not expect to significantly affect energy supplies, distribution and use."

Twenty-five percent of the U.S. domestic supply of oil comes from Alaska. If the polar bear is listed, every permit or other action taken by the companies in that region will have to go through a section 7 consultation, just—it will be a necessary requirement, in my opinion. And, you know, how can the Service justify not preparing this statement?

You know, I was there when they came out with that statement on the polar bear when, in fact, of the 15 populations of the polar bear, with the exception of the West Hudson Bay area, you're actually getting either sustained or increased populations in those areas.

And it's my understanding that the reason for the depleted population in the West Hudson Bay area was due primarily to hunting regulations.

But anyway, I can't see that they could say that this rule is not expected to significantly affect energy supplies, distribution or use under these circumstances.

What do you think about that?

Dr. TUGGLE. Well, I've had the benefit of working with the Interior group when I was still in Washington on the construction—of a potential construction of the natural gas pipeline coming off the north slope and whether it was going to go through Alaska or into Canada. And the benefit of that has been the fact that we've been able to sit down ahead of time to start to get some idea about how that pipeline might affect sensitive species.

In my opinion, strictly my opinion, I think that when that statement was issued, it may have been from a standpoint of not really knowing the impact potentially. And then trying to give it enough time so that we can get the scientific information from USGS that we would need to see about distribution, population size, and the other things that are associated with how the population is distributed.

But I also want to add that there are mechanisms such as programmatic biological opinions that can streamline the consultation process. The more that we know about the population size, the more we know about particular routes that may be taken, we get a better idea about how that might impact the species.

Senator INHOFE. You know, I remember, and were you around when they were discussing that, as far as the pipeline is concerned, its effect on the caribou?

Dr. TUGGLE. Yes, sir.

Senator INHOFE. And have you been up there and seen during the summer months how the caribou, the only shade they can find up there is the pipeline?

Dr. TUGGLE. Yes, sir.

Senator INHOFE. All right. In the final regulation designating the critical habitat of the Arkansas River Shiner, the Service stated that it would review the need for critical habitat in certain areas once the Oklahoma Farm Bureau Plan had been implemented.

I'd ask, does the Service plan to propose excluding these areas in the future?

Dr. TUGGLE. I think that, you know—and I apologize, I can't give you a straight answer because I'm at a disadvantage in terms of my knowledge on where we might modify the critical habitat, but I think at this point we're pretty satisfied with the way the critical habitat looks. That does not mean we would not be flexible in the future if we found that it might be more prudent to exclude areas.

We're trying to focus our attention on the conservation measures that would make the habitat better. I think that if we have good quality habitat, then that diminishes our need for critical habitat.

Senator INHOFE. Dr. Tuggle, I appreciate it very much. We'll go ahead now and conclude this first panel if you don't mind staying around.

Dr. TUGGLE. Absolutely.

Senator INHOFE. I would ask the other four witnesses that we've already introduced, if you'd please come forward to the table.

Dr. TUGGLE. Thank you.

Senator INHOFE. I've asked the timer to give me a little sign when the 5-minutes comes up, because as I say, your entire statement will be made part of the record and we want to get to our questions here.

We'll probably take them in order starting with you, Tom, and working across, if that's all right.

Mr. BUCHANAN. That would be fine, sir.

Senator INHOFE. You're recognized, Mr. Buchanan, for your opening statement.

STATEMENT OF TOM BUCHANAN, ON BEHALF OF OKLAHOMA FARM BUREAU

Mr. BUCHANAN. Thank you, Senator. First, I want to let you know that I, on behalf of Ag producers in Oklahoma, am very appreciative of the opportunity to be before you and the ladies and gentlemen here. We appreciate the opportunity. Thank you.

I am Tom Buchanan. I'm from Jackson County, Oklahoma, in the southwestern part of the State. I have farmed for 27 years and manage currently the Lugert-Altus Irrigation District.

The Lugert-Altus Lake was constructed by the Bureau of Reclamation during World War II. It first provided water to the farmers in the district in 1946 and has continually supplied an irrigation source.

The district covers 48,000 acres of farmland with about 330 different landowners. Our primary crop is cotton. The gross receipts from the district are approximately $48 million annually. A giant boost to the local economy.

Today I would like to address how the Endangered Species Act affects the oil and gas industry, which then directly impacts farming.

Farmers appreciate God's creatures as much as anyone. However, the ESA impacts our operations by increasing input costs and threatening our water supplies.

Oklahoma ranks second in the Nation for production of natural gas; fourth in the Nation of wheat and cattle; and fifth in the Nation for peanuts.

Our State has been called "the State of soil and oil." However, high prices for oil and gas have negative impacts on productive agriculture. Natural gas is the most costly component used in manufacturing nitrogen fertilizer. Fertilizer prices have more than doubled over the past 15 years with no reprieve in sight.

A recent Energy Information Administration outlook forecasts natural gas prices rising by 9.2 percent in 1907, and increasing another 3.7 percent in 1908.

World demand for fertilizer grew by 13 percent between 1901 and 2005 According to the Fertilizer Institute. Next year, Oklahoma farmers will face even steeper bills to fertilize crops.

The ESA is yet another factor contributing to the high cost of fertilizer by slowing down natural gas production. The American Burying Beetle, listed as endangered under the ESA, has delayed and impeded oil and gas production in Oklahoma.

Another species of concern in Oklahoma is the Arkansas River Shiner, a threatened minnow found in two of our largest rivers. The Oklahoma Farm Bureau Legal Foundation, along with 20 other organizations, worked with the U.S. Fish and Wildlife Service to refine critical habitat for the shiner.

The Canadian River Municipal Authority had a 154 mile section of its management plan excluded for critical habitat. The OFB Legal Foundation is working to finalize a voluntary conservation management plan for the shiner in order to remove sections of the Cimarron and Canadian rivers from critical habitat also. These organizations have been proactive about preserving the shiner to protect their own water supplies. After the Klamath Basin crisis, many fear the needs of endangered species trump the needs of the humans.

To illustrate the extensive impact of ESA, Oklahoma's essential industries could be adversely impacted by the listing of a species that lives thousands of miles from here. The Fish and Wildlife Service has proposed listing polar bears as a threatened species based solely on projected impacts of global warming.

Under the ESA, any activity authorized, funded or carried out by a Federal agency that might contribute to global warming, such as permits for livestock or oil and gas production, would be subject to consultation with the Fish and Wildlife Service to make sure that the proposed activity would not jeopardize the continued existence of polar bears.

Consultations can take from 90 to 120 days to complete and result in permanent delays. Because the Service is required to consider the cumulative effects of all actions, even those activities with little impacts, such as, one Oklahoma livestock facility could be denied a permit or have its terms substantially altered because of supposed impacts to polar bears.

Under the ESA, taking does not have to be direct, but can also constitute indirect impacts to species that might affect their breeding, feeding or sheltering. Livestock and oil and gas producers could conceivably be liable for taking polar bears, if they contribute to global warming.

Another concern to agriculture is the Federal regulatory reach of the Clean Water Act or CWA. Water is essential to agriculture production. The scope of Federal jurisdiction is important to farmers and ranchers because jurisdictional determinations directly impacting agriculture activities, have the potential to interfere with the use of private land, and if applied too broadly, impede our ability to produce food and fiber.

As currently drafted, S. 1870 and H.R. 2421 not only expand the geographic scope of CWA jurisdiction, but sweep many current agricultural activities into the regulatory reach of CWA simply because such activities may be conducted near some ditch, swale, wash, erosion feature or an ephemeral stream that would be deemed a water of the United States.

Is the time up, ma'am?

Senator INHOFE. Yes, you're getting close there. You can wrap it up real quickly, if you would.

Mr. BUCHANAN. America's agricultural productive capacity is unprecedented in world's history. It allows our farmers and ranchers to meet the demands of our Nation's growing population while maintaining the most affordable and safest food supply in the world.

Farmers have made great strides in improving our environment, which is in better condition than any other time in our lives. The ESA continues to be a problem, while at the same time Congress is considering CWA legislation that would further burden productive agriculture with unprecedented regulation.

Thank you, sir.

[The prepared statement of Mr. Buchanan follows:]

STATEMENT OF TOM BUCHANAN, ON BEHALF OF OKLAHOMA FARM BUREAU

I'm Tom Buchanan from Jackson County, Oklahoma, in the southwestern part of the State. I have farmed for twenty-seven years and manage the Lugert-Altus Irrigation District.

The Lugert-Altus Lake was constructed by the Bureau of Reclamation during World War II. It first provided water to farmers in 1946. The District covers 48,000 acres of farmland with about 330 landowners. Our biggest crop is cotton. The gross receipts from the District are approximately 48 million dollars annually.

Today I would like to address how the Endangered Species Act affects the oil and gas industry, which then affects farming. Farmers appreciate God's creatures as much as anyone. However, the ESA impacts our operations by increasing input costs and threatening our water supplies.

Oklahoma ranks second in the Nation for production of natural gas, fourth in the Nation in wheat and cattle production, and fifth in the Nation for pecan production. Our State has been called the State of "soil and oil." However, high prices for oil and gas have negative impacts on production agriculture. Natural gas is the most costly component used in manufacturing nitrogen fertilizer. Fertilizer prices have more than doubled over the past 15 years, with no reprieve in sight. A recent Energy Information Administration outlook forecasts benchmark natural gas prices rising by 9.2 percent in 2007 and increasing another 3.7 percent in 2008. World demand for fertilizer grew by 13 percent between 2001 and 2005, according to The Fertilizer Institute. Next year, Oklahoma farmers will face even steeper bills to fertilize crops.

The ESA is yet another factor attributing to the high cost of fertilizer by slowing down natural gas production. The American Burying Beetle, listed as endangered under the ESA has delayed and impeded oil and gas production in Oklahoma.

Another species of concern in Oklahoma is the Arkansas River shiner, a "threatened" minnow found in two of our largest rivers. The Oklahoma Farm Bureau Legal Foundation, along with 20 other organizations, worked with the U.S. Fish and Wildlife Service to refine critical habitat for the shiner. The Canadian River Municipal Water Authority had a 154 mile section of the Canadian River excluded from critical habitat based upon its management plan. The OFB Legal Foundation is working to finalize a voluntary conservation management plan for the shiner, in order to remove sections of the Cimarron and Canadian Rivers from critical habitat. These organizations have been proactive about preserving the shiner to protect their own water supplies. After the Klamath Basin crisis, many fear the needs of endangered species trump the needs of the humans.

To illustrate the extensive impact of the ESA, Oklahoma's essential industries could be adversely impacted by the listing of a species that lives thousands of miles from here. The Fish and Wildlife Service has proposed listing polar bears as a threatened species, based solely on projected impacts of global warming.

Under the ESA, any activity "authorized, funded or carried out" by a Federal agency that might contribute to global warming (such as permits for livestock or oil and gas production) would be subject to consultation with the Fish and Wildlife Service to make sure that the proposed activity would not jeopardize the continued existence of polar bears. Consultations can take 90—120 days to complete and result in permit delays. Because the Service is required to consider the "cumulative effects" of all actions, even those activities with little impacts, such as one Oklahoma

livestock facility, could be denied a permit or have its terms substantially altered because of possible impacts to polar bears.

GENIF

Under the ESA, taking does not have to be direct, but can also constitute indirect impacts to species that might affect their breeding, feeding and sheltering. Livestock and oil and gas producers could conceivably be liable for "taking" polar bears, if they contribute to global warming.

Another concern to agriculture is the Federal regulatory reach of the Clean Water Act or CWA. Water is essential to agriculture production. The scope of Federal jurisdiction is important to farmers and ranchers because jurisdictional determinations directly impact agricultural activities, have the potential to interfere with the use of private land and, if applied too broadly, impede our ability to produce food and fiber. As currently drafted, S. 1870 and H.R. 2421 not only expand the geographic scope of CWA jurisdiction but sweep many agricultural activities into the regulatory reach of CWA simply because such activities maybe conducted near some ditch, swale, wash, erosion feature or ephemeral stream that would be deemed a "water of the United States."

The 1972 conference report of the CWA states "Congress intends the term 'navigable waters' be given its broadest possible constitutional interpretation unencumbered by agency determinations which have been made or may be made for administrative purposes." It is one thing to give a term like "navigable waters" broad meaning and quite another to statutorily eliminate it or give it no meaning what so ever. Deleting "navigable waters" from the CWA significantly changes—rather than clarifies—original congressional intent.

America's agricultural productive capacity is unprecedented in the world's history. It allows our farmers and ranchers to meet the demands of our Nation's growing population while maintaining the most affordable, safest food supply in the world. Farmers have made great strides in improving our environment, which is in better condition than any other time in our lives. The ESA continues to be a problem, while at the same time Congress is considering CWA legislation that would burden production agriculture further with unprecedented regulation.

Senator INHOFE. Thank you, Mr. Buchanan. Mr. Sullivan.

STATEMENT OF ROBERT J. SULLIVAN JR., SULLIVAN AND COMPANY, LLC, ON BEHALF OF OKLAHOMA INDEPENDENT PETROLEUM ASSOCIATION

Mr. SULLIVAN. Thank you, Senator, and good morning. My name is Bob Sullivan. For 32 years I've been an independent oil and gas producer. Eighteen of those years have been either sideways or negative financial experiences for me and my family. Fourteen have been positive. Needless to say, exploring for domestic oil and gas reserves is a high risk and volatile, and it's a very personal thing to me. The health of our industry indeed, directly impacts me and my family.

I appreciate the opportunity to appear here today, and I offer my remarks on behalf of the Oklahoma Independent Petroleum Association, or OIPA which is an association of approximately 1,700 independent oil and gas producers who have similar concerns.

In Oklahoma, independent producers make up the majority of the energy industry producing 96 percent of our State's crude oil and 88 percent of our natural gas.

In the minds of you and your fellow legislators, we independent producers should not be confused with major oil companies who are fully integrated with transportation, refining, marketing, and research and development capabilities.

We independents live or die with production revenues at the wellhead and their associated costs. Part of these costs include pro-

viding gross production taxes to the State that account for over $1 billion of our $7 billion State budget.

As an independent producer, as an Oklahoman, and as an American, I am very concerned about the trend of environmental regulations in this country in general and the Endangered Species Act in particular.

The ESA is in dire need of significant reforms to ensure protection and recovery of endangered species while allowing for economic natural resource development. Only 20 out of over 1,300 species have been recovered, equating to a success rate of about one and a half percent. Let me offer some examples of the negative impact of the Act on the oil and gas industry.

The American Burying Beetle located in the eastern part of Oklahoma was listed as an endangered species in 1989 based upon museum and collectors' data—not on actual comprehensive field or survey data.

Since its listing, the beetle has been found in many areas and is more widespread than originally thought which raises questions of its listing.

In Oklahoma, the Fish and Wildlife Service policy was to allow oil and gas construction activities to occur only in winter months when the American Burying Beetle was thought to hibernate.

In 2002, the Fish and Wildlife Service Tulsa office changed its policy relating to the wintertime oil and gas construction activity without notification to the public and without new data to support such a change.

This change in policy came to light when the USFWS Tulsa office determined that a wintertime pipeline construction project to connect a natural gas well would adversely affect the American Burying Beetle. The project was unnecessarily delayed costing the operator, royalty owners, the State of Oklahoma, and other various parties millions of dollars.

There is no data that indicates the American Burying Beetle population has been affected in any manner by oil and gas activities in wintertime or in summertime. However, the oil and gas industry is implementing the Wildlife Service requirements such as baiting away to protect the beetle.

Baiting away as I'm sure you know is putting dead chickens on the ground to see if the beetles want to eat. And it occurs to me, Senator, that in addition to the oil and gas operators, there are at least two more parties that would find that distasteful, one would be the taxpayers, and the other would be the chickens.

Independent producers take their environmental responsibilities very seriously. But the rare exception of an occasional rogue independent producer, the people I work with and compete against in the search for oil and gas are very responsible citizens. We spend far more time, effort and money on environmental precautions and safeguards that exceed State and Federal regulations than most, if not all, other industries.

Whatever environmental regulations apply to our operations, we voluntarily exceed them, first, because we're simply good citizens who want to do the right thing, and second, because we know the painful consequences of environmental mishaps in our field operations.

Furthermore, some 14 years ago Oklahoma's producers and royalty owners formed the Oklahoma Energy Resources Board, OERB, for the purpose of cleaning up unsightly land scars across our State that were caused by our industry prior to the establishment of both State and Federal environmental regulations. OERB also provided the general public and our schools with extensive education programs about the industry.

To fund this environmental initiative, OERB collects self-imposed levies on oil and gas production from producers and royalty owners, and annually spends approximately $12 million to clean up sites and to honor these education programs.

Since inception, almost 8,000 sites across Oklahoma have been cleaned up at no cost to the landowner or the taxpayers.

As a responsible operator in the field, my experience has been that most environmental initiatives coming from the Federal Government are based on emotion and not on solid, convincing, unbiased, scientific facts.

Sensible environmental regulations to protect the environment and public and private property owners are not only needed, but embraced by independent producers.

Senator INHOFE. Mr. Sullivan, try to wrap it up if you would, please.

Mr. SULLIVAN. OK. I had a comment about global warming I'll pass on.

Senator INHOFE. No, I want to hear that.

Mr. SULLIVAN. I thought that would get you. Kind of a baiting, you know. . . As an example of overreaching the current—is the current global climate debate. Any climate change policy established by our Federal Government must ensure that all major greenhouse gas emitting countries must be included without ignoring developing countries that are accelerating the carbon dioxide emissions.

Although I'm personally not yet convinced that human activities are causing harmful global climate change, I do agree there are some common sense steps we can take while that debate is being resolved.

Clean burning natural gas must be recognized as a viable solution to greenhouse emissions and the sequestration of CO_2 is very apt in this case.

I'll finish up here by just saying in summary, the independent producers willingly and enthusiastically embrace our role as responsible stewards of the environment. Our daily performance in the field and our demonstrated success through OERB conclusively support the seriousness with which we take our role.

Senator, I do thank you in taking leadership in the Senate for common sense environmental regulations. That's what we need here is common sense.

[The prepared statement of Mr. Sullivan follows:]

STATEMENT OF ROBERT J. SULLIVAN JR., SULLIVAN AND COMPANY, LLC ON BEHALF OF OKLAHOMA INDEPENDENT PETROLEUM ASSOCIATION

Good morning Senator Inhofe, my name is Bob Sullivan.

For 32 years I have been an independent oil and gas producer. Eighteen of those years have been either sideways or negative financial experiences for me and my family. Fourteen years have been positive. Needless to say, exploring for domestic

oil and gas reserves is a high risk, volatile business. As a point of interest, I pay for the food, clothing, shelter, and education for my wife and six children out of the same checking account that I pay for drilling exploratory wells. The health of our industry is a very personal matter to me.

I appreciate the opportunity to appear here today, and I offer my remarks on behalf of the Oklahoma Independent Petroleum Association, which is an association of approximately 1,700 Oklahoma independent oil and gas producers who have similar concerns. In Oklahoma, independent producers make up the majority of the energy industry producing 96 percent of our State's crude oil and 88 percent of our natural gas. In the minds of you and your fellow legislators, we independent producers should not be confused with major oil companies who are fully integrated with transportation, refining, marketing, and research and development capabilities. We independents live or die with production revenues at the wellhead and the associated costs. Part of these costs includes providing gross production tax to the State that accounts for over $1 billion of the State's $7 billion budget.

As an independent producer, as an Oklahoman, and as an American, I am very concerned about the problems our industry faces regarding the Endangered Species Act (ESA).

The ESA is in dire need of significant reforms to ensure protection and recovery of threatened and endangered species while allowing for economic natural resource development. Since its inception, only 20 species have been recovered, equating to a success rate of less than 1.5 percent. The following information provides examples of why ESA reform is needed.

1. Improved Data

• The U.S. Fish and Wildlife Service (USFWS) uses limited or incomplete data, deemed "best available" data, to make listing, policy and critical habitat decisions. For example, the American Burying Beetle, located in the eastern part of Oklahoma, was listed as an endangered species in 1989. This listing was based on museum and collector's data—not actual comprehensive field or survey data. Since its listing, the beetle has been found in many areas and is more widespread than originally thought which raises questions regarding its initial listing.

• Oil and gas exploration and production activities have been conducted in eastern Oklahoma for well over 50 years. There is no evidence or data that indicates the American Burying Beetle population has been affected in any manner by oil and gas exploration and production activities in wintertime or summertime, yet our industry is implementing various requirements to avoid a "taking". There is no scientific data showing that the USFWS's "baiting away" requirements are effective in protecting the American Burying Beetle. For all we know, this technique draws them to our sites.

• For many years in Oklahoma, the USFWS's policy was to allow oil and gas construction activities to occur in the winter months when the American Burying Beetle was thought to hibernate. In 2002, the USFWS Tulsa Field Office changed its policy related to winter time oil and gas construction activity without any notification to the public and without new data to support such a change. This change in policy came to light when the USFWS Tulsa Field Office determined that a winter pipeline construction project to connect a natural gas well would adversely affect the American Burying Beetle. The project was unnecessarily delayed costing the operator, royalty owners, the State of Oklahoma, and other various parties millions of dollars.

2. Scheduled Recovery Plan Updates. The ESA requires that the USFWS conduct a status review of each listed species every 5 years. The 1991 Recovery Plan for the American Burying Beetle is being reviewed and updated this year for the first time. New information needs to be considered and incorporated into these plans on a timely basis. For example, the American Burying Beetle is thriving in Oklahoma, and it is apparent that industry's activities are not harming the species; however, our industry continues to implement requirements to protect it.

3. Management Action Plans. There are no requirements for the USFWS to clearly identify, prioritize and fund specific data or research needs to determine the true threats to a listed species. In addition, there are no specific management actions or goals to remediate those threats, or to monitor the progress of those actions to determine if they are effective. Species like the American Burying Beetle have been studied for years with little knowledge gained about the species that can be used to promote its recovery.

4. Consistent Protection Requirements. In many instances, species cross USFWS regional jurisdictions. The various USFWS regions do not have consistent protection requirements. For example, in Oklahoma, the requirement for oil and gas operators

to avoid "taking" an American Burying Beetle is different from the requirements in Arkansas and Texas.

5. Listing and Critical Habitat. Listing requirements should be better defined and critical habitat should be eliminated or more narrowly defined and designated only if alternative options do not exist or do not work. Other options to avoid listing and critical habitat designations should include voluntary pre-listing activities and voluntary conservation efforts by industry, associations, and private citizens.

6. Economic Impacts. The USFWS does not consider the economic impacts to industries such as the oil and gas industry during listing decisions or internal policy decisions to protect a species. The impacts to the oil and gas industry operators, especially small operators, can be costly. These costs cannot be transferred to a customer as compared to other industries.

7. Timing of Protection. In some instances, the USFWS begins protection of a species before it is formally listed. These USFWS's pre-listing requirements are passed on to other Federal agencies like the Bureau of Land Management where they are incorporated into their permit to drill requirements.

8. Unnecessary & Unproductive Litigation. Many environmental groups file lawsuits to force the USFWS to list a species or to designate critical habitat. A large portion of the USFWS's budget over the past few years has gone to fighting these types of lawsuits instead of protecting the species. Changes should be made to the ESA to limit the number of lawsuits and utilize available funds where it is most needed—protecting the listed species.

Finally, on a related issue, legislation is being considered that will greatly expand the jurisdiction of the Clean Water Act by changing the waters that are Governmently regulated from "navigable waters" to "waters of the U.S." If this occurs, it will increase the number of Corps of Engineers' Section 404 permits our industry would have to obtain resulting in more endangered species consultations with the USFWS.

We can do better than this, and I am confident that you can lead us to a better regulatory climate. Independent producers stand ready to assist with sensible regulatory improvements.

Thank you for the opportunity to present this opinion today.

Senator INHOFE. I thank you, Mr. Sullivan.

Ms. Bower-Moore.

STATEMENT OF DRU BOWER-MOORE, REGULATORY ADVISOR, WESTERN DIVISION, DEVON ENERGY CORPORATION

Ms. BOWER-MOORE. Thank you Mr. Chairman. My name is Dru Bower-Moore and I'm a regulatory specialist in Wyoming for Devon Energy Corporation where I specialize in public land issues. I have dealt extensively with issues affecting industries' ability to access and develop public lands of which the Endangered Species Act plays a significant role.

We would like to thank the committee for the opportunity to testify at the field hearing and for the opportunity to offer you new ways to improve the law.

Devon supports the original purpose of the Endangered Species Act, which was to provide protection for species that have been proven, through peer-reviewed science, to be threatened with extinction. However, the Endangered Species Act, as currently utilized, is not achieving its purpose. Congress needs to act to reform and improve the listing and de-listing components of the law and prevent its abuse by special interest groups.

The Endangered Species Act, during its 30-year history, has produced minimal success for recovery of a species once designated as threatened or endangered. Yet, the Fish and Wildlife Service is inundated with petitions to list a species.

Citizen nominations for proposed additions to list a species under the Endangered Species Act pose substantial problems not only to the Fish and Wildlife Service, which must respond to the petitions,

but also for other Federal agencies, States, lessees, and private landowners.

To be clear, the problem is not protection of truly endangered—threatened or endangered species, rather, it is the fact that anyone can submit a petition to list a species and the law currently contains no requirement that such a petition be supported by the use of best scientific and commercial data.

Regardless of the science supporting the petition, or lack thereof, the Service has 90 days to respond.

Furthermore, if the Fish and Wildlife Service issues a positive finding on a petition, it negatively impacts States, landowners and resource users because a species is elevated to a new level of protection even though it has not been formally designated and despite the fact that the petition may not be supported by sound, scientific evidence demonstrating the need to list.

Once a petition has been filed, State and Federal agencies have internal policies that elevate the animal or plant to a sensitive or special status species worthy of additional protection. This standard is then applied in the NEPA process with the potential result of additional mitigation measures to protect the species which are imposed.

Once a petition is filed, the species is treated as a de facto endangered species before the Fish and Wildlife has even completed its analysis. While this action results in a heightened level of protection to prevent listing under ESA, such protection and its attendant costs may not be warranted if the 90-day finding is not supported by sound, scientific evidence.

The Fish and Wildlife Service should not be required to spend precious staff time on petitions lacking scientific merit.

The Endangered Species Act must provide a threshold requirement regarding the information filed in support of a petition to list. Unless and until the threshold is met, the Service would not be required to act on the petition.

We urge Congress to amend ESA to provide a threshold level for information required to support a petition.

Congress must make the Fish and Wildlife Service accountable for the timely implementation of a recovery plan once a species is listed. One way to achieve this is to mandate that the recovery plan be developed concurrently with the Service's decision to list the species. Presently, the agency decides to list a species and then later determines the recovery levels for that species.

The Service can often take years after the listing before issuing a recovery plan. It is far more logical to require the recovery plan to be formulated at the same time the species is listed. The recovery plan should also be required to identify population goals for the species' recovery in addition to its protection of critical habitat.

Therefore, we urge Congress to revise ESA to require the formulation of a recovery plan concurrently with a decision to list and to require that once the objective in the recovery plan has been met, hard release language would provide that the species be automatically de-listed.

While ESA issues play a significant role in our ability to access and develop Federal lands, there are other factors that impact our ability to produce energy in a timely manner. The National Envi-

ronmental Policy Act process on public lands is exhaustive and is becoming more cumbersome over time.

The NEPA documents are taking longer to complete due to the added and multiple layers of analysis to determine impacts. Some EISs are taking six to 7 years for approval, meanwhile development of oil and gas activity is put on hold until that analysis is completed. That's affecting our ability to get natural gas to the consumer.

This delay in issuing APDs is significantly impacting our ability to provide energy to consumers in a timely manner. The process needs to be more efficient and the provisions in the Energy Policy Act of 2005 worked to achieve that.

Devon Energy and other companies in the large independent sector have a record of investing more than we earn, and 100 percent or more of our total cash-flow is reinvested to find and produce more energy.

Senator INHOFE. OK, try to wrap up, Ms. Bower-Moore.

Ms. BOWER-MOORE. I'm just about done, Senator. But we cannot risk making multibillion dollar decisions only to have royalty, tax or regulatory policies change, pulling project economics from underneath us. The U.S. Senate must maintain the Energy Policy Act of 2005 provisions to prevent a decrease in energy supplies and an increase in costs to the consumer.

In conclusion, Mr. Chairman, we thank you again for the opportunity to share Devon's thoughts on this important issue.

[The prepared statement of Ms. Bower-Moore follows:]

STATEMENT OF DRU BOWER-MOORE, REGULATORY ADVISOR, WESTERN DIVISION, DEVON ENERGY CORPORATION

Mr. Chairman and members of the Committee, my name is Dru Bower-Moore and I am a regulatory specialist in Wyoming for Devon Energy Corporation where I specialize in public land issues. I have worked in the public lands field for over 18 years and previously held the position of Vice President for the Petroleum Association of Wyoming. In these positions, I have dealt extensively with issues affecting industries ability to access and develop public lands of which the Endangered Species Act plays a significant role. We would like to thank the Committee on Environment and Public Works for the opportunity to testify at this field hearing regarding "A Perspective on the Endangered Species Act's Impacts on the Oil and Gas Industry" and for the opportunity to offer ideas for improving the current law.

Devon Energy is a leading U.S.-based independent oil and gas exploration and production company with significant operations in the Intermountain West, offshore, the Gulf of Mexico and in the mid-continent region. Although we do have international operations, 90 percent of our production is focused on North America.

DEFINING THE ENDANGERED SPECIES ACT PROBLEM

Devon supports the original purpose of the Endangered Species Act (ESA), which was to provide protection for species that have been proven through peer-reviewed science to be threatened with extinction. However, the Endangered Species Act, as currently implemented by the U.S. Fish and Wildlife Service (FWS) is not achieving this purpose. Congress needs to act to reform and improve the listing and de-listing components of the law and prevent its abuse by special interest groups.

In order to operate on Federal lands, both the lessee and the applicable Federal agency must comply with a myriad of laws designed to protect the environment. Devon works closely with

Federal agencies to comply with requirements of the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), and ESA, among others, before beginning any operations on Federal lands. Under Section 7 of ESA, Federal agencies are required to consult with the FWS if candidate, proposed, threatened, or endangered species and their habitat have been identified

in the area within which a project is proposed. The environmental analysis for a proposed project (and required impact mitigation) can become complex and costly given the number of issues that Bureau of Land Management (BLM) is required to address. Add in the analysis of the project area for the occurrence of species of concern or its habitat [currently 138 candidate, 4 proposed, and 607 threatened endangered species (figures as of August 2007 from the U.S. Fish and Wildlife Service website)], and the project costs escalate as do the mitigation requirements. Species do not need to occur in the project area to be covered by the analysis if suitable habitat exists; therefore, additional conservation measures are most often required by the agency.

The consultation process between the land managing agencies and the FWS, which can include the development of a biological assessment, biological opinion, or both, determines whether such a project may affect a candidate, proposed, threatened, or endangered species and, if necessary, includes recommendations for the protection of the identified species and its habitat. Although there have been improvements in the last several years, in some States this integral step has become a bottleneck preventing the timely processing of permits. Because of the vast number of lawsuits filed against FWS, the very funds FWS needs to carry out these critical duties are being diverted to defend litigation. Without consultation and the necessary documentation from FWS, BLM and other Federal agencies are prevented from acting in a timely fashion on a proposed project, leading to unnecessary delays. We urge Congress to enact reforms to prevent such frivolous lawsuits; thereby, freeing FWS to carry out those duties that will truly serve the purposes of the ESA.

ENDANGERED SPECIES ACT EFFECTS ON LANDOWNERS

The Endangered Species Act, unlike some other Federal laws, applies generally to both private and Federal lands. However, ESA does not provide Federal agencies with the authority to inventory private lands for the potential existence of threatened or endangered plant or animal species. Despite this lack of authority, Federal agencies have been able, in the case of split eState situations (Federal mineral/private surface), to require a Federal lessee to inventory the private surface and provide such information to the Federal agency. In the absence of such information, the land managing agency assumes a "worst case scenario" and devises additional protection measures and stipulations to be placed on the oil and gas project based on this assumption. This places unfair burdens on both the private surface owner and the Federal lessee. Moreover, it creates unnecessary conflict between the Federal mineral lessee and the private surface owner. The ESA should be revised to clearly State that no Federal agency has the authority to require an inventory of private surface merely because a proposed project is covering the underlying Federal minerals. In the absence of such a reform, a Federal mineral lessee is placed in the position of having to obtain information, oftentimes against the wishes of the applicable private surface owner, that the Federal agency has no right to obtain.

If the law were revised to prohibit a Federal agency from requiring an inventory of private surface before being able to act on an application to develop the underlying Federal minerals, this would also serve to alleviate the concerns of the private surface owners regarding misuse of this information by other private parties and organizations. Even if Congress does not prevent the collections of such information, it should protect such information from misuse. Private parties should not be able to submit a Freedom of Information Act (FOIA) request to a Federal agency to obtain ESA survey information gathered on private lands as that documentation should be held in confidence unless the landowner agrees to release the information. Congress has already established this precedent in other laws, and it should enact a similar provision here to protect private property rights.

Congress could provide further relief to both a Federal mineral lessee and an affected private surface owner by providing incentives to the private surface owner to allow access to its property. A reform of this nature would have a twofold benefit. First, it would encourage the recovery of potentially threatened and endangered species by providing the information necessary to truly assess the status of a species. Second, it would remove one of the conflicts between private surface owners and Federal mineral lessees.

INCENTIVES FOR VOLUNTARY PROGRAMS

Any reform of ESA should also include incentives for landowners and other public resource users to implement conservation measures on public lands. Notwithstanding the fact that the proposal to list the Mountain Plover was withdrawn in September 2003, several companies, including Devon, chose to be proactive with re-

spect to protection of the species and its habitat. This group of companies approached FWS and began to negotiate a Memorandum of Understanding (MOU) to cooperate in "good faith" and in a timely manner to develop a Candidate Conservation Agreement with Assurances (CCAA) for the Mountain Plover and the White-tailed Prairie Dog in Wyoming and Colorado. The CCAA would have provided assurances that if the Mountain Plover or White-tailed Prairie Dog were eventually listed as threatened or endangered, the FWS would not impose conservation measures on the agreement participants that were more stringent than those already agreed to by the parties. Because of the nature of landownership in the area to be covered by the CCAA, it would have been applicable to both Federal and private lands since sixty-six percent (66 percent) of the mineral and forty-nine percent (49 percent) of the surface eState is managed by Federal agencies in Wyoming.

As the MOU was being finalized, the FWS published in the Federal Register a final rule (Safe Harbor Agreements and Candidate Conservation Agreements with Assurances; 69 Fed. Reg. 24084, 24092—24094 (May 3, 2004) (codified at 50 C.F.R. parts 13, 17) that virtually eliminated the ability we had to be proactive, and removed any incentive to protect a candidate species through the development of a CCAA. The final rule stated that Candidate Conservation Agreements with Assurances could only be developed on private lands.

Congress must provide leadership in promoting voluntary efforts to conserve species and its habitat regardless of landownership. When 49 percent of the surface and 66 percent of the mineral eState in Wyoming are managed by Federal agencies who then lease these resources to others for development, the law must provide conservation opportunities to those who have leases to use either the surface or the mineral estate. If voluntary efforts to conserve a species are limited to solely privately owned lands, a valuable conservation tool will be needlessly removed. Although FWS is moving toward the recovery success of a few species under ESA, Congress should take all possible steps to provide avenues of conservation. Assurances and incentives to private entities, both landowners and energy companies, implementing voluntary conservation measures must be a part of ESA as this provides an essential tool to prevent the potential loss of a species and its habitat through a collaborative effort of private and public entities.

PETITIONS TO LIST A SPECIES

The Endangered Species Act, during its 30-year history, has produced minimal success for recovery of a species once designated as threatened or endangered. Yet, FWS is inundated with Petitions to list species. Citizen nominations for proposed additions to the list of species protected under ESA pose substantial problems not only for FWS, which must respond to the

Petitions, but also for other Federal agencies, states, lessees and private landowners. To be clear, the problem is not protection of truly threatened or endangered species, rather, it is the fact that anyone can submit a Petition to list a species, and the law currently contains no requirement that such a Petition be supported by use of the best scientific and commercial data. Regardless of the science, or lack thereof, supporting a Petition, the FWS has 90-days to respond.

In the absence of specific information, agencies typically give equal consideration to proposed and candidate species even though ESA's specific requirements regarding species status, distribution and habitat information are incomplete. The protective measures of ESA do not apply to the proposed species and its habitat. The protections of ESA are limited to those species actually listed as either threatened or endangered. However, in practice, the Federal land management agencies actually impose ESA protections to candidate and proposed species in addition to those truly threatened or endangered.

The FWS should not be required to spend precious staff time on Petitions lacking scientific merit. We urge Congress to amend ESA to provide a threshold requirement regarding the information filed in support of a Petition to list. Unless and until that threshold is met, FWS would not be required to act on a Petition. This approach would have a twofold benefit. First, it would ensure that the information required to begin the listing process would be at least as stringent as the information required to de-list a species. Second, it would potentially free FWS from some of the frivolous lawsuits with which it is currently bombarded; thereby, allowing funds that would have otherwise been expended to defend the lawsuits to be used to carry out those activities that would truly serve the purposes of ESA.

Recent petitions to list the Greater Sage Grouse and the White-tailed Prairie Dog are prime examples of Petitions filed without adequate supporting scientific information. Industry trade organizations, of which Devon is a member, submitted detailed, scientific comments challenging both petitions. In both instances, industry

after a careful review of the petitions by qualified experts, found that the petitions contained numerous flaws, errors, inaccuracies, contradictions, misstatements, misrepresentations, unsubstantiated positions and biased opinions. Petitions of this nature do not rise to the level of scientific sufficiency to warrant any action by the FWS, much less a positive 90-day finding. The standards for filing a Petition and granting a positive 90-day finding must be raised to require adequate, peer-reviewed science.

Furthermore if the FWS issues a "positive finding" it negatively impacts States, landowners and resource users because a species is elevated to a new level of protection even though it has not been formally listed as candidate, proposed, threatened, or endangered, and despite the fact that the Petition may not be supported by sound, scientific evidence demonstrating the need to list. Once a Petition has been filed, State and Federal agencies have internal policies that elevate the animal or plant to a "Sensitive or Special Status Species" worthy of additional protection. This standard is then applied during the NEPA process with the potential result that mitigation measures to protect the species may be imposed. Once a Petition is filed, the species is treated as de facto endangered before FWS has completed its analysis. While this action results in a heightened level of protection to prevent listing under ESA, such protection and its attendant costs may not be warranted if the 90-day finding is not supported by sound, scientific evidence.

In addition, special interest groups are not only filing Petitions with the FWS to list a particular species with meager, if any, supporting scientific data, such groups are also seeking to have Federal agencies manage species habitat (whether the species is proposed for listing or not) as an Area of Critical Environmental Concern (ACEC). An ACEC designation usually carries additional restrictions on mineral development.

The standards for filing a Petition to list and for issuing a 90-day finding must be more stringent, and FWS must be forced to undertake an analysis of the actual scientific data provided. Before a petition to list is granted a positive finding decision, it must be based upon the most current, viable, reliable, and accurate scientific data available. We urge Congress to amend ESA to provide a threshold level for information required to support a Petition to list; thereby the decision to list a species would be based on the same stringent standards as a decision to remove a species from the list.

RECOVERY OF SPECIES

Congress must make FWS accountable for the timely implementation of a recovery plan once a species is listed. One way to achieve this is to mandate that a recovery plan be developed concurrently with FWS' decision to list a species. Presently, the agency decides to list a species, and then it determines the recovery levels for the species. FWS can often take years after the listing before issuing a recovery plan. It is far more logical to require the recovery plan to be formulated at the same time the species is listed. The recovery plan should also be required to identify population goals for a species' recovery and protection of its critical habitat. Currently, species are being listed for which there is little or no information about their populations or required habitats.

If FWS does not have the information upon which to base a recovery plan how can it validly determine that a species is threatened? Therefore, we urge Congress to revise ESA to require the formulation of a recovery plan concurrently with a decision to list and to require that once the population objective in the recovery plan has been met, "hard release" language would provide that the species be automatically de-listed.

The ESA should also be reformed to allow consideration of isolated, but thriving species' populations. While we agree the FWS should be required to analyze a species throughout its entire range, it may not be necessary to list and protect a species as threatened or endangered range-wide. Not all populations may warrant the same level of protection in all areas, and ESA must provide flexibility in the management level for the species in different geographic locations.

FRIVOLOUS ENVIRONMENTAL LITIGATION

Another important ESA reform issue to consider is litigation by "special interest groups" whose sole purpose is to delay or prevent development of natural resources. In Wyoming, virtually all lease sales, and most all of the project level EA's or EIS's, including geophysical projects, have been protested, appealed, or challenged at the agency level and in Federal court based on asserted violations of ESA and habitat destruction issues. The same is true for the other Rocky Mountain States.

Clearly, ESA has become the "tool" of choice to prevent oil and gas development on Federal lands without regard for the increased costs and delays in decision-making by land management agencies and the resultant impacts on the United States taxpayers and others who use the public lands. The cost of "ESA abuse" is high and litigation is abundant. Because Federal oil and gas lessees have contractual rights and obligations to develop Federal minerals, lessees are often required, or elect to intervene in these lawsuits to defend their rights. Intervention in these lawsuits obviously costs additional time and financial resources that could be put to better use developing domestic energy sources. If Congress enacts some of those reforms Devon has advocated here today, in particular requiring a threshold level for filing a petition to list and a 90-day finding, we believe such reforms will be a step in the right direction to preventing such abuses of ESA.

RELATED ISSUES

While ESA issues play a significant role in our ability to access and develop Federal lands, there are other factors that impact our ability to produce energy in a timely manner. The National Environmental Policy Act (NEPA) process on public lands is exhaustive and is becoming more cumbersome over time. From the Resource Management Plan (RMP) stage to the Application for Permit to Drill (APD) issuance, there are at least four separate levels of NEPA analysis conducted, which includes consultation with several other cooperating agencies along the way. These NEPA documents (whether at the RMP or full field development phase) are taking longer to complete due to the added, and sometimes redundant, layers of analysis to determine impacts. Some EISs have taken 6 to 7 years for approval meanwhile development is put on hold until the analysis is completed. This delay in issuing APDs while extensive NEPA is conducted is significantly impacting our ability to provide energy to consumers in a timely manner. The process needs to be more efficient and the provisions in the Energy Policy Act of 2005 worked to achieve this purpose for example statutory categorical exclusions [See the section labeled "Energy Policy Legislation].

In addition we are seeing more requirements in the RMP and full field development EIS Records of Decision for monitoring and adaptive management prescriptions through "performance based" standards. While in theory it may make sense to monitor the impacts oil and gas activity has on other resources and adapt as necessary, in reality the land managing agencies do not have the funding or the staffing to comply with their obligations; thereby, leaving all of us vulnerable to litigation. Congress must consider appropriating additional funds for the land management agencies to comply with these requirements and prevent unnecessary legal challenges.

ENERGY POLICY LEGISLATION

Many Members of Congress did their part in passing the Energy Policy Act of 2005 to address the natural gas supply challenge by giving agencies a number of tools to allow them to process drilling permit requests in a more streamlined manner. Importantly, no environmental standard was waived nor was any step in the review process eliminated. Rather, Congress created several tools to allow agencies to process permits more efficiently.

The Intermountain West currently supplies over 25 percent of the Nation's natural gas. The National Petroleum Council estimates that this region has 284 trillion cubic feet (Tcf) of technically recoverable natural gas, enough to supply all of Americas current household energy needs for 60 years. Tools such as categorical exclusions allow for more efficient use of these resources in the Intermountain West.

Devon Energy and other companies in the large independent sector have a record of investing more than we earn, and 100 percent or more of our total cash-flow is reinvested to find and produce more energy. But we cannot risk making multibillion dollar decisions only to have royalty, tax or regulatory policies change—pulling project economics out from under us.

Instead of supporting laws that would assist industry in our ability to provide affordable energy to the citizens of this country and encourage less dependence on foreign energy, the House of Representatives recently passed the "Energy Policy Reform and Revitalization Act" (HR 3221). This legislation will effectively reduce funding and eliminate proactive steps to develop much needed energy resources, which in turn will slow the process and reduce supply. Congress should support laws that assume a good stable investment regime and smooth Government processes, which will promote continued investment in the development of this country's onshore and offshore oil and gas reserves. The U.S. Senate must maintain the "Energy Policy

Act of 2005" provisions to prevent a decrease in energy supplies and an increase in costs to the consumer.

RECOMMENDATIONS

In conclusion, Devon Energy appreciates Congress's recognition of the important role the Endangered Species Act plays in allowing oil and gas exploration and development of Federal lands to meet the growing energy needs of this Nation. Devon recommends that Congress consider the following points:

- Provide adequate funding to FWS in order to prevent bottlenecks on consultations and to promote the timely processing of permits to provide the country with energy to meet increasing demands.
- Reform ESA to provide incentives for private property owners to allow access to their property for the limited purpose of evaluating the potential impacts of a proposed Federal action.
- Reform ESA to promote voluntary efforts to conserve species and its habitat on Federal lands by entities / lessees with contractual natural resource management responsibilities.
- Strengthen scientific justification criteria for listing Petitions to be as stringent as the scientific justification criteria required for the recovery and de-listing processes.
- Require recovery plans to be developed at the time the species is listed and include population goals in the listing proposal for species recovery and its critical habitat.
- Institute "hard release" language, which must be required by law, that would provide the species be automatically de-listed once population goals have been met.
- Appropriate adequate funds for implementation of recovery programs to avoid placing unnecessary monetary burdens on private entities.
- Reform ESA to provide flexibility in managing isolated populations in certain geographic areas to eliminate the "one-size-fits-all" requirements.
- Congress must consider appropriating additional funds for the land management agencies to comply with these requirements and prevent unnecessary legal challenges.
- The U.S. Senate must maintain the "Energy Policy Act of 2005" provisions to prevent a decrease in energy supplies and an increase in costs to the consumer.

Mr. Chairman and members of the Committee, thank you again for the opportunity to share with you Devon's thoughts regarding "A Perspective on the Endangered Species Act's Impacts on the Oil and Gas Industry" along with an examination on ways to improve the current law.

Senator INHOFE. Well, thank you very much for coming down to testify today.

Mr. Haught.

STATEMENT OF JIM HAUGHT, MANAGER, ENVIRONMENTAL SERVICES ONEOK, INCORPORATION

Mr. HAUGHT. Thank you, Senator. And I want to thank you for the opportunity to provide testimony to the Committee from the pipeline perspective.

The pipeline segment of the oil and gas industry is the critical link required to get energy from areas of production to the supply chain.

My name is Jim Haught. I'm manager of Environmental Services at ONEOK, Inc. here in Tulsa where I have more than 15 years of experience in environmental permitting for energy projects.

The focus of this hearing, the endangered species and its impact on the oil and gas industry, is an extremely important and timely topic for our business and the people who depend on our industry.

In ONEOK's more than 100 years in the industry, we've never had as many miles of pipeline scheduled for construction as we do today.

ONEOK is the parent of three local distribution companies serving more than two million end-use customers, primarily homeowners and small businesses. ONEOK is also the general partner of a master limited partnership whose primary focus is the gathering, processing and transportation of natural gas and natural gas liquids, which include ethane, propane, and butane.

Underground pipelines have proven to be the safest and most efficient method to transport these products. Altogether, we are currently involved in one and a half billion dollars worth of pipeline construction and related infrastructure projects nationwide. These projects will be instrumental in supplying the energy and raw products required to sustain the economy and the quality of life enjoyed by Americans.

The topic of infrastructure development brings me to the subject of this hearing and the points I want to make today about the impacts the Endangered Species Act and environmental regulations in general on the development of these energy projects.

First, I want to make it abundantly clear that ONEOK's core values include the protection of the country's environmental and cultural resources. We work hand-in-hand with regulatory agencies to conduct extensive wildlife and other environmental surveys and are extremely sensitive to environmental issues before, during, and after construction.

We believe, however, that there are opportunities to improve the regulatory processes. Many of the current regulatory practices add to the permitting timeline and burden without producing significant environmental benefits.

The balance between environmental preservation and economic health can best be achieved through regulatory processes that utilize a flexible and measured approach.

A major point I want to make today is that pipeline construction projects are inherently different from many of the other construction projects subject to environmental regulations. Pipelines by nature are very narrow, they're linear, and they're buried. They pass through areas and have few above-ground facilities.

Once construction is complete and the pipeline is covered, restoration is initiated to repair these disturbed areas and return them to normal contour and encourage revegetation. Local animal and plant species will return in time.

Like all such construction projects, there are disturbances from pipeline construction. It should be noted, however, that following installation of a pipeline, there are often benefits to wildlife and plant species.

The impact of the Endangered Species Act to the pipeline segment of the oil and gas industry varies with the locale and species of concerns we've heard. There is no doubt that the Endangered Species Act has had some successes as the foundation of maintaining and re-establishing populations of a number of threatened species. However, some of the processes through which the Act is implemented have negative impacts on the oil and gas industry and private landowners.

Landowner concerns that result in delays completing endangered species requirements can threaten a project's schedule and potentially its viability.

In areas of rapid energy development, some landowners have resisted granting access for wildlife surveys that are required beyond the boundary of the proposed project. These landowners report they consider it an intrusion on their private property rights for Federal agencies to require project applicants to conduct sometimes repeated investigations on their property outside of the project footprint.

Although additional agency consultation or other means may be available to determine potential impacts if access is not granted, these options could result in unanticipated delays of months.

Minor delays and permit issuance can sometimes significantly increase costs and/or cause major delays in project completion. Projects are often planned so that construction will occur during the time of the year that will minimize environmental impacts.

Regulatory approved delays can push construction back to less desirable timeframes. For example, in much of the country construction pushed to winter is often slowed by poor weather conditions and shortened day lengths. This causes a longer construction period overall and a resulting increased potential for environmental impacts.

In an effort to expedite the installation of energy pipelines, we recommend that agencies respond to the inherent difference between energy pipeline and other project types by continuing to implement processes to allow the permitting effort to be proportionate to the potential risks.

In closing, we believe that practices can be developed that would allow energy-project permitting to be expedited while still ensuring adequate protection of the environment.

The foundation for these changes would be that the magnitude of the permitting process would be proportional to the potential impacts of the project. This measured approach would lesson the burden on limited agency resources and promote efficiency.

Expedited energy project approvals would be consistent with the current Executive and congressional guidance that already exists.

What is the impact of the Endangered Species Act and other environmental protection programs on the oil and gas industry? In most cases, the impacts are reasonable. However, the impact of unnecessarily prolonged permitting periods and restrictions can be detrimental to the promotion of energy production.

We ask that regulatory agencies be guided to develop creative opportunities to continue to protect the environment while promoting energy independence.

Senator INHOFE. Try to wrap up now if you would, please.

Mr. HAUGHT. Thank you for your time.

[The prepared statement of Mr. Haught follows:]

STATEMENT OF JIM HAUGHT, MANAGER, ENVIRONMENTAL SERVICES
ONEOK, INCORPORATION

The Endangered Species Act's Impacts on the Oil & Gas Industry Thank you, Senator Inhofe. And thank you for the opportunity to testify before the Committee on Environment and Public Works.

My name is Jim Haught. I am Manager of Environmental Services at ONEOK, Inc. (ONEOK) here in Tulsa where I have more than 15 years experience in environmental permitting for energy projects. The focus of this hearing—the Endangered Species Act and its impact on the oil and gas industry—is an extremely important and timely topic for our business and the people who depend on our industry. As

America's population and economy continue to grow, so does the need for energy and related raw products. We at ONEOK are working hard to satisfy that need. In ONEOK's more than 100 years in the industry, we have never had as many miles of pipeline scheduled for construction as we do today.

ONEOK is the parent of three local distribution companies serving more than two million end-use customers, primarily homeowners and small businesses. ONEOK is also the general partner of a master limited partnership whose primary focus is the gathering, processing and transportation of natural gas and natural gas liquids, which includes ethane, propane and butane.

Underground pipelines have proven to be the safest and most efficient method to transport these products. Altogether, we are involved in $1.5 billion worth of pipeline construction and related infrastructure projects nationwide. These projects will be instrumental in supplying the energy and raw products required to sustain the economy and the quality of life enjoyed by Americans.

The topic of infrastructure development brings me to the subject of this hearing and the points I want to make today about the impacts that the Endangered Species Act and environmental regulations in general have on the development of these projects.

First, I want to make it abundantly clear that ONEOK's core values include the protection of the country's environmental and cultural resources. We work hand-in-hand with regulatory agencies to conduct extensive wildlife and other environmental surveys and are extremely sensitive to the environment before, during and after construction. We believe, however, that there are opportunities to improve regulatory processes. Many of the current regulatory practices add to the permitting timeline and burden without producing significant environmental benefits. The balance between environmental preservation and economic health can best be achieved through regulatory processes that utilize a flexible and measured approach.

A major point I want to make today is that pipeline construction projects are inherently different from the many other construction projects subject to environmental regulation. Pipelines are narrow, linear and buried. They pass through areas and have few above-ground facilities. Once construction is complete and the pipeline is covered, restoration is initiated in the disturbed areas to return them to normal contour and encourage re-vegetation. Local animal and plant species typically return in time.

Like all such construction projects, there are disturbances from pipeline construction. It should be noted, however, that following installation of a pipeline there are often benefits to wildlife and plant species. Just recently, a wildlife manager told me that a previous pipeline project through the wildlife management area resulted in positive outcome from the corridor of mixed vegetation that attracted concentrations of large game and has helped promote an increase in the previously declining grouse population.

The impacts of the Endangered Species Act to the pipeline segment of the oil and gas industry vary with the locale and species of concern. There is no doubt that the Endangered Species Act has been successful as the foundation for re-establishing healthy populations of a number of previously threatened species. However, some of the processes through which the Act is implemented have negative impacts on the oil and gas industry and private landowners.

Landowner concerns that result in delays completing endangered species requirements can threaten a project's schedule and potentially its viability. In areas of rapid energy development, some landowners have resisted granting access for wildlife surveys that are required beyond the boundary of the proposed project. These landowners report they consider it an intrusion on their private property rights for Federal agencies to require project applicants to conduct sometimes repeated investigations on their property outside of the proposed project footprint. Although additional agency consultation or other means may be available to determine potential impacts if access is not granted, these options could result in unanticipated delays of several months.

Minor delays in permit issuance can sometimes significantly increase costs and/or cause major delays in project completion. Projects are often planned so that construction will occur during the time of year that will minimize environmental impacts. Regulatory approval delays can push construction back to a less desirable timeframe. For example, in much of the country construction pushed to winter is often slowed by poor weather and shortened day length. This causes a longer construction period overall and a resulting increased potential for environmental impacts.

In an effort to expedite the installation of energy pipelines, we recommend that agencies respond to the inherent difference between pipeline and other project types by continuing to implement processes that allow the permitting effort to be propor-

tionate to the potential risks. An example of a significant change would be the development of standard permits, similar to the U.S. Army Corps of Engineers' nationwide Permits, for pipeline construction. These permits would direct the applicant toward pre-approved guidelines to identify environmental impacts and then allow use of appropriate, approved mitigation measures.

In closing, we believe that practices can be developed that would allow energy-project permitting to be expedited while still ensuring adequate protection of the environment. The foundation for these changes would be that the magnitude of the permitting process would be proportional to the potential impacts of the project. This measured approach would lessen the burden on limited agency resources and promote efficiency. Expedited energy project approvals would be consistent with the Executive and congressional guidance that already exists.

What is the impact of the Endangered Species Act and other environmental protection programs on the oil and gas industry? In most cases, the impacts are reasonable and warranted. However, the impact of unnecessarily prolonged permitting periods and restrictions can be detrimental to the promotion of energy production.

We ask that the regulatory agencies be guided to develop creative opportunities to continue protecting the environment while promoting energy independence. Thank you for the opportunity to testify today.

Senator INHOFE. Thank you. And I do have a number of questions so what I'm going to do is ask questions and try to get brief answers. But Dr. Tuggle made a statement that I think is accurate in this region. I suspect it may not be accurate in other regions in terms of a project has not been stopped as a result of this—am I accurately quoting you Dr. Tuggle—has not been stopped as a result of these section 7 discussions.

Do you folks agree with that? Any of the four of you disagree with it?

I think the problem—and see if I've got this message right—may well be that while delays make it much less profitable, that perhaps some of the projects, while they were completed did not—were not profitable projects; is that accurate, or is that inaccurate?

Mr. SULLIVAN. Accurate. I think that's correct.

Senator INHOFE. Let's start with you, Mr. Buchanan. You made some comments. Would you like to elaborate any on the voluntary management plan for the Arkansas River Shiner?

Mr. BUCHANAN. Certainly I would. I appreciate the opportunity because I would be very remiss if I did not take the opportunity to address that, and tell you, sir, that that's an opportunity that has existed amongst interested parties. It's allowed groups to come together and identify local problems and then certainly look at local ways to solve them to come up with a doable situation that does what needs to be done.

With that said, the OFB legal foundation has worked cooperatively with the Tulsa Fish and Wildlife very progressively I would say, and I want you to know that we're very happy with that working relationship and are proud to say that we are partners with Tulsa in that effort.

The voluntary management plan is more complicated that is being undertaken for the Canadian River municipal water simply because of the amount of miles that are being included in the river. So it will be a little more difficult and there will be more conversation involved, but it is ongoing, it is being progressive. It is coming up with the desired results. And the Canadian River Municipal Water Authority will hold a progress report and status meeting on November 1, and the Foundation will be on the program to further explain this.

Senator INHOFE. Thank you very much.

Mr. Sullivan, at a recent Senate Energy Committee, two of the Deutsche Bank energy experts stated that—and I'm going to quote this—"Anyone who blames record high U.S. gas prices on gouging at the pump, simply reveals their total ignorance of global supply and demand fundamentalists."

Mr. Sullivan, how can a politician be in favor of increasing our domestic production and yet be so punitive in their actions? Do you have any thoughts about that? With the exception of me.

Mr. SULLIVAN. With your notable exception, and I appreciate it. But you cannot—you simply cannot have energy security while punishing the very people that can get you out of that security box.

I don't know why it is in this country that we can't return to the National resolve that we had in World War II where we turned to industry to solve these problems. We turned to science to get us to the moon. Why can't we turn to the energy industry to get us off of this dependence on oil? We rather choose to bash and to punitively address the industry, the very people that can solve the problem. So you can't have it both ways.

Senator INHOFE. Well, I understand that. I live with that on a daily basis. It is difficult, but I would like to have you specifically address the part—the reference that was made on gouging, because—and how that relates to the global supply and demand fundamentalists that he refers to.

Mr. SULLIVAN. First of all, I would reiterate that we, as independents, we live or die at the wellhead with that price, and that price is set on a global—for oil I'm talking about and natural gas.

Senator INHOFE. I think that's a good point.

Mr. SULLIVAN. As an independent, we don't even have a chance to gouge. But having said that, I am convinced that there is enough of a pure market for oil worldwide and enough in the pure market for gas, at least continentally, that it would be very difficult to gouge.

Senator INHOFE. Well thank you. That's good.

Ms. Bower-Moore, according to a 2004 Department of Energy report—which I am going, without objection, to make that part of the record—on natural gas, critical habitat designations and section 7 consultations were estimated to have caused delays to a natural gas projection for 6 months to 2 years with an estimated cost over a 30-year period to the economy of 261 to $979 million.

The question would be, what has been your experience with delays of your company's projects due to the ESA?

Ms. BOWER-MOORE. Unfortunately, Mr. Chairman, special interest groups are using the Endangered Species Act for political reasons most often and not biological reasons.

So while ESA listings of a species are significant, it's the entire listing and de-listing process that has a significant impact on our ability to do business on public lands.

Once a petition is filed, it is internally elevated by the land managers such as the Bureau of Land Management or the Forest Service that increase our mitigation costs, our protection costs and delays in the process. So once the petition is filed, the burden of proof changes for us as in innocent until proven, to guilty until proven innocent.

Senator INHOFE. And of course those costs are passed on. That's the hardest thing for people to understand that nothing happens in a vacuum.

And I'd ask you further, the Clinton administration issued 50 percent more oil and gas leases. You know, you hear so much about this Administration and some of these special interest groups will have us believe that the Bush administration has issued the oil and gas leases at an unprecedented pace, and yet it's my understanding that the Clinton administration issued 50 percent more oil and gas leases and less than one-tenth of these were challenged.

I think it was Secretary Norton testified in 2005. Do you have any thoughts about that?

Ms. BOWER-MOORE. Well, unfortunately, once again we see that environmental groups are using the Endangered Species Act to benefit themselves, and it does have an impact on our ability to do business on public lands. We think there are some things in the law that we could change that would help that.

In addition, however, we would like to see Congress encourage incentives to the private sector for habitat enhancement projects and conservation measures established on Federal lands, not just private lands.

And what we mean is, if a company such as Devon were willing to implement voluntarily habitat enhancement measures on areas that were not developing, we feel that we should be able to get some assurances from the Federal land management agencies that we can get something back in return for our efforts for that.

Senator INHOFE. Well, let me suggest you put that down. This is something—a proposal that I think could be considered, we could be of some help to you in this. So why don't you do that for the record for this meeting.

Mr. Haught, in your testimony you discussed how delays in the permitting process can actually pose a detriment to the wildlife environment by pushing construction into less desirable seasons of the year.

Can you give us some examples of how this can actually hurt, as opposed to help the environment?

Mr. HAUGHT. Typically construction periods that are beneficial from a logistic standpoint for construction fall during the same times of year that have the fewest environmental impacts. They tend to be in the late spring, summer and early fall times. These times avoid, from an endangered species standpoint, most of the breeding season, nesting season for raptors and critical large game habitat times.

By trying to consider both the environmental impacts of construction timing and the construction standpoint, we can back into a time to allow reasonable permitting periods to be able to accomplish this. When those permitting periods are extended, it will push those projects into the times of the year that—and the winter may encroach on critical habitat range for large game, and in the springtime will get into those breeding and nesting periods where you have more detrimental impacts that you would have had the project been allowed to occur on time.

Senator INHOFE. In currently obtaining a 404—a section 404 permit under the Clean Water Act, often triggers a section 7 consultation under the ESA.

Now if the Federal jurisdiction under the Clean Water Act were expanded, and you know what we're talking about here, to include isolated non-navigable waters, could that result in additional ESA consultations for your projects?

Mr. HAUGHT. Very timely question, Senator, and the answer to that is, yes, it would result in additional consultations required. Many times the Clean Water Act is the only trigger of Federal involvement for small distribution projects,

In these instances we're talking about usually extensions of distribution systems, a very small diameter pipe that happened very rapidly, and this Federal trigger then pulls in—from the Water Act—pulls in the endangered species' obligations.

Senator INHOFE. That's right.

How about you, Mr. Buchanan, in the Ag world?

Mr. BUCHANAN. I would add that it's an extremely timely topic. In fact, sir, I came up yesterday to Tulsa to meet with the Corp on this exact issue. We have a problem in the Lugert-Altus irrigation district with trying to conserve and be more efficient with our use of waters.

And one of our proposed activities has triggered the potential of what we were just talking about. And it's an ephemeral stream at best. We feel that it is not navigable at all. It does not fall under the jurisdictions. And it creates a major problem whenever we're trying to achieve those efficiencies and conservation that the rest of the world wants us to do.

Senator INHOFE. Give us an example of, under this ruling that we're talking about here, what could be considered navigable?

Mr. BUCHANAN. Well, you're asking for my definition, I assume, and that's if I could put a boat on it and float it, that's navigable to me.

Senator INHOFE. OK.

Mr. BUCHANAN. And when we're in Western Oklahoma, you've got to have a very shallow-drafting boat to make that happen.

Senator INHOFE. Yes, I understand that.

Mr. Sullivan, or Ms. Bower-Moore, do you have any comments to make about that?

Mr. SULLIVAN. Yes. When you start including culverts, ditches, arroyos in navigable waters and bring in all the regulations that go with that, trigger the ESA, you're taking a break and putting it right on the oil and gas industry and saying slow down.

Senator INHOFE. Do you agree?

Ms. BOWER-MOORE. I think it's been well said, Mr. Chairman.

Senator INHOFE. Ms. Bower-Moore, according to the American Gas Association, "America is not running out of natural gas and is not running out of places to look for natural gas. America is running out of places where we are allowed to look for gas." And that's a quote.

Could you provide some examples from your experiences as to the truth of this statement?

Ms. BOWER-MOORE. Mr. Chairman, one of my favorite sayings, as I speak in Wyoming, is minerals are where they are, and the rea-

son we produce them at the levels and rates we produce them, is because the consumers' demand continues to increase.

And so not only is the Endangered Species Act delaying or impeding our ability to access those resources, also the need for process as a whole is having that impact.

One of the other things that we're seeing, Mr. Chairman, is that staffing for Federal land management agencies is becoming increasingly problematic. It is the same people within those agencies that are looking at all of the different projects on a larger level down to the APD level. And with the lack of manpower, the consistent turnover in the field office, and multiple analyses, they are all having a significant impact in our ability to meet the energy needs of this Nation in a timely manner.

Senator INHOFE. Sometime it might be worth quantifying that as to how that's going to affect the ultimate cost.

Mr. Sullivan, it's my understanding that the Fish and Wildlife Service sometimes creates the Best Management Practices for certain exploration activities during the course of a section 7 consultation.

Does this pose problems for the independent operators?

Mr. SULLIVAN. It certainly does. As I stated in my testimony, there's really no evidence the oil and gas activities have impacted the burying beetle at all. However, the Best Management Practices were developed for our business, and—including the baiting I referred to. And I just feel that we are environmental stewards who can figure out—when a serious problem is presented to us, we can figure out a way to protect the environment and still get up the reserves that this country needs.

Senator INHOFE. Mr. Haught, you've been concerned with this private property rights. This happens to be one of my favorite subjects. In fact, way back—oh, gosh, 40 years ago or so it was, when I was—the first thing I did—first trip I took to Washington after being elected to the State

Legislature was to—in fact, I was—being in this courtroom reminds me, I was with Ralph Thompson, at that time he was a first term, and David Boren, the three of us went to Washington to protest Lady Bird's Highway Beautification Act of 1965. And that was all about property rights. And we were protesting it in front of the committee called the Environment and Public Works Committee, the same committee I ended up chairing. It's kind of poetic justice.

You're the second person today to voice concerns about private landowners and property rights. And they're very important to me.

How can we minimize the effect of the environmental regulations on private landowners and at the same time speed energy resource development?

Mr. HAUGHT. It appears that most of the issues we have with landowners' concern with the ESA itself, comes in those areas of high energy development.

The landowners tend not to object as much to the pipelines and activity that is going on as they do to the multiple attempts with the Government agencies to require these companies to conduct surveys on their private property.

We think that this is an opportunity, one of the opportunities to follow the recommendations we made and look at the projects that

are being presented on it on an individual basis and try to make those requirements proportionate to the potential impact.

The pipeline issues, pipeline right-of-ways tend to be very narrow, and therefore, the surveys and the requirements there should be narrowed also.

Senator INHOFE. Mr. Sullivan, what role do you see that the independent oil and gas operators play in securing American's energy future?

Mr. SULLIVAN. I see it as an essential role, Senator. If we are going to, in the long term, get onto renewables or some alternative fuels, that's fine and I'm in favor of it, and am actually spending some of my time working on those things.

But in the meantime, the short intermediate term, we are hooked on oil and natural gas. And it's the independent producer, and only the independent producer, who can help mitigate that problem. So we need to allow the independent producer the freedom of regulation and stifling rules and laws so we can do our thing and help this country while we're transitioning to long term—

Senator INHOFE. A lot of people don't realize the role of that in marginal wells for example, and the very small—I heard a statistic not too long ago that apparently was true, that if we had everything flowing today that's been plugged up from the margin of wells, it would exceed what we're having to import from Saudi Arabia. Does that sound reasonable?

Mr. SULLIVAN. I can't verify that number, but I can say that right here in the State of Oklahoma, for example, there are more reserves of oil and gas in the ground than we have produced since inception 100 years ago.

Senator INHOFE. That's a good one to use.

Mr. SULLIVAN. What's required to get them out is the economic incentive to do so. And everybody cusses the high prices, but it is causing us independents to go take those risks. And we're getting oil out of shale and out of places you wouldn't imagine because of these high prices. So we know where the reserves are. It's a matter of economics and the lack of discouragement from the Government to get—

Senator INHOFE. You mentioned shale. That's a huge potential that we have out there.

Mr. SULLIVAN. It is; it's huge. And, Senator, my little company, we, today, are spending virtually all of our resources going after reserves in your old stomping ground in Osage County, an old producing area that everybody knew was there but was heretofore uneconomic to get out. And now we've developed through technology, and through, yes, higher prices, we are incentivized to go get them.

Senator INHOFE. Well, that's ironic, because many, many years ago, and the story I told you about, a tool dresser on a cable tool rig, we were actually going after the stuff that had been left by the big guys. Now you're doing this again in the same area.

Mr. SULLIVAN. Exactly.

Senator INHOFE. Mr. Buchanan, I wrote an article for the Energy Law Journal in 2005. And by the way, I'll insert that, without objection, into the record also. I refer to the fact that some environ-

mental regulations derive natural gas demand while others simultaneously restrict natural gas supply.

What effect does this have on farmers? You know, a lot of people don't know that relationship with the Ag community.

Mr. BUCHANAN. Well, certainly. It's a very short answer, which is that regulations slow down production. And when demand is high, prices increase. That's how our markets work. High oil and gas prices negatively impact production agriculture since natural gas is the most common component in manufacturing nitrogen fertilizer.

Senator INHOFE. Did you agree with my statistic in my opening statement, that it's 90 percent?

Mr. BUCHANAN. Yes, sir. And it's becoming a burden that we cannot continue to carry, the cost of that nitrogen fertilizer.

Senator INHOFE. Mr. Haught, one of the pipeline projects that ONEOK is currently working on—will go from

Wyoming to Oklahoma, one of the pipelines. That pipeline will cross the boundaries of three Environmental Protection Agency regions; two Fish and Wildlife Service regions. And it's my understanding that the interpretations of ESA and other environmental laws can vary widely between the EPA and the Fish and Wildlife; and then from region to region, from State to State.

What has been your experience working within this framework of regions in these States, and how has inconsistency between these States and agency regulations affected you?

Mr. HAUGHT. Senator, those variations in implementing the same requirements, the same acts are such that from a practical standpoint we have to treat each of those different, States different—different regions and even different districts within the same agency. Each of their processes are different enough that we tend to treat those as a different permitting process.

Sometimes the variations may be as minor as a different form to accomplish the same thing, to as much as programmatic differences, wherein one agency, if there's a requirement, will put the onus on the project applicant to do the consultations and you can have a little more control of your timing destiny that way, whereas other agencies implement the same regulation may require that all contacts, all consultations, be agency to agency only.

In this case the applicant doesn't have an opportunity to provide resources to that process and you're dependent upon staffing at the agencies who are—tend to be burdened with heavy workloads as it is. And many times it negatively impacts those projects.

Senator INHOFE. Well, let me thank all of you. I've completed my checklist, but what I'd like to do at this time is kind of start over here maybe again with you, Mr. Buchanan, on anything you don't feel you were able to cover in your opening statement or any thoughts that have not been discussed that relate to this—today's discussion. Would you like to make any further comments, take 5 minutes or so?

Mr. BUCHANAN. Certainly it won't be that long, sir. What I would like to add though to try to tie up—from an Ag viewpoint—it's been referred to, I believe Mr. Sullivan talked about the dependence, our foreign dependence on energy for this Nation, how you developed that taste and that thirst, and that's where we are satisfying that.

From Ag viewpoint, what we see happening because of regulatory activities that are coming down to us, is that this Nation is on the road to becoming foreign dependent for their production of food and fiber.

And when we consider safety issues, not only of National safety, but just on your dinner plate, safety of what you're eating, that is something we do not, cannot, and should not pursue. We have to maintain a healthy Ag economy in this Nation.

Senator INHOFE. I think it's very important to have this as a part of this record.

Mr. BUCHANAN. I would agree. Thank you, sir.

Senator INHOFE. Mr. Sullivan, it's you that brought up the global warming, not me. But I would like to make an observation that in this recess, we've been in recess for 3 weeks now, and there have been more changes in scientific evidence having to do with anthropogenic gases affecting climate change than there has been in probably in the 6 months before that. And so it's kind of interesting that that's going on right now.

It's also interesting that while we were all concerned about the Wharton Econometrics Survey, it talked about the expense of what it would cost to have some of these cap-and-trade policies, in effect what it would cost a family of four.

The MIT came out with another study saying that they are far too conservative, and that the current bills that are being considered would cost each family of four some $4,500 a year in what I would refer to as direct taxes.

You know, that would be actually 12 times larger than the largest tax increase in recent history, and that was the 1993 tax increase for America.

I don't have a question that goes with that, other than do you agree, and is there anything else you'd like to elaborate on?

Mr. SULLIVAN. I agree. And just in my closing remarks, Senator, I think—I remember in 1974, President Ford with some ballyhoo, came out with what he called "Project Independence." And he was very concerned, as were others, about our country's dependence on foreign oil. We were importing 26 percent of our oil. We wore little lapel pins that said "Project Independence." We're now importing 60 percent of our oil, and no one seems to care.

So, Senator, to get up to 50,000 feet in one of your airplanes and look down on it, I think the big picture is simply as follows: We must, as a country, have the National resolve to focus on this very serious issue and solve it. We are in danger of—we are putting our destiny in the hands of other people, and they don't like us. We've got to change that.

So the independents in this country, and especially in this State, are one of the key elements, as I said, in at least the short and intermediate term helping us solve that problem.

We've got to get over onto renewals. And I'm a big fan of that.

But this whole business about regulation and endangered species, it must take a different priority to that very important issue of getting this country off the dependence of foreign oil.

Senator INHOFE. Thank you very much. Excellent statement.

Ms. Bower-Moore.

Ms. BOWER-MOORE. Mr. Chairman, the only one thing that I did want to quickly address that I didn't address in my oral testimony was regarding private landowners. And in the State of Wyoming we have a significant amount of split estate, Federal and mineral and private surface.

In order to access that surface, it's a requirement that we do surveys for any proposed, threatened or endangered species. And it is a real thorn of contention with our landowners.

If there is no way to change the law to prevent those surveys from being conducted regarding oil and gas projects, then we need to find a way that information would be—would not be available to be FOIA'd in the public arena because landowners have a fear that information will be used by special interest groups against them on their private property.

Having said that, Mr. Chairman, thank you for letting us attend. And Devon is committed to protecting the environment and developing the resources this country desperately needs.

Senator INHOFE. I know that's true.

Mr. Haught.

Mr. HAUGHT. Thank you, Senator. I would just like to reiterate the concept that we wanted to express here, in that we're not—and I don't think anyone on this panel is probably totally against regulation—but I think we are for fair and balanced regulation that's proportionate to the potential impact so that we can have a risk benefit outcome that's—will help promote, not only our economy, but the energy industry also.

We believe that mechanisms do exist or the authorizations do exist for agencies to be more creative and flexible in their permitting issues.

We think that some direction to those agencies to consider those alternatives as they are presented would be something that we'd like to see.

Senator INHOFE. That's good.

Dr. Tuggle, I appreciate very much your remaining for the rest of it. If there's any last comment you'd like to make or any response to anything that's been said, you feel free to come forward. And I'm sure Mr. Sullivan will give you his chair for a minute or so.

Dr. TUGGLE. Senator, I certainly appreciate the comments that have been made, and I've taken a couple of notes here. And I think that one of the things that I would like to emphasize is the fact that, as you are aware, you've been briefed by our director on the proposed regulatory changes from a policy standpoint on how we administer the Endangered Species Act internally. And we are working on some of these common sense approaches.

One of the things that I think is really incredible is the fact that, as we have talked about the development of Best Management Practices, we have reached out to industry.

The Service does not perceive the industry as the bad players. We think that conservation is a part of the American fabric, and we certainly appreciate the fact that industry has stepped up and played a significant role in terms of protecting and conserving species.

I think the thing that we're talking about here is, is a minimization of some of the inconsistencies as it relates to how we administer the Act.

We think that some of the recommendations that we're going to be making with our reg changes may address some of these issues. And it boils down to what someone said early about common sense.

But the fundamental premise is, is that the Service continues to reach out to industry or anybody that's affected by how we administer the Endangered Species Act with very proactive programs such as programmatic biological opinions, such as Best Management Practices and such as habitat conservation plans so that we can minimize these impacts from a regulatory standpoint and maximize the impacts from a conservation standpoint.

Senator INHOFE. I appreciate that. And I hope that you will take some of this evidence back with you and share it with the Director and perhaps we can address some of these problems.

I look forward to visiting with all of you in the future about how we're doing that. And I appreciate so much all five of you being here to testify today. And we are adjourned.

[Whereupon, the committee was adjourned.]

[Additional statements submitted for the record follow:]

United States Department of the Interior

OFFICE OF THE SOLICITOR

March 16, 2007

M-37013

Memorandum

To: Director, U.S. Fish and Wildlife Service

From: Solicitor

Subject: The Meaning of "In Danger of Extinction Throughout All or a Significant Portion of its Range"

I. INTRODUCTION

Since 1973, the Endangered Species Act (ESA) has defined "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." Endangered Species Act of 1973 § 3(6), 16 U.S.C. § 1532(6) (2006) (ESA/Act). Thirty-three years later, questions continue to be raised about the meaning of the phrase "in danger of extinction throughout ... a significant portion of its range" (SPR phrase/SPR language).

As a result of these continued questions, the Fish and Wildlife Service (Service) is working to develop a policy on how to apply the SPR phrase when determining whether a species is an endangered species under the Act.[1] To facilitate the development of this policy, you have requested this Office's view of the meaning of the SPR phrase. Our office has reviewed the statutory language, the legislative history, relevant court rulings, and Departmental practices. I provide you our most informed view of the general meaning of the SPR phrase and the specific meaning of its component terms, particularly "significant" and "range."

Your effort to develop a policy is prompted, in part, by the 2001 decision of the Ninth Circuit Court of Appeals that rejected the interpretation of the SPR phrase favored by the Department. *Defenders of Wildlife v. Norton*, 258 F.3d 1136 (9th Cir. 2001) (flat-tailed horned lizard).[2]

[1] Because the definition of "threatened species" under the ESA includes the SPR phrase—i.e., a threatened species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range"—the opinion given in this memorandum about the meaning of the SPR phrase also applies when the Service is determining whether a species is a threatened species.

[2] Seven district courts have essentially adopted or followed the Ninth Circuit's interpretation. *See Nat'l Wildlife Fed'n v. Norton*, 386 F. Supp. 2d 553 (D. Vt. 2005) (gray wolf); *Defenders of Wildlife v. Secretary, U.S. Dept. of the Interior*, 354 F. Supp. 2d 1156 (D. Or. 2005) (gray wolf); *Defenders of Wildlife v. Norton*, 239 F. Supp. 2d 9 (D.D.C. 2002) (Canada lynx); *see also Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 402 F. Supp. 2d 1198 (D. Or. 2005) (coastal cutthroat trout) (following flat-tailed horned lizard case in general, without directly addressing other possible interpretations); *Envtl. Protection Info. Ctr. v. Nat'l Marine Fisheries Serv.*, No. C-02-5401 EDL (N.D. Cal. Mar. 1, 2004) (green sturgeon) (same); *Southwest Ctr. for Biological Diversity v. Norton*, CA

There, the Ninth Circuit interprets the SPR phrase as a "substantive standard" for determining whether a species is an endangered species. Under the court's interpretation, there are two situations in which the Secretary must determine a species to be an endangered species: 1) where the Secretary finds that the species is in danger of extinction throughout all of its range; or 2) where the Secretary finds that the species is in danger of extinction throughout a significant portion of its range.

Since approximately 2000, the Department, on the other hand, has interpreted the SPR phrase to mean that a species is an endangered species only when it is in danger of extinction throughout a portion of its current range that is "so important to the continued existence of a species that threats to the species in that area can have the effect of threatening the viability of the species as a whole." *Ctr. for Biological Diversity v. Norton*, 411 F. Supp. 2d 1271, 1278 (D.N.M. 2005), *appeal pending* (Rio Grande cutthroat trout). Under the Department's interpretation, there is only one situation in which the Secretary must find a species to be an endangered species—when the Secretary finds that it is in danger of extinction throughout all of its range. Under this interpretation, the Secretary need not demonstrate that there are threats so severe throughout the range that the species is in danger of extinction in every portion of its range. Instead, if the Secretary can demonstrate that the species faces threats in only a portion of its range so severe as to threaten the viability of the species throughout its range, a determination that a species is an endangered species would be justified. In other words, since approximately 2000, the Department has viewed the SPR phrase not as providing another "substantive standard" for determining whether a species is an endangered species, but rather as "clarifying" the evidentiary burden the Secretary must satisfy when making that determination.[3] For this reason, the Department's interpretation of the SPR phrase is sometimes referred to as the "clarification interpretation." The Department's interpretation of the SPR phrase was recently upheld by the District Court of New Mexico. *Id.* Only two district courts have upheld the Department's interpretation, to date.[4]

No. 98-934 (RMU/JMF), 2002 U.S. Dist. LEXIS 13661 (D.D.C. July 29, 2002) (magistrate's recommendation) (Queen Charlotte goshawk) (same), *adopted in rel part*, slip op. (D.D.C. May 24, 2004); *Defenders of Wildlife v Norton*, CA 99-02072 (HHK) (D.D.C. Dec. 13, 2001) (Florida black bear) (same).

[3] Prior to the 1978 Amendments, some listings specified that species were endangered in only part of their range within the United States. Boundaries for these partial range listings varied from the U.S.-Canadian border defining the contiguous United States for such species as the grizzly bear, 40 Fed. Reg. 31,376 (July 28, 1975), and gray wolf, 41 Fed. Reg. 17,742 (Apr. 28, 1976), to a mere three parishes in Louisiana comprising the listed range of the American alligator, 40 Fed. Reg. 44,412 (Sept. 26, 1975). Species were also listed as endangered in some states and threatened in others, such as the gray wolf, 41 Fed. Reg. 24,062 (June 14, 1976), and the bald eagle, 43 Fed. Reg. 6230, 6233 (Feb. 14, 1978). However, the determinations therein of endangered species and threatened species do not explain the bases for listing them in only portions of their ranges.

[4] The District Court of Colorado, citing the District Court of New Mexico's decision with no additional analysis, also upheld the Department's interpretation of the SPR phrase. *Ctr. for Biological Diversity v U S Fish & Wildlife Serv.*, CA No. 05-cv-00305-RPM, 2007 U.S. Dist. LEXIS 16175, at *8 (D. Colo. Mar. 7, 2007) (Bonneville cutthroat trout).

For the reasons given below, I conclude that:

1. The SPR phrase is a substantive standard for determining whether a species is an endangered species—whenever the Secretary concludes because of the statutory five-factor analysis that a species is "in danger of extinction throughout ... a significant portion of its range," it is to be listed and the protections of the ESA applied to the species in that portion of its range where it is specified as an "endangered species";

2. the word "range" in the SPR phrase refers to the range in which a species currently exists, not to the historical range of the species where it once existed;

3. the Secretary has broad discretion in defining what portion of a range is "significant," and may consider factors other than simply the size of the range portion in defining what is "significant"; and

4. the Secretary's discretion in defining "significant" is not unlimited; he may not, for example, define "significant" to require that a species is endangered only if the threats faced by a species in a portion of its range are so severe as to threaten the viability of the species as a whole.

II. ANALYSIS

A. The Language of the SPR Phrase

As the Supreme Court has recently affirmed, "the starting point in every case involving construction of a statute is the language [of the statute] itself." *Landreth Timber Co. v. Landreth*, 471 U.S. 681, 685 (1982); *see Duncan v. Walker*, 533 U.S. 167, 172 (2001). Where the meaning of the language in a statute is plain, that is normally the end of the inquiry. *Lamie v. United States Trustee*, 540 U.S. 526, 534 (2004); *United States v. Ron Pair Enters.*, 489 U.S. 235, 241 (1989). To determine the plain meaning, the words in a statutory provision that are not defined by the statute itself are customarily given their ordinary meaning. *BP Am. Prod. Co. v. Burton*, 127 S. Ct. 638, 643 (2006) (citing *Perrin v. United States*, 444 U.S. 37, 42 (1979)); *Williams v. Taylor*, 529 U.S. 420, 431 (2000). However, in determining the plain meaning:

> a reviewing court should not confine itself to examining a particular statutory provision in isolation. The meaning—or ambiguity—of certain words or phrases may only become evident when placed in context .... It is a "fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme."

Food & Drug Admin. v. Brown & Williams Tobacco Co., 529 U.S. 120, 132–33 (2000) (quoting *Davis v. Michigan Dep't of Treasury*, 489 U.S. 803, 809 (1989)).

The SPR phrase has no biologically or scientifically accepted ordinary or technical meaning. Therefore, courts have focused on four words in the SPR phrase as key to interpreting its meaning. Those words are "extinction," "or," "range," and "significant." The meaning of each is addressed below.

1. "Extinction"

"Extinction" is defined by the dictionary as "the condition or fact of being extinct." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 411 (10th ed. 2000).[5] The word "extinct," as used in reference to a plant or animal species, is defined as "no longer in existence," "having died out or come to an end," or "having no living members." *Id.*[6] A fair, but not necessary, implication from this definition is that to be extinct, a species must have no living members anywhere. In other words, using the dictionary definition, a species that once inhabited the United States, but no longer has any living representatives there, arguably cannot be said to be extinct if there are living representatives elsewhere in the world.

Based on the dictionary definition, the Ninth Circuit concluded that "'extinction' suggests total rather than partial disappearance," and that the phrase "in danger of extinction throughout ... a significant portion of its range" is therefore "inherently ambiguous, as it appears to use language in a manner in some tension with ordinary usage." *Defenders of Wildlife*, 258 F.3d at 1141. In spite of this conclusion by the Ninth Circuit, it should be noted that "ordinary usage" does not necessarily equate to the dictionary definition. *See Third Nat'l Bank v. Impac, Ltd.*, 432 U.S. 312, 376 (1977) ("As always, the meaning of particular phrases must be determined in context [and] read in context."). Experience suggests that in ordinary usage, people often refer to an animal or plant as being extinct in one place, even though it may not be extinct in all places. For example, a species such as the California condor may be considered extinct in some States although it persists in others.[7]

Moreover, just because the language in a statutory provision may be in "some tension with ordinary usage" does not mean that it lacks a plain meaning. As noted above, plain meaning can also be supplied from the context in which the words are used. *See id.*; *Cabell v. Markham*, 148 F.2d 737, 739 (2d Cir. 1945) (statutory context should be favored over a contrary dictionary definition).[8] In the context of the SPR phrase as a whole the meaning of "extinction" is clear.

---

[5] The dictionary definition of "extinction" from a dictionary contemporary with the enactment of the ESA is similar: "the condition or fact of being extinct or extinguished" or "the process of becoming extinct or extinguished." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 806 (16th ed. 1971).

[6] The 1971 definition is again similar: "no longer in existence," "lacking living representatives," or "lacking survivors." *Id.*

[7] Further, no alternative or more specific general or biological term defines the disappearance of a species in only a portion of its range. The term "extirpation" is sometimes used in this manner, but dictionaries generally define "extirpation" in a similar manner to "extinction," as implying total destruction or disappearance. *See, e.g.*, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 411 (10th ed. 2000). Similarly, the 1971 definition of "extirpate" is "to destroy totally," "wipe out," "kill off," or "make extinct," and "extirpation" is defined as "the act of extirpating or state of being extirpated." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 806 (16th ed. 1971).

[8] Judge Learned Hand, in this case, stated that "it is one of the surest indexes of a mature and developed jurisprudence not to make a fortress out of the dictionary; but to remember that statutes always have some purpose

The word is used as part of a phrase—"in danger of extinction"—that is modified by the phrase "throughout ... a significant portion of its range." Thus, for purposes of the ESA, a species can be "endangered" even if it is facing extinction only in a significant portion of its range. In other words, a species does not need to be in danger of extinction everywhere—i.e., be in danger of total disappearance—to merit the protection of the ESA. As long as it is in danger of extinction "throughout ... a significant portion of its range"—i.e., is in danger of disappearing in that significant portion of the range—it must be protected in that portion of its range where, in fact, it is an "endangered species."

This understanding of Congressional intent in using the word "extinction" is supported by the way in which the word is used elsewhere in the ESA. In section 2, Congress found that "various species of fish, wildlife, and plants in the United States" that are of considerable "value to the Nation and its people" "have been rendered extinct," or "are threatened with extinction." ESA § 2(a)(1)–(3). These findings suggest that Congress viewed the disappearance of a species within the part of its range occurring in the United States as constituting "extinction" in that geographic area, even though the species might be prospering elsewhere. Similarly, section 4(c) of the ESA requires the Secretary, when publishing the list of endangered species, to "specify with respect to each such species over what portion of its range it is endangered," the clear implication being that the species can be endangered—i.e., in danger of extinction—in one portion of its range without being in danger of extinction throughout its range. ESA § 4(c)(1). Indeed, to read the SPR phrase instead as requiring that a species be in danger of extinction throughout its entire range before it could be considered "endangered" for purposes of the ESA would severely diminish the Secretary's ability to achieve one of the primary objectives of the ESA, which is to "[safeguard], for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants." ESA § 2(a)(5).

The legislative history of the ESA is consistent with this reading of the word "extinction," as modified by the SPR phrase. The predecessor statute to the ESA, the Endangered Species Conservation Act of 1969, had defined "endangered species" as follows:

> A species or subspecies of fish or wildlife shall be deemed to be threatened with worldwide extinction whenever the Secretary determines, based on the best scientific and commercial data available to him ... that the continued existence of such species or subspecies of fish or wildlife is ... endangered ....

The Endangered Species Conservation Act of 1969 § 3(a), 83 Stat. 275, 275 (1969). This provision had been interpreted as requiring that a species be threatened with worldwide extinction before it could be protected.[9] To give the Secretary greater flexibility in his listing decisions, and thus provide greater protection for species, Congress included a new definition of "endangered species" in the ESA of 1973. The House Report on the ESA noted that the new definition of "endangered species" represented "a significant shift in the definition of existing

---

or object to accomplish, whose sympathetic and imaginative discovery is the surest guide to their meaning." *Cabell*, 148 F.2d at 739.

[9] *See* Appendix at A-4.

law which considers a species to be endangered only when it is threatened with worldwide extinction." H.R. REP. NO. 93-412, at 10 (1973). This legislative history, coupled with the manner in which "extinction" is used elsewhere in the Act, supports a reading of the term "extinction" to include the disappearance of species in only part of its range.

2. "Or"

"Or" is defined in the dictionary as "a function word to indicate an alternative" or "used in logic as a sentential connective that forms a complex sentence which is true when at least one of its constituent sentences is true."[10] MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 815 (10th ed. 2000). In its analysis, the Ninth Circuit focused on the fact that the definition of "endangered species" includes the disjunctive term "or." *Defenders of Wildlife*, 258 F.3d at 1141–42. That definition states that a species is endangered if it is "in danger of extinction throughout all or a significant portion of its range." ESA § 3(6). The Ninth Circuit noted that, where the word "or" is used in a statute, courts must seek to give an independent and separate meaning to the clauses that appear on either side of the word "or"; otherwise, one or the other of the clauses would be surplusage. *Defenders of Wildlife*, 258 F.3d at 1142. This is consistent with "a basic canon of statutory construction" that "a statute ought, upon the whole, be so construed that, if it can be prevented, no clause, sentence, or word shall be superfluous, void or insignificant." *Dodd v. United States*, 545 U.S. 353, 371 (2005).

The Ninth Circuit rejected the Department's interpretation of the definition of "endangered species" because it failed to respect this canon of construction. The court reasoned as follows:

> The Secretary's explanation of this odd phraseology is of no assistance in puzzling out the meaning of the phrase, since her interpretation simply cannot be squared with the statute's language and structure. The Secretary ... interprets the enigmatic phrase to mean that a species is eligible for protection under the ESA if it "faces threats in enough key portions of its range that the entire species is in danger of extinction ...." [The Secretary] therefore assumes that a species is in danger of extinction in "a significant portion of its range" only if it is in danger of extinction everywhere.
>
> If, however, the effect of extinction throughout "a significant portion of its range" is the threat of extinction everywhere, then the threat of extinction throughout "a significant portion of its range" is equivalent to the threat of extinction throughout all its range. Because the statute already defines "endangered species" as those that are "in danger of extinction throughout all ... of [their] range," the Secretary's interpretation of "a significant portion of its range" has the effect of rendering the phrase superfluous.

[10] A 1971 dictionary defines "or" in similar terms, as "a function word to indicate an alternative between different or unlike things, states, or actions" or a "choice between alternative things, states, or courses." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1585 (16th ed. 1971).

> Such a redundant reading of a significant statutory phrase is unacceptable. When interpreting a statute, we must follow a "natural reading ..., which would give effect to all of the statute's provisions." By reading "all" and "a significant portion of its range" as functional equivalents, the Secretary's construction violates that rule.

Defenders of Wildlife, 258 F.3d at 1141–42 (footnote and citation omitted). Because the Ninth Circuit keyed on the presence of the disjunctive "or" in the definition, its interpretation is sometimes referred to as the "disjunctive interpretation."

On the other hand, the New Mexico court, while agreeing with the Ninth Circuit that the SPR phrase is ambiguous, disagreed with the Ninth Circuit's conclusion that the Department's interpretation was arbitrary, instead adopting the Department's interpretation as the "most appropriate and logical way to view this puzzling phrase." *Ctr. for Biological Diversity*, 411 F. Supp. 2d at 1280. The court accepted the Department's interpretation and did not independently analyze the meaning of the term "extinction," standing alone or in context, and did not attempt to give separate and independent meaning to the phrases on either side of the disjunctive word "or."

Consistent with the Ninth Circuit's interpretation of "or" and for the reasons discussed below, I conclude that if the Secretary determines that a species is in danger of extinction in a significant portion of its range, he must specify the portion of its range where it is an endangered species and then apply the protections in the Act to the members of the species in that portion of its range.

3. "Range"

The meaning of "range" in the SPR phrase is not disputed. The general dictionary definition of "range" as "the region throughout which a kind of organism or ecological community naturally lives or occurs," MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 964 (10th ed. 2000),[11] is clear and has not been questioned or debated by any court. Instead, the debate centers on whether the "range" referred to in the definition of "endangered species" is the historical or the current range of the species.

In addressing this issue, context again is key. Under the definition, a species is "endangered" only if it "is in danger of extinction" in the relevant portion of its range. The phrase "is in danger" denotes a present-tense condition of being at risk of a future, undesired event.[12] Hence, to say a species "is in danger" in an area where it no longer exists—i.e., in its historical range—

---

[11] The 1971 definition of "range" is identical. *See* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1880 (16th ed. 1971).

[12] "Danger" is defined as (among other things) "the state of being exposed to serious loss or injury," meaning that the loss has not happened yet. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 573 (2002); *cf* MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 292 (10th ed. 2000) (defining "danger" as "exposure or liability to injury, pain, harm, or loss." If a species has already been extirpated from an area, it is not in "danger" there; the loss has already occurred. The 1971 definition of "danger" is similar: "the state of being threatened with serious loss or injury." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 573 (16th ed. 1971).

would be inconsistent with common usage. Thus, "range" must mean "current range," not "historical range." This interpretation of "range" is further supported by the fact that when determining whether a species is an endangered species, the Secretary must consider the "present" or "threatened" (i.e., future), rather than the past, "destruction, modification, or curtailment" of a species's habitat or range. ESA § 4(a)(1)(A).

The Ninth Circuit appears to conclude, however, without any analysis or explanation that the "range" referred to in the SPR phrase includes the historical range of the species. The Ninth Circuit concludes its opinion by stating that a species "can be *extinct* 'throughout ... a significant portion of its range' if there are major geographical areas in which it is no longer viable but once was," and then faults the Secretary for not "at least explain[ing] her conclusion that the area in which the species can no longer live is not a significant portion of its range." *Defenders of Wildlife*, 258 F.3d at 1145 (emphasis added); *see Northwest Ecosystem Alliance v. United States Fish and Wildlife Service*, 475 F.3d 1136, 2007 U.S. App. LEXIS 2296, at *35-36 (9th Cir. Feb. 2, 2007) ("[w]e have recognized that a species can be considered extinct throughout a significant portion of its range 'if there are major geographical areas in which it is no longer viable but once was."). This suggests that, in the view of the Ninth Circuit, the range the Service must analyze in assessing endangerment includes the historical range—i.e., the places where the species was once viable but is no longer.[13]

This interpretation is not supported by the statute. Indeed, it appears to be based on an inadvertent misquote of the relevant statutory language. In addressing this issue, the Ninth Circuit states that the Secretary must determine whether a species is "extinct throughout ... a significant portion of its range." *Id.* If that were true, the Secretary would necessarily have to study the historical range. But that is not what the statute says, and the Ninth Circuit quotes the statute correctly elsewhere in its opinion. Under the ESA, the Secretary is to determine not if a species is "extinct throughout ... a significant portion of its range," but if it "is in danger of extinction throughout ... a significant portion of its range." A species cannot presently be "in danger of extinction" in that portion of its range where it "was once viable but no longer is"—if by the latter phrase the court meant lost historical habitat. In that portion of its range, the species has by definition ceased to exist. There it is not "in danger of extinction"; it is extinct.

To determine whether a species is presently "in danger of extinction throughout ... a significant portion of its range," the Service must (and currently does) focus on the range in which the species currently exists. Data about the historical range and how the species came to be extinct in that location may be relevant in understanding or predicting whether a species is "in danger of extinction" in its current range.[14] But the fact that it has ceased to exist in what may have been

---

[13] It is possible that the court was referring to areas within the current range within which the Service expected the species to become extirpated. However, in a subsequent challenge to the Service's decision on remand, the district court held that the Ninth Circuit had required the Service to determine "whether the lizard's lost historical habitat was a significant portion of the range." *Tucson Herpetological Soc'y v. Norton*, No. CV-04-0075-PHX-NVW, slip op. at 9 (D. Ariz. Aug. 30, 2005).

[14] The New Mexico district court agreed with this construction for the most part, noting that "FWS must take into account the species' historical range and reductions thereto[, b]ut even with a reduction in range ..., if the remaining core populations ensure the species' survival throughout its range or a significant portion thereof, then the species is

portions of its historical range does not necessarily mean that it is "in danger of extinction" in a significant portion of the range where it currently exists.

4. "Significant"

As explained above, a species can be determined to be an endangered species for purposes of the ESA even if it is in danger of extinction only in a significant portion of its range. However, the question remains, what portion of its range should be considered "significant."

Most, if not all, dictionaries list several definitions of "significant." For example, one standard dictionary defines "significant" as "important," "meaningful," "a noticeably or measurably large amount," or "suggestive." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 1088 (10th ed. 2000).[15] If it means a "noticeably or measurably large amount," then the Secretary, in determining endangerment, would have to focus on the size of the range portion in question, either in relation to the rest of the range or perhaps even in absolute terms. If it means "important," then the Secretary would have to consider additional factors, other than size, to determine whether the portion of the range in which a species is "in danger of extinction" is "significant." For example, would the portion of the range be "significant" if it were a key breeding ground of the species, even though the area in question was only a small part of the entire range?

One district court interpreted the term to mean "a noticeably or measurably large amount" without analysis or any reference to other alternate meanings, including "important" or "meaningful." *Defenders of Wildlife v. Norton*, 239 F. Supp. 2d 9, 19 (D.D.C. 2002) (Canada lynx).[16] The court did not explain why the Service could not employ another, equally plausible definition of "significant." Therefore, I find the court's interpretation unpersuasive.[17] It is impossible to determine from the word itself, even when read in the context of the entire statute,

---

not endangered." *Ctr. for Biological Diversity*, 411 F. Supp. 2d at 1282. Similarly, the court also stated that a species's "lost habitat may be numerically or geographically large ... but not biologically significant because the species' survival is not threatened by the shrinkage in habitat." *Id.* at 1283. The Colorado District Court agreed, finding "persuasive" the New Mexico District Court's interpretation "that the current range is the relevant context." *Ctr for Biological Diversity v. U.S. Fish & Wildlife Serv*., CA No. 05-cv-00305-RPM, 2007 U.S. Dist. LEXIS 16175, at *7 (D. Colo. Mar. 7, 2007).

[15] The 1971 definition of "significant" is "having or likely to have influence or effect" or "deserving of consideration." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 2116 (16th ed. 1971). Note that this edition did not include a definition similar to "a noticeably or measurably large amount."

[16] Citing MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (9th ed. 1990). In a subsequent ruling the court rejected the Service's finding on remand that equated "significant" with "important," which the court viewed as contrary to its previous ruling. *Defenders of Wildlife v Kempthorne*, CA No. 04-1230 (GK), 2006 U.S. Dist. LEXIS 71137, at *36–37 (D.D.C. Sept. 29, 2006) (remanding the listing determination on other grounds).

[17] The Ninth Circuit implicitly agreed, finding that "it is not inconsistent with common usage, nor is it unreasonable, for the Service to construe ... 'significant,' in the sense of being notable." *Northwest Ecosystem Alliance*, 2007 U.S. App. LEXIS 2296, at *20. Analyzing the meaning of "significant," as it is used in the Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act, the court later stated that "the term 'significant' has 'its commonly understood meaning, which is important.'" *Id* at *30-31 (quoting *Nat'l Ass'n of Homebuilders v Norton*, 340 F.3d 835, 846 (9th Cir. 2003) (citations and internal quotation marks omitted)).

which meaning of "significant" Congress intended. Even if it were clear which meaning was intended, "significant" would still require interpretation. For example, if it were meant to refer to size, what size would be "significant": 30%, 60%, or 90% of current range? Additionally, would, or should, the size be the same percentage in every case or for each species? Moreover, what factors, if any, would be appropriate to consider in making a size determination? Is size all by itself "significant," or does size only become "significant" when considered in combination with other factors? On the other hand, if "significant" were meant to refer to importance, what factors would need to be considered in deciding that a particular portion of a species's range is "important" enough to trigger the protections of the ESA?

Where there is ambiguity in a statute, as with the meaning of "significant," the official charged with administering the statute, which in this case is the Secretary, has broad discretion to resolve the ambiguity and give meaning to the term. As the Supreme Court has stated:

> In *Chevron*, this Court held that ambiguities in statutes within an agency's jurisdiction to administer are delegations of authority to the agency to fill the statutory gap in reasonable fashion. Filling these gaps, the Court explained, involves difficult policy choices that agencies are better equipped to make than courts. If a statute is ambiguous, and if the implementing agency's construction is reasonable, *Chevron* requires a federal court to accept the agency's construction of the statute, even if the agency's reading differs from what the court believes is the best statutory interpretation.

Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 980 (2005) (internal citations omitted).

In resolving the ambiguity, however, the Secretary does not have unlimited discretion. A court may overturn the Secretary's interpretation if it is "arbitrary, capricious, ... or otherwise not in accordance with law." Administrative Procedure Act, 5 U.S.C. § 706(2)(A). In exercising his discretion, the Secretary must be guided, at a minimum, by the following considerations. First, in defining the term, he should do so in a way that is consistent with achieving the purposes of the statute. As a corollary, he may not define the term in a way that would make any other portion of the statute superfluous, and he should strive to define the term in a way that makes sense in the context of the statute as a whole. Second, he should take into account whatever legislative history might be relevant for purposes of determining the intent of Congress. Third, he should take into account any judicial interpretations of the term. Indeed, in those jurisdictions where the ambiguous term has been judicially interpreted, he may be bound by that interpretation, unless he has subsequently issued an authoritative interpretation of the term that differs from what the court found. *See Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. at 983–85. Each of these considerations is discussed below with reference to the meaning of the word "significant" in the SPR phrase.

a. Purpose of the Act

The primary stated purposes of the ESA include "to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved" and "to provide a program for the conservation of such endangered and threatened species." ESA § 2(b). According to the Act's findings, such species of fish, wildlife, and plants are worthy of conservation because they are of "esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." ESA § 2(a)(3). Thus, in defining what portion of a range will be considered "significant," it is appropriate for the Secretary to consider factors other than just the size of the portion in relation to the current range as a whole. He may define "significant" in such a way as to insure conservation of the species protected by the Act. For example, the Secretary could consider, among other things, the portion of the range in terms of the biological importance of that portion of the range to the species and in terms of the various values listed in the Act that would be impaired or lost if the species were to become extinct in either that portion of the current range or in the current range as a whole.

b. Legislative History

The legislative history addressing the meaning of the word "significant" is sparse. Some of the floor debate and hearing testimony strongly suggest the Secretary has the discretion to divide the range of a species along political boundaries and declare it endangered only in states where the state authorities are not providing adequate protection of the species. Given the language of the final bill, such a division would have to be consistent with his definition of what makes a portion of a species's range "significant." For example, in a floor debate on the Senate version of the ESA, Senator Tunney made the following remarks:

> [T]he Secretary may list an animal as "endangered" through all or a portion of its range. An animal might be "endangered" in most States but overpopulated in some. In a State in which a species is overpopulated, the Secretary would have the discretion to list that animal as merely threatened or to remove it from the endangered species listing entirely while still providing protection in areas where it was threatened with extinction. In that portion of its range where it was not threatened with extinction, the States would have full authority to use their management skills to insure the proper conservation of the species.
>
> A well-known example may serve to illustrate how S. 1983 provides for maximum management and conservation discretion, while insuring absolute protection for species imminently in danger of extinction. ... It is likely that in certain portions of Louisiana, the American alligator may be relisted under this bill as a threatened species [in response to the State of Louisiana allowing the harvest of alligators in one parish to limit habitat destruction caused by overpopulation of alligators]. S. 1983 would permit continued State action to enhance the existence of this species. In other areas the alligator would remain

> listed as an endangered species and would be entitled to absolute Federal or State protection ....

119 CONG. REC. 25,669 (July 24, 1973). The attached appendix contains relevant portions of the legislative history from 1972 and 1973.[18]

c. Judicial Interpretations

Many of the courts that have addressed the meaning of the word "significant" have explicitly or by implication acknowledged that its ultimate meaning is ambiguous.[19] In that circumstance, even though a court may have adopted one interpretation or another for purposes of resolving the case before it, the Secretary is not necessarily bound by the court's interpretation, even in the area of that court's jurisdiction. As the Supreme Court has explained:

> A court's prior judicial construction of a statute trumps an agency construction otherwise entitled to *Chevron* deference only if the prior court decision holds that its construction follows from the unambiguous terms of the statute and thus leaves no room for agency discretion.

Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. at 982. I have found no appellate cases that conclude that there is only one possible meaning of "significant."[20] Within certain limits, therefore, the Secretary has the authority to define a reasonable meaning of the word "significant" in the SPR phrase through a listing rule or by amending the rules that govern listing decisions.[21]

The Ninth Circuit, for example, while acknowledging that the Secretary has "a wide degree of discretion in delineating" what portion of a range is "significant," nonetheless appeared to set

---

[18] *See The Endangered Species Conservation Act of 1972: Hearings on S 3199 and S 3818 Before the Subcomm on the Environment of the Senate Comm on Commerce*, 92nd Cong. 109 (1972) (statement of Curtis Bohlen, Deputy Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior); *The Endangered Species Conservation Act of 1973. Hearings on S. 1592 and S. 1983 Before the Subcomm. on the Environment of the Senate Comm. on Commerce*, 93d Cong. 60-62 (1973) (statements of Dr. Earl Baysinger, Assistant Chief, Office of Endangered Species and International Activities, and Douglas Wheeler, Deputy Assistant Secretary for Fish and Wildlife and Parks); *see* Appendix at A-2–13.

[19] *See, e g., Defenders of Wildlife v. Norton*, 258 F.3d at 1142–43 (flat-tailed horned lizard) (finding the SPR phrase ambiguous and rejecting both a quantitative approach and the Secretary's approach based on the clarification interpretation of significance); *Ctr. for Biological Diversity v. Norton*, 411 F. Supp. 2d at 1277 (Rio Grande cutthroat trout) (finding the language of the SPR phrase "puzzling and enigmatic" and questioning whether "significant" may refer to size or biological significance). *But cf. Defenders of Wildlife v Norton*, 239 F. Supp. 2d at 19 (Canada lynx) (finding that "significant" means a "noticeably or measurably large amount" according to a dictionary definition).

[20] One district court has found that there is only one possible meaning of "significant." *Defenders of Wildlife v. Norton*, 239 F. Supp. 2d at 19 (Canada lynx).

[21] *See* Joint Regulations; Endangered Species Committee Regulations, 50 C.F.R. pt. 424. Note that these are joint regulations with the National Marine Fisheries Service, the National Oceanic and Atmospheric Administration, and the Department of Commerce. Consequently, any amendment of these regulations will require coordination with the National Marine Fisheries Service and approval by the Secretary of Commerce.

some outer limits of that discretion—i.e., the point at which an interpretation would be unreasonable or arbitrary. *See Defenders of Wildlife v. Norton*, 258 F.3d 1136, 1145 (9th Cir. 2001). On the one hand, it rejected what it called a quantitative approach to defining "significant," where a "bright line" or "predetermined" percentage of historical range loss is considered "significant" in all cases. *Id.* at 1143. According to the court, there are two problems with such an approach:

> First, it simply does not make sense to assume that the loss of a predetermined percentage of habitat or range would necessarily qualify a species for listing. A species with an exceptionally large historical range may continue to enjoy healthy population levels despite the loss of a substantial amount of suitable habitat. Similarly, a species with an exceptionally small historical range may quickly become endangered after the loss of even a very small percentage of habitat.

Id. The Ninth Circuit concluded, at least with respect to range loss, that what is "significant" must "necessarily be determined on a case by case basis," and must take into account not just the size of the range but also the biological importance of the range to the species. *Id.* At the other end of the spectrum, the Ninth Circuit rejected what it called "the faulty definition offered by the Secretary," a definition "flatly inconsistent with the statute" that holds that a portion of a species's range is "significant" only if the threats present there are severe enough to put the species in jeopardy of worldwide extinction. *Id.* at 1143, 1146. The Ninth Circuit found, in effect, that because such an interpretation would make surplusage out of other words in the definition of endangered species, the interpretation would be unreasonable. It thus appears that within the two outer boundaries set by the Ninth Circuit, the Secretary still has wide discretion, even in the Ninth Circuit, to give the definitive interpretation of the word "significant" in the SPR phrase.

B. Reading the SPR Phrase in Harmony with other ESA Provisions

In interpreting the SPR phrase, the Secretary must do so "with a view to [its] place in the overall statutory scheme." *Davis v. Michigan Dep't of Treasury*, 489 U.S. 803, 809 (1989). I address here questions that have been raised about whether reading the SPR phrase as a substantive standard can be done in harmony with sections 3(16), 4(a)(1), and 4(c)(1) and sections 7 and 9.

1. Determining Whether a Species is an Endangered Species and Specifying Over What Portion of it its Range it is Endangered

Section 4 establishes the process the Secretary is to use to determine whether any species is an endangered species because of any of five statutory factors. Section 4(b) establishes the informational basis and the procedure the Secretary is to use to make his determinations. Section 4(c) requires the Secretary to publish a list of all species determined to be endangered species, referring to the species by name, specifying over what portion of its range it is endangered (and hence, an endangered species), and specifying any critical habitat within such range.

The Department has previously argued that reading the SPR phrase as a substantive standard for determining whether a species is an endangered species would lead to a violation of the listing provisions in section 4 of the Act, and that therefore such a reading of the SPR phrase must be in error. According to the argument, such a reading would be inconsistent with the listing provisions in two ways. First, it would improperly allow the Secretary under section 4(a)(1) to determine that something less than a species as a whole is endangered, and, second, it would improperly allow the Secretary under section 4(c)(1) to list as endangered something less than a species as a whole. For example, a recent brief filed on behalf of the Department argued that "[l]isting a species in only the significant portion [of its range] where it is found to be endangered ... would allow FWS to list a lesser entity than those specified in the 'species' definition, which would appear to violate section 4(a)(1)." Defendant's Supplemental Brief in Response to Court's June 8, 2005 Memorandum Opinion and Order at 10, *Ctr. for Biological Diversity v. Norton*, 411 F. Supp. 2d 1271 (D.N.M. 2005) (No. CIV 03-252 LFG/LAM).

The problem with the argument, both with respect to section 4(a)(1) and section 4(c)(1), is that it is a classic case of allowing the tail to wag the dog. Moreover, as discussed in the following section, the argument is inconsistent with the legislative history of the ESA.

With respect to section 4(a)(1), the argument simply assumes a meaning for that section and then uses that meaning to interpret the definition of "endangered species," instead of settling on a meaning for the definition of "endangered species" and then using that definition when applying section 4(a)(1). The argument assumes that because section 4(a)(1) requires (authorizes) the Secretary to determine whether "any species is an endangered species," only a species as a whole can be endangered. In other words, it is all or nothing; a species is either endangered in its entirety or it is not endangered. This reading of section 4(a)(1), however, simply begs the question of what it means to be an "endangered species." Because "endangered species" is a defined term in the Act, one must start with that definition to determine the meaning of section 4(a)(1), rather than vice versa. When the construction of the Act is approached in that manner, section 4(a)(1) can be read in full harmony with a reading of the SPR phrase as a substantive standard.

Section 4(a)(1) requires the Secretary to "determine whether any species is an endangered species." There are two defined terms in that phrase—"species" and "endangered species." Section 3(16) defines "species" as including "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." In other words, under the definition, three different groups of organisms expressly qualify as a "species":

1. a group of organisms comprising all of the organisms in a species;
2. a group of organisms comprising all of the organisms in "any subspecies of fish or wildlife or plants"; or
3. a group of organisms comprising "any distinct population segment of vertebrate fish or wildlife which interbreeds when mature."

Section 3(6) defines "endangered species" as any species which is in danger of extinction either throughout all of its range or throughout a significant portion of its range. Thus, under section 4(a)(1), the Secretary must examine whether:

1. the members of any group of organisms constituting a "species" are in danger of extinction throughout all of the species's range; or
2. the members of any group of organisms constituting a "species" that inhabit a significant portion of the species's range are in danger of extinction.

The Secretary is required to make his determinations in section 4(a)(1)

> solely on the basis of the best scientific and commercial data available to him *after* conducting a review of the status of the species *and after* taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.

ESA § 4(b)(1)(A) (emphases added).

The Secretary is thus asked to determine under section 4(a)(1) which members of the species are endangered, either all of the members or only those members that inhabit a significant portion of the species's range. For example, the Secretary might examine the American alligator as a species, determine that Florida is a significant portion of the American alligator's range, and conclude that American alligators in Florida are in danger of extinction, even though alligators elsewhere are not.

Having made his determination, the Secretary would then be required to comply with the listing requirements in section 4(c)(1). That section requires him to "publish in the Federal Register a list of all species determined by him ... to be endangered species." Some have argued that this language means that only a species as a whole can be listed. However, the balance of the language in the section proves otherwise. The section requires, in full, that the list "refer to the species ... by scientific and common name or names, specify with respect to each such species over what portion of its range it is endangered ..., and specify any critical habitat within such range."[22]

---

[22] It has also been questioned whether interpreting the SPR phrase as a "substantive standard" for listing is consistent with the "distinct population segment of any species of vertebrate fish or wildlife." ESA § 3(16). The argument is that Congress intended that the protections of the Act below the taxonomic category of subspecies be limited to DPSs, thus the protection of a subset of a DPS (in this case a SPR of a DPS) would be inconsistent with this intent. There is, however, no support in the language of the Act or its legislative history for the assertion that Congress included the DPS language to alter or limit the meaning of the SPR phrase. The DPS language was added to the definition of "species" five years after the SPR phrase and replaced earlier language that Congress evidently concluded was too broad. *See* H.R. CONF. REP. NO. 95-1804, at 17 (1978). Moreover, Congress refused twice in 1978 to specifically alter the language of the SPR phrase. *See* Appendix at A-16–17. Instead, the DPS language and the SPR phrase give the Secretary two different tools "to provide a program for the conservation of ... endangered species"—the overarching goal of the Act. ESA § 2(b). In some cases, the results achieved with those tools will

Applying the requirements of section 4(c)(1) to my example of the American alligator, the Secretary would refer to it by its scientific or common name, specify that portion of its range in which it is endangered as Florida, and specify any critical habitat within its range. In so doing, he would not be listing a "lesser entity than those specified in the 'species' definition"; rather, he would be doing exactly what section 4(c)(1) requires—identifying the members of the species that are "endangered species" by specifying the portion of the range in which they are in danger of extinction. As a result of such a listing, the public might commonly refer to the American alligator as "endangered," or as having been "listed"; however, for purposes of the Act, it would only be the alligators in Florida that would be "endangered." The Ninth Circuit appeared to adopt this approach in the flat-tailed horned lizard case, implying that different portions of a species's range may require enhanced or different degrees of protection. *Defenders of Wildlife*, 258 F.3d at 1146.[23] Accordingly, section 4 can be read in harmony with a reading of the SPR phrase as a substantive standard.

2. Protecting Listed Species

Similarly, the protections afforded in sections 7 and 9 to endangered species can also be applied in full harmony with a reading of the SPR phrase as a substantive standard.

Section 7 requires federal agencies to insure, in consultation with the Secretary, that their actions are "not likely to jeopardize the continued existence of any endangered species." It bears highlighting that section 7(a)(2) requirements apply to "endangered species," not species as a whole. In other words, the section does require consultation on any species that is listed as threatened or endangered. Under our reading of the SPR phrase, an "endangered species" can consist either of all of the members of a species, regardless of where they live, or of all the members of a species that inhabit a significant portion of a species's range. Thus, when a species is listed pursuant to section 4(c)(1) as endangered throughout all of its range, federal agencies are required to consult about their actions that may affect the species regardless of where they might occur throughout the entire range of the species. By the same token, where a species is listed pursuant to section 4(c)(1) as endangered in only a portion of its range, federal agencies are required to consult about their actions only if they may affect the members of the species inhabiting that portion of its range. In short, if a proposed federal agency action may affect a species within a significant portion of its range where it is classified as an endangered species or a threatened species, the agency must consult with the Service on that action.

---

overlap—e.g., a DPS might, by definition, inhabit a significant portion of a species's range, depending on how the Secretary defines "significant." But this potential for overlap does not mean that the DPS language alters or limits the meaning of the SPR phrase.

[23] The court also extensively quoted the legislative history supporting the view that the protections of the Act are limited to the portion of the species's range in which it is endangered. *Defenders of Wildlife*, 258 F.3d at 1144–45; *see also Roosevelt Campobello Intl. Park Comm'n v U.S. Envtl Protection Agency*, 684 F.2d 1041, 1050 n.5 (1st Cir. 1982) (bald eagle) ("[T]he Secretary of the Interior is given the exclusive duty and power to publish a list specifying 'with respect to each ... species over what portion of its range it is endangered.' ... We see no reason why the Secretary should not have ... authority to ascertain the appropriate range in which the species is endangered .... In any case, the legislative history appears to authorize the Secretary to deem a species endangered in the United States, or a portion thereof, even if it is abundant elsewhere").

Section 9 prohibits any person from taking certain actions "with respect to any endangered species of fish or wildlife." Once again, it bears repeating that Congress used the term "endangered species," and not "species" as a whole. For example, it is unlawful to "take" any member of an endangered species of fish or wildlife within the United States. As noted above, under our reading of the SPR phrase, an "endangered species" can consist either of all of the members of a species, regardless of where they live, or of all the members of a species that inhabit a significant portion of a species's range. Thus, where a species is listed pursuant to section 4(c)(1) as endangered throughout all of its range, it would be unlawful to "take" any member of that species subject to the jurisdictional limitations of section 9. By the same token, where a species is listed pursuant to section 4(c)(1) as endangered in only a portion of its range, it would only be unlawful to "take" a member of the species that inhabits that portion of its range. In the first instance, the Secretary would have specified that the species is endangered in all of its range, while in the second instance the Secretary would have specified the portion of its range where it is endangered. In summary, it would be a violation of section 9(a)(1)(B) of the ESA if a person, while in the United States, "takes" an individual of a fish and wildlife species from a significant portion of its range that has been classified as an endangered species. It is the act of taking a member of an endangered species that establishes the violation—not the taking of a member of the species itself.

Reading the Act to require protection for a species only where it is endangered, as specified in section 4(c)(1), provides precisely the flexibility that the Nixon Administration sought in 1972 and the Congress provided in 1973. In 1972, when responding to a written question from then Senator Spong, who had expressed his understanding that "a species could be declared endangered over part of its range and not declared endangered in other parts," a Deputy Assistant Secretary responded for the Department in the affirmative. He stated, "[i]t is our hope that this ability to provide selective protections would provide protections to those animals needing it, encourage the agencies which have management and protective authority to exercise that authority and allow the recognition of such efforts." Appendix at A-6. Embracing such an approach, the Senate Commerce Committee noted, "[b]y providing for the listing of a species endangered throughout a significant portion of its range, the Committee recognized the need for maintaining a viable population of species or subspecies where possible in more than just one portion of the world." Appendix at A-8. These concepts derived from the legislative history of the Act are subsumed within the provisions of section 4(b)(1), which specifically requires the Secretary to consider the presence of conservation practices and management measures that are in place in various nations or States when making determinations under section 4. By "taking into account ... those efforts being made by any State ... or any political subdivision of a State ... to protect ... species, whether by predator control, protection of habitat and food supply or other conservation practices," when making his determination of endangerment and then "specify[ing] over what portion of its range" a species is endangered, the Secretary is able to recognize the conservation practices and protection efforts of States and local jurisdictions, while also ensuring the Act's protections are properly provided.

In 1973, during committee hearings, then Representative John Breaux stated he understood the legislation to allow the Secretary "to designate areas in which the species is endangered and

areas where it is not endangered." Appendix at A-10. Then Assistant Secretary Reed testified that "[t]he administration's bill gives the Secretary the power to allow harvest in areas where the animal is not presently threatened with extinction and protect [it] in areas where [it] is in trouble, that is where [it] is likely to become threatened with extinction." Appendix at A-9. Similarly, the floor debates for the Endangered Species Act of 1973 in both the House of Representatives and the Senate support the ability of the Secretary to provide protections of the Act to a species where it is in danger of extinction, and not doing so for those areas where it is not in danger. Appendix at A-12–13.

An alternative reading—that a species must be protected throughout its entire range even if it is found to be endangered in only a significant portion—would render section 4(c)(1) meaningless, or at least relegate its application to delineating the range of distinct population segments and experimental populations, although neither of these terms existed when Congress prescribed the requirements for listing in section 4(c)(1).[24] Moreover, this reading would conflict with the Congressional desire that "the Federal government should protect [endangered or threatened] species where States have failed to meet minimum Federal standards, it should not pre-empt efficient programs." S. REP. NO. 93-307, at 3 (1973). Finally, the alternative reading would frustrate the import of requiring that the conservation practices within a State, or its political subdivisions, be taken into account when making a determination under section 4(a)(1). A statutory term should not be construed to lead to absurd results. *Nixon v. Mo. Mun. League*, 541 U.S. 125, 138 (2004).

The protections afforded in sections 7 and 9 to endangered species can also be applied in full harmony with a reading of the SPR phrase as a substantive standard.

III. CONCLUSION

I trust this memorandum and its conclusions will be helpful to you in developing your SPR policy. The Service, acting for the Secretary, has considerable discretion to consider a number of factors when determining whether a species is endangered in any significant portion of its range. Therefore, my office stands ready to assist you as you seek to explain how that discretion should

[24] In 1982, several operative provisions contained in section 4(c) were moved to section 4(b). However, the legislative history does not indicate that Congress intended the amendments to diminish the operative effect of the remaining provisions in section 4(c). In fact, plaintiffs have successfully enforced another provision of section 4(c), the requirement that the Secretary conduct reviews of listed species at least every five years. *See, e g , California State Grange v. Norton*, No. CIV-S-05-00560 MCE/PAN, slip op. (E.D. Cal. Sept. 20, 2005) (approving settlement agreement in case in which plaintiffs alleged failure to conduct reviews under section 4(c)(2) of 194 listed species; in settlement, dated Sept. 12, 2005, the United States agreed to deadlines for completing reviews of all 194 species). Moreover, this reading is consistent with the definitions of "conserve," "conserving," and "conservation" relating to bringing "any endangered species or threatened species to the point where the measures provided pursuant to this Act are no longer necessary." ESA § 3(3). It is doubtful that Congress would have required the Secretary to specify which portion of a species range is endangered or threatened, if in all instanees the entire range was to be specified. Given the context of the Congressional discussion leading to the passage of the ESA in 1973, it is doubtful that Congress would require the measures of protection provided in the Act to apply in those portions of the range where the species is neither endangered or threatened. *See* Appendix at A-4–6 & A-8–13.

be exercised in the Service's listing and delisting decisions. This opinion applies to all instances where the Service is attempting to determine whether a species is an endangered species or a threatened species.

This opinion was prepared with the substantial assistance and contribution of Deputy Solicitor Lawrence J. Jensen and the Division of Parks and Wildlife of the Office of the Solicitor, Deputy Associate Solicitor Barry N. Roth and Assistant Solicitor for Fish and Wildlife W. Michael Young, Philip G. Kline, Benjamin C. Jesup, and John D. Rudolph of the Branch of Fish and Wildlife, Eric W. Nagle of the Pacific Northwest Regional Solicitor's Office, Cheryll F. Dobson of the Pacific Southwest Regional Solicitor's Office, and Margot Zallen of the Rocky Mountain Regional Solicitor's Office.

David Longly Bernhardt

Attachment

APPENDIX: LEGISLATIVE HISTORY

A. Endangered Species Act Precursors and Relevant Legislative History

1. Endangered Species Preservation Act of 1966

The Endangered Species Preservation Act of 1966 (ESPA) represented the first comprehensive federal effort to protect endangered species. The ESPA defined endangered species narrowly:

> A species of native fish and wildlife shall be regarded as threatened with extinction whenever the Secretary of the Interior finds, after consultation with the affected States, that its existence is endangered because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or because of other factors, and that its survival requires assistance.[1]

The Conference Report, as well as the statute state that Congress intended to achieve two goals. First, Congress intended the ESPA to represent "a program for the conservation, protection, restoration, and propagation of selected species of native fish and wildlife, including migratory birds, that are threatened with extinction . . .."[2] To further this purpose, Congress authorized the Secretary of the Interior to "utilize the land acquisition and other authorities of the Migratory Bird Conservation Act . . . the Fish and Wildlife Act of 1956 . . . and the Fish and Wildlife Coordination Act to carry out a program in the United States of conserving, protecting, restoring, and propagating" threatened species.[3]

Second, Congress declared its policy to be the following:

> [the Secretaries of Interior, Agriculture, and Defense,] including the various bureaus, agencies, and services within the Departments, shall seek to protect species of native fish and wildlife threatened with extinction and, where practicable and consistent with their program purposes . . . shall preserve the habitats of such threatened species on lands under their jurisdiction.[4]

Thus, the ESPA operated to protect only 'native' fish and wildlife that were directly threatened or whose habitats were faced with the threat of destruction. The narrow focus of the bill led to

---

[1] The Endangered Species Preservation Act of 1966, Pub. L. No. 89-669, § 1(c), 80 Stat. 926, 926 (1966).

[2] ESPA § 1(a); H.R. CONF. REP. NO. 89-2205, at 3 (1966); 112 CONG. REC. 26,638 (1966).

[3] ESPA § 2(a).

[4] *Id.* § 1(b).

subsequent legislation three years later.[5]

2. Endangered Species Conservation Act of 1969

When Congress enacted the Endangered Species Conservation Act of 1969 (ESC),[6] it broadened the definition of 'endangered species' to provide that: "*A species or subspecies* of fish or wildlife shall be deemed to be threatened with *worldwide extinction* whenever the Secretary determines, based on the best scientific and commercial data available to him, . . . that the continued existence of such species or subspecies of fish or wildlife is . . . endangered . . .."[7] Additionally, consistent with the ESC's expansion of protection to foreign species, Congress prohibited the importation into the United States of any threatened species of fish or wildlife.[8]

Further, to strengthen the enforcement of endangered species legislation and to assist the States in stopping "illegal traffic in certain protected species of fish and wildlife, such as the alligator, [the ESC made] it unlawful for anyone to knowingly put into interstate commerce or foreign commerce, any such species taken contrary to a Federal, State, or foreign law."[9]

3. Legislative History Pertaining to the Endangered Species Conservation Act of 1972 and Related Bills

The process of developing and enacting what was to eventually become the Endangered Species Act of 1973[10] began on February 8, 1972, when President Nixon issued an environmental message to the Nation. Both the Senate and the House of Representatives drafted bills responding to the President's proposal. All of these bills contained SPR language either identical or similar to the language found in the Administration's proposal, as it related to SPR.[11] Thus, the committee hearings and testimony surrounding the Endangered Species Conservation Act of 1972 during the 92nd Congress are relevant.

---

[5] The ESPA contained weak enforcement mechanisms. It did not apply to foreign wildlife and the Secretary's land acquisition authority represented the ESPA's only means of habitat protection.

[6] The Endangered Species Conservation Act of 1969, Pub. L. No. 91-135, 83 Stat. 275 (1969).

[7] *Id.* § 3(a) (emphasis added).

[8] *Id.* § 2; *see also* S. REP. NO. 91-526, at 1 (1969); 115 CONG. REC. 33,568 (1969).

[9] 115 CONG. REC. 20,166 (1969) (referring to H.R. 11363, 89th Cong. (1969)); *see also* ESC §7(a)-(b).

[10] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (1973) (amended 1978, 1982, 1986, and 1988).

[11] H.R. 1311 § (2)(c)(1) (1972); H.R. 13081, 92d Cong. § (2)(c)(1) (1972); S. 3199, 92d Cong. § (2)(c)(1) (1972); *see also* S. 3818, 92d Cong. § (4)(a) (1972) (including flora in the definition of endangered species and including "habitat" in "significant portion of its habitat or range.").

In his message, President Nixon stated that "we have found that even the most recent act to protect endangered species, which dates only from 1969, simply does not provide the kind of management tools needed to act early enough to save a vanishing species."[12] As a result, the Nixon Administration proposed the Endangered Species Conservation Act of 1972, which sought "to provide a program for the conservation, protection, restoration, and propagation of selected species and subspecies of fish and wildlife, including migratory birds, that are threatened with extinction, or are likely within the foreseeable future to become threatened with extinction."[13]

To facilitate this approach, the Nixon Administration proposed a definition for "endangered species," which introduced the SPR phrase that is currently in force today:

> A species or subspecies of fish or wildlife shall be regarded as an endangered species whenever, in his discretion, the Secretary determines, based on the best scientific and commercial data available to him and after consultation, as appropriate, with the affected States, and, in cooperation with the Secretary of State, the country or countries in which such fish and wildlife are normally found or whose citizens harvest the same on the high seas, and, to the extent practicable, with interested persons and organizations, and other Federal agencies, that the continued existence of such species or subspecies of fish or wildlife, in the judgment of the Secretary, is *either presently threatened with extinction or will likely become threatened with extinction, throughout all or a significant portion of its range*, due to any of the following factors . . ..[14]

The authorizing committees, individual Members of Congress, and representatives from the Department of the Interior and the Department of Commerce invested considerable effort during the 92nd Congress considering the proposed endangered species legislation. Although the legislation was not enacted, the Committee hearings contain interesting discussion of many of the key concepts and terms that would ultimately find their way into the Endangered Species Act of 1973.

In a hearing before the Senate Commerce Committee, a National Oceanic and Atmospheric Administration (NOAA) official, David Wallace, summarized the need for the proposed 1972 legislation. In that testimony, he highlighted the Administration's view that a central problem with both the 1966 and 1969 Acts was that the Secretary's ability to list endangered species was too limited:

---

[12] *See* President's Message to Congress Outlining the 1972 Environmental Program, 8 WEEKLY COMP. PRES. DOC. 223-224 (November 8, 1972).

[13] Endangered Species Conservation Act of 1972, H.R. 1311, 92d Cong. § 2(a) (1972).

[14] *Id.* at § (2)(c)(1) (emphasis added).

> The existing Endangered Species Act divides fish and wildlife into "native fish and wildlife" and "other fish and wildlife." For the present law to have any effect on native species of fish and wildlife, they must be found to be actually "threatened with extinction."
>
> In the case of "other fish and wildlife," one must find that a species is "threatened with worldwide extinction." Once these determinations are made, the Secretary of Interior is given various powers to acquire lands and use funds to conserve, protect, and restore the species. However, his powers to place restrictions on the taking of such species or any trafficking therein are minimal.
>
> As to other species of fish and wildlife, the Secretary's power is limited to forbidding imports. Clearly this authority is far too limited.
>
> S. 3199 is in sharp contrast with existing law. First, it wipes out the artificial distinction between "native" and "other" fish and wildlife so that maximum protection measures can be applied to both to the extent that the United States can exercise jurisdiction. This clarifies the status of large numbers of species that move in and out of the waters along our coasts. Secondly, while retaining the existing category of animals which are presently "threatened with extinction," the bill adds a new category of animals which "will likely within the foreseeable future become threatened with extinction."
>
> Moreover, it provides that action may be taken if either condition exists within a significant portion of the animal's range and does not require a finding of worldwide endangerment.[15]

Additionally, Associate Administrator Wallace explained that listing a species as endangered or threatened under the proposed legislation:

> [D]oes not require a finding of worldwide endangerment. *This last modification recognizes the fact that a species or subspecies may be threatened because of events taking place in a very small but significant part of its range.* Thus, if a species' breeding area is being threatened, with the result that its future is in doubt, the species could be placed upon the endangered list, *regardless of the fact that the breeding ground is geographically small* relative to the whole range of

---

[15] *The Endangered Species Conservation Act of 1972: Hearings on S 3199 and S. 3818 Before the Subcomm on the Environment of the Senate Comm on Commerce*, 92d Cong. 132 (1972) (statement of David Wallace, Associate Administrator for Marine Resource, National Oceanic and Atmospheric Administration); *see Predatory Mammals and Endangered Species. Hearings on H R 1311 and 13081 Before the Subcomm on Fisheries and Wildlife Conservation of the House Comm on Merchant Marine and Fisheries,* 92d Cong. 190 (statement of Robert White, Administrator, National Oceanic and Atmospheric Administration).

the species.[16]

Similarly, Curtis Bohlen, the Deputy Assistant Secretary for Fish and Wildlife and Parks, in a written response to questions from Senator Spong wrote:

> Senator SPONG: As I understand it, a species could be declared endangered over part of its range and not endangered in other parts. Is this correct? If so, how do you plan to enforce it? Specifically, how would you deal with a commercial species which is endangered in part of its range and abundant elsewhere?
>
> Mr. BOHLEN: That is correct.
>
> Although man's present ability to rapidly and drastically alter the environment makes it possible for a species or subspecies to be forced from a secure status to a hazardous one almost overnight, such happenings are the exception rather than the rule. Usually it becomes apparent to scientists that a species is heading for trouble long before it reaches the point at which it is threatened with extinction. It is when such indicators - - unregulated commercial, or other overexploitation; significant reductions in population; significant loss or threatened loss of habitat, etc. - - are detected that an animal would become a candidate for the Endangered Species List.
>
> Quite commonly an animal's status does not deteriorate at the same rate throughout its range. This is especially true for those whose range extends into two or more nations, States, or other political subdivisions. This is so since the well-being of most wildlife now is dependent upon the management and other considerations it receives–or, just as importantly, fails to receive–from the people and governments who control the land upon which it lives.
>
> To more directly answer your question, let's assume a hypothetical situation involving a commercially valuable animal which occurs in three countries. Let's assume, after the appropriate reviews, consultations, etc., that it is determined that
>
> –in country "A" - a good management program exists; adequate unthreatened habitat is present; the population is healthy and produces a surplus which is harvested under a carefully regulated system,
> –in country "B" - the animal largely is ignored and neither receives special management or protective attention nor is overexploited,
> –in country "C" - no management program exists and the animal is being heavily

---

[16] *The Endangered Species Conservation Act of 1972 Hearings on S. 3199 and S 3818 Before the Subcomm. on the Environment of the Senate Comm on Commerce*, 92d Cong. 132 (1972) (statement of David Wallace, Associate Administrator for Marine Resources, National Oceanic and Atmospheric Administration)(emphasis added).

> overexploited.
>
> Thus, this animal would be considered to be in good shape over part of its range (country "A"), holding its own in a second portion (country "B"), and in trouble in a third.
>
> Under our present authority, no assistance could be given this animal, since it is not "threatened with extinction." However, it is obvious that unless something acts on behalf of the animal, its extirpation in country "C" is imminent. Once that occurs, the same forces likely would shift their attention to the animal in country "B," thus making the species' continued existence dependent on the welfare of the remnant population in country "A."
>
> This is a "textbook example" of our concept of a candidate for the "likely to become threatened with extinction" category.
>
> If that same animal were so classified, regulations could be issued that would:
>
> a. Permit the importation into the United States of lawfully taken specimens from country "A."
> b. Prohibit or restrict the importation of specimens which originated in countries "B" or "C." As programs to manage and protect the animal are implemented in country "B" or "C" and as the animal responds, such prohibitions or restrictions could be relaxed accordingly.
>
> It is our hope that this ability to apply selective protections would provide protection to those animals needing it, encourage the agencies which have management and protective authority to exercise that authority and allow the recognition of such efforts.[17]

Senator Spong posed the identical question to Associate Administrator Wallace who responded as follows:

> Where a species is presently threatened with extinction over a significant part of its range, the Secretary will enact measures which, for example, would control the

---

[17] *The Endangered Species Conservation Act of 1972. Hearings on S 3199 and S. 3818 Before the Subcomm on the Environment of the Senate Comm on Commerce*, 92d Cong. 109 (1972) (statement of Curtis Bohlen, Deputy Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior).

> time of taking, the manner of taking, catch limitations, or areas where taking would be prohibited.[18]

In Committee hearings in the House of Representatives, Representative Potter questioned Deputy Assistant Secretary Bohlen about whether a discrete population could qualify as a subspecies:

> Mr. POTTER: I talked with Mr. Baysinger on the identity of subspecies, as differentiated from population stocks. My question, is this bill, which relates to "species and subspecies," sufficiently fine-tuned to let you reach the situation where somebody goes in, say, and wipes out one entire population, even though it may not be a subspecies?
>
> Mr BOHLEN: There is an added clause in the definition of endangerment, which refers to the status of the species or subspecies throughout all, or a portion of its range.
>
> Mr. POTTER: You feel this gives you the necessary tools to handle discrete populations?
>
> Mr. BOHLEN: Yes, I think it does.[19]

Additionally, in a hearing before the Senate, Nathaniel Reed, Assistant Secretary for Wildlife and Fish and Parks, testified that the SPR language authorized the Secretary to regulate a species in one part of its range without regulating the species where it is abundant in other parts of its range.[20]

The Administration's original 1972 bill limited protection to species and subspecies.

---

[18] *Id.* at 141 (statement of David Wallace, Associate Administrator for Marine Resource, National Oceanic and Atmospheric Administration). Ralph McMullen, Director of the Michigan Dept. of Natural Resources and President of the International Association of Game, Fish, and Conservation Commissioners, testified that the SPR language should allow the Secretary to designate a species as threatened or endangered in a significant portion of its range without designating that species as threatened or endangered rangewide. Interestingly, Mr. McMullen also interpreted the term "range" to mean the present range of a species, rather than historical range. *See Predatory Mammals and Endangered Species. Hearings on H R. 13081 and 1311 Before the Subcomm on Fisheries and Wildlife Conservation of the House Comm. on Merchant Marine and Fisheries*, 92d Cong. 321 (1972).

[19] *Predatory Mammals and Endangered Species Hearings on H R 1311 and 13081 Before the Subcomm on Fisheries and Wildlife Conservation of the House Comm. on Merchant Marine and Fisheries,* 92d Cong. 136 (1972) (statement of Curtis Bohlen, Deputy Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior).

[20] Letter from Nathaniel Reed, Assistant Secretary of Fish and Wildlife and Parks, to Senator Ted Stevens (Sept. 25, 1972) (on file with the Solicitor's Office of the Dept. of the Interior) (commenting on S. 3818 § 4(a)).

In 1972, a Senate Report by the Committee on Commerce contained language identical to the Administration's bill. The Senate Report explained the SPR language as follows:

> Where the Secretary determines that a species or subspecies of fish and wildlife throughout all or a significant portion of its habitat or range is presently threatened with extinction or is likely within the foreseeable future to become threatened with extinction, he may list such species as an endangered species. By providing for the listing of species endangered throughout a significant portion of its range, the Committee recognized the need for maintaining a viable population of species or subspecies where possible in more than just one portion of the world.[21]

4. The Endangered Species Act of 1973

The enactment of the Endangered Species Act on December 29, 1973[22] stemmed directly from two bills introduced in the House and the Senate during the 93rd Congress: S. 1983 and H.R. 37. These two bills incorporated the SPR language and other new provisions introduced in the Administration's 1972 proposal and extended protections to populations of species in addition to species and subspecies. The bills reiterated the focus of the 1972 bills to rectify a perceived shortcoming of the 1969 Act, which required a species to be threatened with worldwide extinction before it could be listed and thereby protected under the 1969 Act.[23]

Much of the 1973 Congressional debate centered on amending ESC in two principal respects. First, Congress supported the addition of language that provided the Secretary with the authority to protect species that are likely to become threatened with extinction before that threat is realized. Second, Congress sought to provide the Secretary with the flexibility to protect species that are threatened or endangered in only a portion of their range, rather than requiring worldwide endangerment.

The Senate bill, S. 1983, included the current version of the SPR phrase and the Senate Report noted that "flexibility in regulation is enhanced by a provision which allows for listing if the

---

[21] S. REP. NO. 92-1136, at 6 (Sept. 15, 1972).

[22] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (1973) (amended 1978, 1982, 1986, and 1988).

[23] However, the interaction between the federal and state government in the administration of the Act, particularly any perceived preemption of state laws, was the primary point of debate and perhaps the most important and contentious issue that Congress dealt with in passage of the 1973 Act. *See, e.g.*, H.R. REP. NO. 93-412, at 7 (July 27, 1973).

animal is endangered over a 'substantial portion of its range."[24]

House committee report language regarding H.R. 37 referenced an early incarnation of the SPR language, which modified the "endangered species" definition from the 1969 Act to include any species in danger of extinction "throughout its entire range, or any portion of its range."[25] The House Committee Report noted that the new "endangered species" definition represented

> a significant shift in the definition in existing law which considers a species to be endangered only when it is threatened with worldwide extinction. It includes the possibility of declaring a species endangered within the United States where its principal range is in another country, such as Canada or Mexico, and members of that species are only found in this country insofar as [it exists] only on the periphery of [its] range.[26]

The House Committee Report also lists the principal changes to be effected by the new legislation, including that "[i]t permits protection of animals which are in trouble in any significant portion of their range, rather than threatened with worldwide extinction."[27]

During Committee hearings before the House Subcommittee on Fisheries and Wildlife Conservation, Assistant Secretary Reed, stated:

> [W]e find ourselves in a bind. We must [under the 1969 Act] put an animal on the endangered species list to give it protection over all of its range when it could be surplus in part of its range. The alligator, which for instance, in Florida and Louisiana are numerous and coming back may be able to stand a harvest. But, the alligator is in real trouble throughout the rest of its range.
>
> The administration's bill gives the Secretary the power to allow harvest in areas where the animal is not presently threatened with extinction and protect [it] in areas where [it] is in trouble, that is, where [it] is likely to become threatened with

---

[24] S. REP. NO. 93-307 (July 1, 1973). Note that the Report references the language "*substantial* portion of its range" (emphasis added). However, this is the only reference in the Report to the word "substantial" rather than "significant" The bill referenced in the same Senate report includes the term "significant" rather than "substantial" as does every other House and Senate report referencing S. 1983.

[25] H.R. REP. NO. 93-412, at 10 (July 27, 1973).

[26] *Id.* Later Congressional testimony by Representative Price reiterated this reasoning. He stated that "H.R. 37, would protect species threatened in any significant portion of their range, rather than only those threatened with worldwide extinction." 119 CONG. REC. 30,165 (Sept. 18, 1973).

[27] H.R. REP. NO. 93-412, at 2 (note that the introductory remarks inexplicably refer to "significant portion of its range," whereas the actual definition in the Bill at that time did not include the word "significant"); *see also* 119 CONG. REC. 30,165 (Sept. 18, 1973) (stating identical language in relation to an updated version of H.R. 37 containing the SPR phrase in the current Act).

extinction.[28]

Later, Assistant Secretary Reed responded to a question from Representative Breaux:

> Mr. BREAUX: As I understand this bill, the Department is allowed to designate areas in which the species is endangered and areas where it is not endangered.
>
> How could this effect county lines–where some counties within a State have an endangered species while others do not?
>
> Mr. REED: Both the State and Federal officers would have an awfully hard time dealing with areas as small as some counties. It is possible, but I can hear [the Bureau's law enforcement officer] sitting behind me, shaking right now.[29]

Howard Pollock, Deputy Administrator of NOAA, responded to the same question in the following manner:

> [T]hat action may be taken if either condition [of endangered or threatened status] exists throughout a significant portion of the animal's range and does not require a finding of worldwide endangerment. This last modification recognizes the fact that a species or subspecies may be threatened because of events taking place in a small but significant part of its range.[30]

In addition, Dr. Earl Baysinger, Assistant Chief, Office of Endangered Species and International Activities and Douglas Wheeler, Deputy Assistant Secretary for Fish and Wildlife and Parks, testified at hearings on S. 1592 introduced by Sens. Magnuson and Hatfield. S. 1592 did not, at that time, contain any definitions of endangered or threatened species. However, administration witnesses stated:

> Mr. WHEELER: [F]or the first time, under the authority of this bill, we would be able to fine-tune to the extent that we could prohibit the taking in that area where the condition of endangerment exists, and not in others.
>
> The law presently requires that we find a species to be endangered throughout all its range. We are not able to say that in Florida it exists but in Alaska it does not.

---

[28] *Endangered Species: Hearings on H R 37 and 4758 Before the Subcomm. on Fisheries and Wildlife Conservation of the House Comm on Merchant Marine and Fisheries*, 93d Cong. 207 (1973) (statement of Nathaniel Reed, Assistant Secretary for Fish and Wildlife and Parks, Department of Interior).

[29] *Id.* at 210.

[30] *Id.* at 227 (statement of Howard Pollock, Deputy Administrator of NOAA, U.S. Dept. of Commerce).

> Dr. BAYSINGER: If we were to find that the whistling swan was threatened within the territory of the United States, under the present law we would have to apply that endangered category to the swan throughout its range wherever it occurs, whether it be Alaska, Utah, or Maryland.
>
> Under the legislation we are talking about today, we would be able to fine tune that and take a look at the swan . . . [I]f this were an animal about which we were concerned, that was obviously getting in trouble in part of its range, for whatever reason, we would be able to sit down, look at the animal, determine with the other agencies with whom we are dealing what actions are needed to prevent that animal from deteriorating to the point where it would become endangered, make the finding that this animal is likely to become threatened over a portion of its range, and then apply such techniques as would be needed to prevent it from deteriorating further within that portion of its range.
>
> We don't have that authority under the existing act.
>
> Senator COOK: In other words, S. 1592 gives you a degree of selectivity that you never had before?
>
> Dr. BAYSINGER: Yes, it gives us a scalpel rather than a broad sword.[31]

The Senate bill, S. 1983, included the current version of the SPR phrase. The Senate Report noted:

> The bill provides a broadened concept of "endangered species" by affording the Secretary the additional power to list animals which he determines are likely within the foreseeable future to become threatened with extinction. This give effect to the Secretary's ability to forecast population trends by permitting him to regulate these animals before the danger becomes imminent while long-range action is begun. By creating two levels of protection, regulatory mechanisms may more easily be tailored to the needs of the endangered animals. Flexibility in regulation is enhanced by a provision which allows for listing if the animal is endangered over a "substantial portion of its range."[32]

---

[31] *The Endangered Species Conservation Act of 1973: Hearings on S 1592 and S 1983 Before the Subcomm. on the Environment of the Senate Comm. on Commerce*, 93d Cong. 60-62 (1973) (statements of Dr. Earl Baysinger, Assistant Chief, Office of Endangered Species and International Activities and Douglas Wheeler, Deputy Assistant Secretary for Fish and Wildlife and Parks).

[32] S. REP. NO. 93-307 at 3; *But see* id. at 7 ("Section 3(2) defines an endangered species" as one "which is in danger of extinction throughout all or a significant portion of its range."). Note that the Report references the language "*substantial* portion of its range" (emphasis added). However, this is the only reference in the Report to the word "substantial" rather than "significant" and, therefore, appears to be a mistake or misquote. The bill referenced in the same Senate report uses the term "significant" rather than "substantial" as does every other House and Senate

In floor debate in the House of Representatives, Representative Goodling stated:

> [U]nder existing laws, the Federal Government was unable to adequately provide conservation and protection measures to those species which had not yet met the legal and technical definition of "extinct," but due to a variety of other factors were closely approaching that population level. H.R. 37 broadens the concept of "endangered species" by vesting authority in the Secretary to list those species which are "likely within the foreseeable future to become threatened with extinction." . . . Greater flexibility is provided while at the same time additional means of protection, conservation, and management is permitted and required.[33]

Later, during House consideration of the Bill, Representative Young stated:

> By drawing upon and expanding existing areas of authority and competency in the Departments of Interior, Commerce, and Agriculture, the committee has been able to expand greatly our important efforts to protect species threatened with extinction to include those species which may become endangered, whether on a large scale or within a part of their habitat only.[34]

Senator Tunney, in floor debate, stated:

> [U]nder existing law, a species must be declared 'endangered' even if in a certain
> portion of its range, the species has experienced a population boom, or is otherwise threatening to destroy the life support capacity of its habitat. Such a broad listing prevents local authorities from taking steps to insure healthy population levels.[35]

Senator Tunney went on to explain that

> [T]he Secretary may list an animal as 'endangered' through all or a portion of its range. An animal might be 'endangered' in most States but overpopulated in some. In a State in which a species is overpopulated, the Secretary would have the discretion to list that animal as merely threatened or to remove it from the endangered species listing entirely while still providing protection in areas where

---

report referencing S. 1983.

[33] 119 CONG. REC. 30,164 (Sept. 18, 1973); *see also id.* at 30,157.

[34] 119 CONG. REC. 30,167 (Sept. 18, 1973).

[35] 119 CONG. REC. 25,669 (July 24, 1973).

> it was threatened with extinction. In that portion of its range where it was not threatened with extinction, the States would have full authority to use their management skills to insure the proper conservation of the species.
>
> A well-known example may serve to illustrate how S. 1983 provides for maximum management and conservation discretion, while insuring absolute protection for species imminently in danger of extinction. . . . [I]t is likely that in certain portions of Louisiana, the American alligator may be relisted under this bill as a threatened species [in response to the State of Louisiana allowing the harvest of alligators in one parish to limit habitat destruction caused by overpopulation of alligators]. S. 1983 would permit continued State action to enhance the existence of this species. In other areas the alligator would remain listed as an endangered species and would be entitled to absolute Federal or State protection until a State plan was approved by the Secretary under the provisions of this act.[36]

B. Congressional Activity After the Enactment of the Endangered Species Act of 1973

Congress has not amended the SPR language since the 1973 Act, therefore the subsequent amendments to the Endangered Species Act of 1973 provide little probative insight into what Congress intended in 1973. However, subsequent actions in Congress, especially in 1979, indicate that Congress was fully aware of the ability of the Secretary to list a species as a threatened species or endangered species in only a portion of its range., not merely a significant portion of its range.

1. Legislative History Pertaining to the 1978 Amendments

Congress did not amend the SPR language when it passed the 1978 amendments to the ESA. However, it did alter the definition of "species" to specifically include "any distinct population segment." This language remains in the current Act.

During Senate debate of the bill that became the 1978 amendments to the ESA S. 2899, Senator Bartlett introduced a proposal to amend the SPR language in the endangered and threatened definitions by replacing the phrase "a significant portion" with the phrase "the essential portion."[37] Senator Bartlett submitted this amendment in response to the delay of a dam project that purportedly would have reduced the range of a listed fish species by 12%.[38] The following colloquy between Senators Bartlett and Wallop discussed the amendment:

---

[36] *Id.*

[37] 124 CONG. REC. 21,582-3 (July 19, 1978).

[38] 124 CONG. REC. 21,583.

> MR BARTLETT: . . . I believe that this amendment will resolve the confusing application of the Endangered Species Act, and retain sufficient protection to insure that we do not decimate various species.
>
> . . . I feel that this amendment provides the opportunity in the definition for consideration to be given to varying percentages which might be more pertinent and accurate to the situation than would be evident with the language that is now in the two definitions.
>
> MR. WALLOP: The Senator has come across a flaw in the original Act which is minor but, through interpretation, as is sometimes the case, has become major. I ask the Senator if he would basically agree that his definition of "essential" would be that portion of its range that does not necessarily imply that the species must be endangered over the vast majority of its range, or even the most crucial part of its range; in other words, if "essential" means that portion of the range necessary for the continued survival and recovery of the species.
>
> MR. BARTLETT: Yes, I agree with that definition of the word "essential" and I think it is important that that be understood.[39]

Senator Bartlett's amendment, was not included in the October 15, 1978 Conference Report that accompanied S. 2899.[40]

Another amendment introduced on the same day by Senator Garn would have amended the SPR phrase by removing the term "significant."[41] Senator Garn explained: "I would also permit the designation of a species as endangered even in some portion of its range that is less than "significant." . . . [T]o permit the protection of a major species, such as the alligator, which may be threatened in a restricted geographic locale, but is not over its entire range, or even over a significant part of its range."[42] The Senator withdrew the amendment before the Senate acted on the amendment.[43]

In addition to including the DPS language, Congress also amended section 4(c)(1) to require

---

[39] *Id.*

[40] An additional amendment to the term "endangered species" was also proposed, but rejected in the Senate. Senator Scott introduced an amendment that would have added the phrase "and which the Secretary has determined is of a substantial benefit to mankind," thereby instituting an additional limitation on whether a species qualifies as endangered. 124 CONG. REC. 21,358 (July 18, 1978).

[41] 124 CONG. REC. 21,564 (July 19, 1978).

[42] *Id.* at 21,572.

[43] *Id.*

inclusion of critical habitat designations in the lists of endangered and threatened species.

2. Legislative History Pertaining to ESA Reauthorization in 1979

After addition of the current DPS language in the 1978 amendments, the Senate, while deliberating reauthorization and appropriations for the Endangered Species Act in 1979, responded to a General Accounting Office (GAO) Report proposing amendments to the Act.[44]

The Report found that the DPS language "permits the Fish and Wildlife Service to list geographically limited populations of vertebrate species as endangered or threatened even though they may not be endangered or threatened throughout all or a significant portion of their existing ranges or their overall statuses are not known."[45] The Report concluded that redefining the "species" definition to limit listings to entire species would require FWS to review the status of species listed in parts of their ranges and to then determine which of these species are threatened or endangered throughout all or a significant part of their ranges.[46] These species would then be listed throughout their entire ranges.[47]

The GAO Report proposed, among other things, amending the Act so "the term 'species' includes any subspecies of fish, wildlife or plans." As an alternative to this approach, the GAO proposed to modify the term "species" by adding the following sentence: "Distinct population listings must constitute significant portions of the species' range in terms of total numbers, biological importance, or the need to maintain the species within the United States."[48] The GAO Report concluded that the redefined "species" definition from the 1978 amendments only partially corrected the problem by limiting populations to vertebrates.[49]

The GAO Report concludes by proposing an alternative legislative amendment that was "acceptable to FWS officials" and consistent with then contemporary draft FWS guidelines by defining what constitutes a "significant portion" of the range of endangered and threatened species.[50] According to the Report, those draft FWS guidelines defined "significant portion" as:

---

[44] ENDANGERED SPECIES - A CONTROVERSIAL ISSUE NEEDING RESOLUTION, U.S. General Accounting Office, CED 79-65 (July 2, 1979) (GAO Report).

[45] *Id.*

[46] *Id.* at 55.

[47] *Id.*

[48] *Id.* at 106.

[49] *Id.* at 51.

[50] *Id.* at 59. The Report noted that the draft guidelines were "under review within the Office of Endangered Species" at the time. *Id.*

> (1) More than half of a species' range, which may include historical as well as recent and anticipated future losses or (2) losses of habitat totaling less than 50 percent of relatively small range, or in other circumstances where the loss may have an inordinately large negative impact on the species' survival.[51]

The GAO Report also discussed the Department of the Interior's response to the GAO's similar draft recommendations. The Department was critical of the GAO's first legislative proposal to redefine the "species" definition for two reasons. First, because the draft recommendations concluded that the entire range of a species endangered or threatened in a significant portion of its range must be listed, needless allocation of resources for section 7 consultations and other ESA activities would be required for biologically non-endangered populations of certain species.[52] Second, the proposed revision may prevent FWS from listing widespread species that are listed solely to protect populations in the coterminous United States.[53]

In response to the alternative recommendation, Larry Meierotto, the Assistant Secretary of the Interior for Policy, Budget and Administration, stated that "allowing only the listing of 'significant' populations is, however, acceptable and, we would contend simply gives legislative sanction to the reasonable interpretation that we have made of the existing definition."[54]

A Senate Committee did not adopt either of GAO's legislative recommendations as they related to the term "species," stating:

> The Committee agrees that there may be instances in which FWS should provide for different levels of protection for populations of the same species. For instance, the U.S. population of an animal should not necessarily be permitted to become extinct simply because the animal is more abundant elsewhere in the world. Similarly, listing of populations may be necessary when the preponderance of evidence indicates that a species faces a widespread threat, but conclusive data is available with regard to only certain populations.[55]

---

[51] *Id*

[52] *Id.* at 58.

[53] *Id.*

[54] Letter from Larry E. Meierotto, Assistant Secretary for Policy, Budget, and Administration, Department of the Interior, to Henry Eschwege, Director of the Community and Economic Development Division, General Accounting Office (June 15, 1979).

[55] S. REP. NO. 96-151, at 6-7 (May 15, 1979). The Senate Report did not address the GAO Report's alternate proposal reciting the draft FWS guidelines for determining "significant portion."

However, the Senate Report cautioned FWS to use the ability to list populations "sparingly."[56]

3. Legislative History Pertaining to the 1982 Amendments

The 1982 amendments do not directly address the SPR phrase or amend the "species," "endangered species," or "threatened species" definitions. However, a Senate Committee Report discussed the Secretary's failure to recognize differing status of populations of a species in response to testimony regarding game species listed in foreign countries:

> The Committee also received testimony stating that "the Secretary has listed some foreign species as endangered throughout their entire range without considering whether their population status varies from country to country." There may be nations where a combination of a healthy population and effective management programs permit the sport hunting of such species without adversely affecting its status. The failure to recognize this may result in the foreign nations being denied much-needed revenues derived from license fees that are used to fund their wildlife conservation and management programs.
>
> If the Secretary is in receipt of biological information from a foreign nation with respect to a resident game species listed as "endangered," he should evaluate the status of such species within the country in question.[57]

The 1982 amendments significantly narrowed the discretion available to the Secretaries in the listing process by removing the petition requirements from section 4(c), placing them in section 4(b), and adding several additional requirements and deadlines. The 1982 amendments also allowed direct judicial review of all non-discretionary actions under section 4 by amending the citizen-suit provisions of section 11.[58]

In describing the Conference Report, Representative Breaux, who was a manager of the bill, stated: "This law is not designed to strengthen or weaken the Endangered Species Act, but simply to make it work better."[59]

---

[56] *Id.* at 7. The House and Senate also rejected proposals to further amend the definition of "species" in response to the GAO Report. In the House, Representative Young proposed to amend the "species" definition to exclude invertebrates altogether. 125 CONG. REC. 29,066 (Oct. 25, 1979). In the Senate, Senator Bellmon proposed to amend the "species" definition so that a species could only be listed upon a determination by the Secretary that the species has an aesthetic or economic value. 125 CONG. REC. 14,577 (June 13, 1979).

[57] S. REP. NO 97-418, at 16 (May 24, 1982).

[58] Endangered Species Act of 1973, Pub. L. No. 95-632, *amended by* Pub. L. No. 97-304, 96 Stat. 1411 (Oct. 13, 1982).

[59] 128 Cong. Reg. 26,188 (Sept. 30, 1982).

Environmental Policy and Regulatory Constraints to Natural Gas Production

Environmental Assessment Division
Argonne National Laboratory

Operated by The University of Chicago,
under Contract W-31-109-Eng-38, for the

United States Department of Energy

Argonne National Laboratory

Argonne National Laboratory, a U.S. Department of Energy Office of Science laboratory, is operated by The University of Chicago under contract W-31-109-Eng-38.

This technical report is a product of Argonne's Environmental Assessment Division (EAD). For information on the division's scientific and engineering activities, contact:

Anthony J. Dvorak
Director, Environmental Assessment Division
Argonne National Laboratory
Argonne, Illinois 60439-4832
Telephone (630) 252-3107

Publishing support services were provided by Argonne's Information and Publishing Division (for more information, see IPD's home page: http://www.ipd.anl.gov/).

Disclaimer

Available electronically at http://www.osti.gov/bridge

Available for a processing fee to U.S. Department of Energy and its contractors, in paper, from:

U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831-0062
phone: (865) 576-8401
fax: (865) 576-5728
email: reports@adonis.osti.gov

Environmental Policy and Regulatory Constraints to Natural Gas Production

by Deborah Elcock

Environmental Assessment Division
Argonne National Laboratory, 955 L'Enfant Plaza, S.W., Washington, D.C., 20024

December 2004

Work sponsored by U.S. Department of Energy,
Office of Policy and International Affairs

NOTICE

This formal technical report is an information product of Argonne's Environmental Assessment Division (EAD). It presents results of completed studies that are broader in scope than those reported in technical memoranda issued by EAD. This report has been internally reviewed and edited and has been externally peer reviewed by individuals who are not associated with Argonne or the sponsoring agency.

For more information on the division's scientific and engineering activities, contact:

Anthony J. Dvorak
Director, Environmental Assessment Division
Argonne National Laboratory
Argonne, Illinois 60439
Telephone (630) 252-3107
email: ead@anl.gov

Publishing support services were provided by Argonne's Information and Publishing Division.

CONTENTS

CONTENTS (Cont.)

CONTENTS (Cont.)

TABLES

ACKNOWLEDGMENTS

The author wishes to thank the sponsor and project director of this report, David O. Moses, of the U.S. Department of Energy (DOE), Office of Policy and International Affairs, and to express special appreciation to Nancy Johnson and William Hochheiser of DOE's Office of Fossil Energy for their thoughtful input and guidance. The legal research and technical reviews conducted by Markus G. Puder of Argonne National Laboratory are also gratefully acknowledged.

NOTATION

The following is a list of the acronyms and abbreviations (including units of measure) used in this report. Acronyms and abbreviations used only in tables may be defined only in those tables.

ACRONYMS AND ABBREVIATIONS

AGA	American Gas Association
APD	application and approval of permit to drill
API	American Petroleum Institute
BART	best available retrofit technology
BLM	Bureau of Land Management
CAA	Clean Air Act
CBM	coal bed methane
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
CMP	coastal management program
COE	U.S. Army Corps of Engineers
CROMERRR	Cross-Media Electronic Reporting and Record-Keeping Rule
CSU	controlled surface use
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
3-D	three-dimensional
DEN	*Daily Environment Report*
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
E&P	exploration and production
EA	environmental assessment
EFH	essential fish habitat
EIA	Energy Information Administration
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EPCA	Energy Policy and Conservation Act
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act of 1976
FR	*Federal Register*

FS	USDA Forest Service
FWPCA	Federal Water Pollution Control Act
FY	fiscal year
GCVTC	Grand Canyon Visibility Transport Commission
HAP	hazardous air pollutant
H.B.	House Bill
HCA	high consequence area
H.R.	House Resolution
INGAA	Interstate Natural Gas Association of America
IOGCC	Interstate Oil and Gas Compact Commission
IPAA	Independent Petroleum Association of America
IRA	inventoried roadless area
LEAF	Legal Environmental Assistance Foundation
MACT	maximum achievable control technology
MDEQ	Montana Department of Environmental Quality
MEPA	Montana Environmental Protection Act
MMS	Minerals Management Service
NAAQS	National Ambient Air Quality Standards
NAPSR	National Association of Pipeline Safety Representatives
NEP	National Energy Policy
NEPA	National Environmental Policy Act of 1969
NFS	National Forest System
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_x	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NPC	National Petroleum Council
NPDES	National Pollutant Discharge Elimination System
NSO	no surface occupancy
NWP	nationwide permit
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OMB	Office of Management and Budget
OPS	Office of Pipeline Safety
PM	particulate matter
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of 2.5 μm or less
POD	Plan of Development and Production
POE	Plan of Exploration

PSD	Prevention of Significant Deterioration
Pub. L.	Public Law
R&D	research and development
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RSPA	Research and Special Programs Administration
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOS	Special Ocean Site
SPCC	Spill Prevention Control and Countermeasures Plan
SWANCC	Solid Waste Agency of Northern Cook County
TL	timing limitation
TMDL	total maximum daily load
TPH	total petroleum hydrocarbons
UIC	underground injection control
USC	*United States Code*
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRAP	Western Regional Air Partnership
WSA	Wilderness Study Area

UNITS OF MEASURE

dB(a)	A-weighted decibel(s)		
ft	foot(feet)	mg	milligram(s)
ft^3	cubic foot (feet)	MMCF	million cubic feet
gal	gallon(s)	mi	mile(s)
hp	horsepower	MW	megawatt(s)
kg	kilogram(s)	s	second(s)
lb	pound(s)	TCF	trillion cubic feet
m^3	cubic meter(s)	µg	microgram(s)
MCF	thousand cubic feet	µm	micrometer(s)

ENVIRONMENTAL POLICY AND REGULATORY CONSTRAINTS TO NATURAL GAS PRODUCTION

by

Deborah Elcock

ABSTRACT

For the foreseeable future, most of the demand for natural gas in the United States will be met with domestic resources. Impediments, or constraints, to developing, producing, and delivering these resources can lead to price increases or supply disruptions. Previous analyses have identified lack of access to natural gas resources on federal lands as such an impediment. However, various other environmental constraints, including laws, regulations, and implementation procedures, can limit natural gas development and production on both federal and private lands. This report identifies and describes more than 30 environmental policy and regulatory impediments to domestic natural gas production. For each constraint, the source and type of impact are presented, and when the data exist, the amount of gas affected is also presented. This information can help decision makers develop and support policies that eliminate or reduce the impacts of such constraints, help set priorities for regulatory reviews, and target research and development efforts to help the nation meet its natural gas demands.

1 INTRODUCTION

U.S. demand for natural gas is expected to continue into the future. Further, the U.S. Department of Energy's (DOE's) Energy Information Administration (EIA) has forecast that U.S. annual natural gas consumption will increase from 23 trillion cubic feet (TCF) in 2000 to 35 TCF in 2025 (EIA 2003). The factors driving this demand continue to mount. Foreign oil price instability related to tensions in the Middle East and Latin America could further shift demand from oil to less costly and domestically produced natural gas. Air pollution regulations favor the burning of clean natural gas over coal; while coal is more abundant, its use is of greater environmental concern. Energy price spikes and brownouts, such as those that occurred in California in 2001, could occur again if the delicate supply-demand balance is disrupted. Weather patterns can further increase demand.

In 1999, the National Petroleum Council (NPC) reported that the demand for natural gas was growing and that the resource base was adequate to meet this demand; however, certain factors needed to be addressed to realize the full potential for natural gas use in the United States (NPC 1999). In 2001, the National Energy Policy Development Group (NEPDG), established by the President to develop a plan to help the private and public sectors promote dependable,

affordable, and environmentally sound energy for the future, presented its National Energy Policy (NEPDG 2001). The NEP recommendations included investigating several areas that could be limiting domestic natural gas production. The potential for a near-term natural gas shortage prompted a June 26, 2003, Natural Gas Summit, designed to give the Secretary of Energy and other DOE officials information on the ramifications and potential resolutions of short-term challenges to the natural gas industry. In September 2003, the NPC released an update to its 1999 study (NPC 2003). In the update, the NPC reports that government policies encourage the use of natural gas but fail to address the need for additional natural gas supplies. The 2003 report states that a status quo approach to these conflicting policies will result in undesirable impacts to consumers and the economy. A key issue raised but not fully explored in these efforts was how environmental and regulatory policy constraints, which were developed to meet national environmental protection goals, can, at the same time, limit natural gas exploration and production (E&P) and transportation. Recent studies have examined limitations to accessing natural gas, particularly in the Rocky Mountain region, but even after the gas is accessed, numerous additional environmental policy and regulatory constraints can affect production and delivery to consumers.

The purpose of this Phase I study is to identify specific existing and potential environmental policy and regulatory constraints on E&P, transportation, storage, and distribution of natural gas needed to meet projected demands. It is designed to provide DOE with information on potential constraints to increased natural gas supply and development in both the long and short terms so that the Department can develop, propose, and support policies that eliminate or reduce negative impacts of such constraints, or issues, while continuing to support the goals of environmental protection. It can also aid in setting priorities for regulatory reviews and for research and development (R&D) efforts.[1] A possible future Phase II study would identify potential short-, mid-, and long-term strategies for mitigating these environmental policy and regulatory constraints.

1.1 SCOPE

The scope of this study is limited to traditional natural gas (or gas). It does not address liquefied natural gas or methane hydrates, nor does it describe constraints to increased use of other fuels such as coal. The importance of economic constraints and safety issues is acknowledged, but only environmental policy and regulatory impediments are addressed. Constraints are identified for the E&P and transportation phases, not end use. The focus is on existing, national-level constraints, although important state requirements and overlaps with state jurisdictions are included, as are regulations that are being considered or developed that could impede natural gas production.

---

[1] The data collection and analyses for this Phase I study were conducted between 2001 and 2003. Since then, some of the details regarding individual constraints may have changed. For example, it is possible that the development status of certain regulations may have changed from proposed to final, or that certain agencies may have taken actions intended to mitigate identified constraints. The current status of individual constraints should be verified prior to using them for decision making.

1.2 METHODOLOGY

The 1999 NPC study and the NEP were used as departure points for the current study.[2] The NPC highlighted access to natural gas resources as a critical factor for meeting projected demand. It did not address environmental constraints beyond access, but it did recommend assessing the impact of existing and proposed environmental regulations on the natural gas supply. The NEP also contains several recommended study areas related to natural gas production. These include the role of expediting permits, the examination of land status and lease stipulation impediments to gas leasing, the requirements for siting energy facilities in the coastal zone and the Outer Continental Shelf (OCS), and the regulatory process for permitting interstate natural gas pipeline projects. This study reviews and updates the access issues as presented by the NPC and investigates issues raised in the NEP. In addition, it identifies and describes more than 30 additional environmental policy and regulatory constraints to natural gas production and delivery.

To identify and assess environmental policy and regulatory constraints, existing studies were reviewed, and detailed issue investigations were conducted by examining existing and proposed statutes. Information published on proposed and final rules in the *Federal Register* was assessed, and issues were discussed with trade associations and industry and with state and federal government officials. Comments on proposed regulations and congressional testimony on issues and legislation that could affect natural gas production were reviewed. Information was also obtained from meetings on environmental policy relevant to natural gas conducted by the U.S. Commission on Ocean Policy, the Interstate Oil and Gas Compact Commission (IOGCC), the Minerals Management Service (MMS), the National Oceanic and Atmospheric Administration (NOAA), the Integrated Petroleum Environmental Consortium, the U.S. Environmental Protection Agency (EPA), and others.

Once potential policy and regulatory constraints were identified, an attempt was made to determine the nature of the impact and the amount of gas that each constraint could affect. It was determined that a given constraint could affect the natural gas supply in one or more of the following ways: (1) make natural gas resources unavailable; (2) delay E&P or transportation; or (3) increase costs to the extent that some operators might stop operations, particularly if subjected to multiple costly regulations. To estimate the amount of gas a given constraint could affect, existing resource estimates were used. These estimates were reported in units of TCF and prepared by organizations such as the NPC, EIA, MMS, the U.S. Geological Survey (USGS), and an interagency group that studied U.S. oil and gas resources in five western basins (DOI, USDA, and DOE 2003). No attempt was made to develop independent estimates for amounts of gas that could be affected by the constraints, nor was an attempt made to normalize the estimates by year or form of estimate (e.g., technically recoverable, economically recoverable). As a result, these estimates can provide an indication of the order of magnitude of impact, but they should not be used to make direct comparisons among the various constraints. Some gas supplies are

---

[2] The conclusions of the 2003 NPC report are consistent with those of the 1999 report; that is, action is required to address the need for additional natural gas supplies. Also consistent with the 1999 report, the 2003 report acknowledges the importance of environmental policy and regulatory issues but does not address them in detail.

constrained by more than one factor. Therefore, the estimates are not additive, and eliminating one constraint may leave the gas supply affected by one or more other constraints.

1.3 ORGANIZATION

The remainder of the report consists of four chapters. Chapter 2 provides very brief summaries of the environmental policy and regulatory constraints, organized by type of impact. Chapter 3 provides more detail on each of the constraints and includes a discussion of the issue, the source of the constraint (e.g., statute, regulation, implementation), the lead player(s) (e.g., Bureau of Land Management [BLM], EPA), and the development phase affected by the constraint (e.g., E&P, transportation). Chapter 4 presents conclusions, and Chapter 5 provides a list of references cited in this report.

2 ISSUE SUMMARIES

A regulatory constraint can impact natural gas by any one or any combination of the following:

- Restricting access to the gas, thereby making it unavailable for E&P;
- Delaying E&P or transportation; or
- Increasing costs, which could delay production, increase economic limits resulting in earlier well abandonment, and cause operators to leave the market, thereby reducing the gas supply in the short term and possibly increasing consumer costs in the long term.

This section describes various environmental policy and regulatory constraints in terms of these impacts. First are issues that may limit access to gas supplies. These include the following:

- Coastal Zone Management Act (CZMA) consistency provisions,
- Endangered Species Act of 1973 (ESA) requirements,
- U.S. Department of Agriculture (USDA) Forest Service (FS) restrictions,
- Outdated BLM land use plans,
- Lease stipulations,
- Monument designations,
- OCS moratoria,
- Permit restrictions,
- Bans on drilling in the Great Lakes,
- The "Roadless Rule," and
- Wilderness Area designations.

Issues likely to produce delays include the following:

- Coal bed methane (CBM)-produced water and potential regulations to manage such water,

- Drilling permit delays,
- Essential fish habitat (EFH) regulations,
- Fracturing operations and the possibility of future rules that could limit this practice,
- Changes in nationwide permits (NWPs) issued by the U.S. Army Corps of Engineers (COE),
- National Environmental Policy Act of 1969 (NEPA) requirements,
- Pipeline certification issues,
- Pipeline safety regulations, and
- Wetlands mitigation issues.

Existing and potential issues likely to increase costs include the following:

- Regulations for cooling-water intake structures at offshore extraction facilities,
- Electronic reporting requirements,
- Lack of incentives to go beyond compliance,
- State waste disposal regulations,
- Maximum achievable control technology (MACT) rules,
- Mercury discharge regulations,
- Nitrogen oxides (NO_X) requirements,
- Noise regulations,
- Nonroad diesel regulations,
- Ocean discharge criteria,
- Particulate matter (PM) regulations,
- Pipeline gathering definitions,
- Regional haze rule,

- Spill prevention and control and countermeasures regulations,
- Standards for closing wells,
- Storm water construction permits, and
- Total maximum daily load (TMDL) regulations.

The following paragraphs summarize these environmental policy and regulatory constraints and include, where available, an estimate of the amount of gas potentially affected. No priorities have been assigned to these issues, and no inferences regarding priorities should be made from the order in which they are presented. Chapter 3 provides greater detail on each of these issues.

2.1 ISSUES LIKELY TO LIMIT ACCESS

2.1.1 Coastal Zone Management Act Consistency Provisions

The CZMA requires that each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone must be undertaken in a manner consistent "to the maximum extent practicable" with the enforcement policies of approved state coastal management programs (CMPs). Nonfederal applicants for federal licenses or permits must comply with state CMP enforcement policies. Federal approvals may not be granted until the state concurs, or, if the state objects, until the Secretary of the Department of Commerce, on appeal by the applicant, overrides the state's CMP objections. These provisions have caused duplications and costly delays to federal leasing and production activities. Also, once a lease has been obtained, the CZMA can still limit or prevent exploration, development, and production for that lease. (See related issue, OCS Moratoria — West Coast.)

TCF Affected: 362.2

2.1.2 Endangered Species Act

The ESA can limit access to gas resources and cause delays in permitting on both federal and private lands. Court-interpreted definitions have expanded the scope of what is considered a "take" under the ESA to include habitat modification, such as clearing or similar development that occurs with natural gas E&P. Similarly, the U.S. Fish and Wildlife Service (USFWS), an implementing agency for the ESA, often treats sensitive species as requiring the same or similar protections as species that are actually listed as endangered or threatened.

TCF Affected: Not estimated.

2.1.3 Forest Service Restrictions

FS restrictions contained in Records of Decision (RODs) for development of natural gas resources in three areas — Beaverhead National Forest, Helena National Forest, and Lewis and Clark National Forest — are limiting the ability to access and produce natural gas.

TCF Affected: 10 to 30

2.1.4 Outdated BLM Land Use Plans

The Federal Land Policy and Management Act of 1976 (FLPMA) established land use planning requirements on federal lands, and *United States Code*, Title 43, Section 1701 (43 USC 1701) states that it is the policy of the United States to manage public lands under the principles of multiple use and sustained yield. Land use plans and planning decisions provide the basis for every land action undertaken by the BLM, but many have been prepared without considering natural gas resource potential. If a land use plan is out of date with respect to anticipating the cumulative impacts of gas development, substantial delays in the permitting of new wells can occur as a new environmental analysis (typically an environmental assessment [EA] or environmental impact statement [EIS]) is completed and the plan updated. Today, many land use plans need to be updated to recognize the use of the land for natural gas development before additional development can occur.

TCF Affected: 120.3

2.1.5 Lease Stipulations

Two categories of restrictions limit access to onshore public lands. Some lands, such as Wilderness Areas and areas with specific geological attributes or unique or significant natural or cultural resources, are completely off limits because of statutory, Executive Order, or other administrative requirements. Other lands, while technically available for development, are subject to stipulations imposed by the BLM or the FS to implement statutory or regulatory requirements. Some of these stipulations, which can affect large geographic areas, can prevent development without providing obvious commensurate environmental benefits (Rubin 2001). Combinations of individual stipulations applied to the same area can effectively prevent access to key natural gas resources (Russell 2000). The EIA has estimated that federal lease stipulations increase development costs by 6% and add 2 years to development schedules (EIA 2001b). Operators report a growth in stipulations and note that when land managers impose a stipulation in one area, there is a tendency to impose the same stipulation in surrounding areas (Martin 1997).

TCF Affected: 108

2.1.6 Monument Designations

The Antiquities Act of 1906 allows the President, at his discretion, to declare by public proclamation, historic landmarks and historic and prehistoric structures owned or controlled by the government of the United States. Between 1996 and 2001, the Administration, under the authority of the Antiquities Act, designated 19 new national monuments and expanded 3 others. The 22 designations collectively cover about 5.6 million acres of federal land, much of which may contain natural gas resources; however, this land is off limits to development.

TCF Affected: 1

2.1.7 OCS Moratoria — Atlantic Ocean

Moratoria deny access to broad areas of natural gas reserves and resources. Major natural resources have been discovered off the Canadian Coast, and this resource potential could extend southward. The moratoria were implemented primarily because of past oil spills; however, they also constrain natural gas E&P.

TCF Affected: 28.0

2.1.8 OCS Moratoria — Eastern Gulf of Mexico

Moratoria covering most of the eastern part of the Gulf of Mexico deny access to broad areas of natural gas reserves and resources. They were implemented primarily because of past oil spills; however, they also constrain natural gas E&P.

TCF Affected: 11.3

2.1.9 OCS Moratoria — West Coast

Moratoria deny access to broad areas of natural gas reserves and resources. They were implemented primarily because of past oil spills; however, they also constrain natural gas E&P. On the West Coast, recent legal action has also limited production on existing leases.

TCF Affected: 18.9

2.1.10 Permit Restrictions

Once leasing access has been obtained and a permit to drill has been issued, restrictions in the permit may be so severe that access is effectively prohibited. These federal and state restrictions can be site- or BLM- or FS-Office-specific.

TCF Affected: 86.6

2.1.11 Bans on Great Lakes Drilling

Recently enacted state and federal temporary and permanent drilling bans in the Great Lakes have effectively stopped exploration and new production of natural gas in the Great Lakes.

TCF Affected: 1.1

2.1.12 Roadless Rule

On January 12, 2001, the USDA's FS promulgated a rule that prohibits road construction in inventoried roadless areas (IRAs) on National Forest System (NFS) lands. These areas compose about one-third of the NFS, or about 58.5 million acres. The Roadless Rule denies access to approximately 11 TCF of potential natural gas resources in the Rocky Mountain region. The rule has been subject to numerous lawsuits and may be revised to allow for an assessment of impacts and the ability to build roads on a more local, forest-by-forest level.

TCF Affected: 11

2.1.13 Wilderness Areas

The FLPMA charged the BLM with identifying and managing lands as potential Wilderness Areas. As required by law, the BLM completed the inventory in 1991 and submitted its recommendations to the President, who endorsed and submitted them to Congress. However, of the roughly 26.5 million acres identified as Wilderness Study Areas (WSAs), Congress has yet to make decisions on 16.3 million acres. In addition, since 1991, some western states, for example, Colorado and Utah, have "reinventoried" potential Wilderness Areas, adding more acres to those that are managed as, although not officially designated as, WSAs. Until Congress acts, all of these areas — both Wilderness Areas and Wilderness Study Areas — will continue to be off limits to gas (and oil) leasing, even though they may contain substantial resources.

TCF Affected: 9

2.1.14 Ocean Policy

The U.S. Commission on Ocean Policy, established under the Oceans Act of 2000, is charged with developing recommendations to submit to the President on a coordinated and comprehensive national policy for oceans and coastal areas. Draft recommendations include the establishment of an Ocean Policy Framework and expanded authorities to address the use of ocean and coastal resources. It is too early to estimate the impacts of such broad

recommendations and their implementation on offshore natural gas exploration, production, and development.

TCF Affected: Not estimated.

2.2 ISSUES LIKELY TO PRODUCE DELAYS

2.2.1 CBM-Produced Water Management

Regulations are being written to address the potential impacts of discharging or disposing of produced water generated during CBM exploration, production, and development. There are significant unknowns regarding the actual impacts of produced water, and many of the regulations may be costly to implement, resulting in delayed or reduced production.

TCF Affected: 74

2.2.2 Drilling Permits

Once the BLM has issued a gas lease on federal land, no drilling can occur until the BLM issues a permit to drill. In the gas-rich basins of the Rocky Mountain region, backlogs for permits to drill and right-of-ways (ROWs) are growing. Many Resource Management Plans (RMPs) are outdated, and revisions, which often require additional environmental analyses, are required before gas leasing or development can occur. Insufficient staffing, combined with the number of plans needing updating and the recent increase in permit applications spurred by gas price increases, compounds the delays. Citizens' suits also contribute to permitting delays. These delays will be particularly important for CBM.

TCF Affected: 311.2

2.2.3 Essential Fish Habitat

EFH regulations issued in 2002 require assessments and consultations that can duplicate the environmental requirements of other federal agencies. This duplication can delay leasing or permitting decisions, because federal agencies undertaking activities that could adversely affect EFH (e.g., permitting) must prepare EFH assessments, undertake consultation with the National Marine Fisheries Service (NMFS), and, in some cases, implement mitigation strategies that could add further costs and delays.

TCF Affected: 174.5

2.2.4 Fracturing Operations

Hydraulic fracturing is a process producers use to increase the flow of natural gas (and oil) from rocks whose natural permeability does not allow the gas to reach the well bore at sufficient rates. It is commonly used to release methane from coal beds, where the gas is held in the rock by hydraulic pressure. During fracturing, a fluid (usually a water-sand mixture) is pumped into the reservoir to split the rock and create drainage pathways. Typically, it is a one-time practice. The NPC estimates that 60 to 80% of all the wells drilled in the next decade to meet natural gas demand will require fracturing. The practice is controversial, with environmentalists arguing that it needs more regulation. Federal or increased state regulation could delay gas production or make it uneconomical, thereby reducing the amount available at reasonable prices (Stewart 2001).

TCF Affected: 293

2.2.5 Nationwide Permits

Section 404 of the Clean Water Act (CWA) requires that any activities that result in the discharge of dredged or fill material into waters of the United States (which include most wetlands) must be approved via a permit issued by the COE. Obtaining an individual permit can take a year or more (Bleichfeld et al. 2001). To reduce the burden caused by permitting many small, inconsequential projects, the COE has established nearly 40 general, or NWPs, for categories of activities that will have minimal adverse effects on the environment. The processing time for activities approved under a general permit averages about 14 days (Copeland 1999). Recent regulatory changes have limited the activities covered by NWPs, meaning that more gas-related activities will require individual permits. Also, recent court cases and other actions have resulted in changes to the definitions of wetlands, meaning that the scope of activities and areas requiring a permit have been in a state of flux, which has led to additional delays caused by conflicting definitional interpretations.

TCF Affected: Not estimated.

2.2.6 NEPA Integration and Lawsuits

NEPA requires federal agencies to evaluate the human and environmental impacts of federal activities and projects, including leasing and other activities on federal lands. Various levels of jurisdiction and decision making under the law often produce unnecessary project delays. Also, NEPA-related lawsuits can lead to the preparation of "appeal-proof" documentation, which can further delay project review and approval.

TCF Affected: 464.5

2.2.7 Pipeline Certification

According to the Interstate Natural Gas Association of America (INGAA), about 200 major new pipeline construction projects (valued at about $2.5 billion per year) will be required over the next 10 years to support projected natural gas demands. The lead time to obtain permission to build new pipeline facilities can be lengthy. The Federal Energy Regulatory Commission (FERC) must approve all new pipelines and expansions to existing interstate pipelines. The process requires approvals from numerous federal, state, and local agencies that have little incentive to work together to approve applications in a timely manner (INGAA 2001). For interstate pipelines, the INGAA estimates that it takes an average of 4 years to obtain approvals to construct a new natural gas pipeline.

TCF Affected: 23.3

2.2.8 Pipeline Safety (Integrity Management)

Recent natural gas pipeline incidents involving loss of life and property, a perceived lack of effectiveness on the part of the federal agency charged with implementing statutory mandates regarding pipeline safety, and the realization that increased gas demands can only be met with increased pipeline capacity have contributed to increased natural gas pipeline safety requirements. Federal-level safety, or integrity management, standards for natural gas transmission pipelines are being written that could increase costs and result in temporary supply disruptions. In addition, states can issue regulations more stringent than the federal regulations for intrastate pipelines.

TCF Affected: Not estimated.

2.2.9 Wetlands Mitigation

Recent COE regulations and guidance for mitigating impacts to wetlands have taken a watershed approach, which allows case-specific exemptions to the one-for-one mitigation-to-impact requirement and expands options for conducting mitigation. Environmental opposition may result in a review and rethinking of these revisions, which could increase the time and money associated with obtaining permits and implementing strategies to mitigate impacts to wetlands caused by natural gas E&P, development, transportation, and construction activities.

TCF Affected: Not estimated.

2.3 ISSUES LIKELY TO INCREASE COSTS

2.3.1 Cooling-Water Intake Structures

Section 316(b) of the CWA requires that cooling-water intake structures reflect the best technology available for minimizing adverse environmental impacts. The EPA is developing national regulations to implement these requirements. It has issued final Phase I regulations for new power plants and manufacturing facilities and final Phase II regulations for existing power plants. The EPA published proposed Phase III regulations for existing manufacturing facilities, including oil and gas extraction facilities, and for new offshore oil and gas extraction facilities in November 2004. Final Phase III regulations must be published by June 2006. The impacts of the final 316(b) Phase III regulations on oil and gas production are not known at this time.

TCF Affected: Not estimated.

2.3.2 Electronic Reporting and Record-Keeping Requirements

On August 31, 2001, the EPA published its proposed Cross-Media Electronic Reporting and Record-Keeping Rule (CROMERRR), which deseribes conditions under which the EPA would "allow" submission of electronic documents and maintenance of electronic records to satisfy federal EPA reporting and record-keeping requirements. The rule is touted as voluntary, but any entity that reports or maintains records electronically would have to follow certain requirements, which could include installation of costly new systems incompatible with current electronic data management systems. The American Petroleum Institute (API) estimated that the financial impact of the proposed rule on the petroleum industry was comparable to what the industry spent on Y2K, or about $1 billion.

TCF Affected: Not estimated.

2.3.3 Lack of Incentives to Go beyond Compliance

Permitting and regulatory processes generally lack incentives for companies to provide environmental protection beyond standard operating practices. Proposals that would provide environmental protections beyond legal requirements and proposals that could provide equal protection at lower costs have been rejected by local, state, and federal authorities. Such rejections constrain environmental progress and preclude opportunities to reduce costs. They can also discourage natural gas operators who may otherwise be willing to take voluntary action in the E&P areas, where additional regulations, expected in response to increased activity and attendant environmental impact, would add to the workload of already burdened regulatory staff, further exacerbating production delays.

TCF Affected: 86.6

2.3.4 Louisiana E&P Waste Disposal Regulations

Amendments to the State of Louisiana's E&P waste storage and disposal rules passed on November 20, 2001, may increase costs and delay natural gas E&P schedules in the state. Louisiana is the first state to adopt such regulations, and because many oil and gas states follow Louisiana's lead, the requirements may set precedents for other states, with attendant costs for natural gas E&P operations.

TCF Affected: Not estimated.

2.3.5 Maximum Achievable Control Technology

MACT rules regulate emissions of hazardous air pollutants (HAPs) from stationary and mobile sources. Final MACT rules exist for oil and gas production facilities and for natural gas transmission and storage facilities. Recently, the EPA signed final MACT rules for turbines, process heaters, and reciprocating internal combustion engines, which may affect gas operations. Compliance with these rules, for example, a 95% reduction in emissions at major sources, could impact the economics of natural gas operations.

TCF Affected: Not estimated.

2.3.6 Mercury Discharge Regulations

Discharges of mercury-containing drilling muds from gas (and oil) drilling operations in the Gulf of Mexico have generated concern that such mercury may convert to toxic methylmercury, which can accumulate in the food chain and poison fish. Such concerns may expand to other onshore and offshore geographical areas, leading to strengthened or new mercury regulations.

TCF Affected: Not estimated.

2.3.7 NO_x Prevention of Significant Deterioration Increment Consumption

An increasingly important air quality issue that can affect natural gas production in the West is the potential for new regulations to limit NO_x emissions. The Air Quality Act limits emissions in Prevention of Significant Deterioration (PSD) areas, most of which exist in the West, where the number of combustion sources that create such emissions is growing. Many of these combustion sources are from oil and gas drilling, and particularly CBM drilling, which is expected to increase significantly over the next few years.

TCF Affected: Not estimated.

2.3.8 Noise Regulations

As E&P and transportation of natural gas increase in response to increased demand, the number of drilling rigs, processing plants, and pipelines will also increase. These increases will require additional equipment, particularly compressors and drills, both of which generate high levels of noise. To date, most drilling and producing operations and pipelines have been located away from population centers, so that noise has not been a major issue. However, as thousands of wells are drilled (particularly for CBM in the West) and as new pipelines are built, noise is expected to become an issue that could lead to regulation, and subsequently higher operating and transportation costs. Noise also affects wildlife, and its effect on otherwise quiet areas will continue to be a subject of concern and potential regulation.

TCF Affected: Not estimated.

2.3.9 Nonroad Diesel Rule

Section 213(a) of the Clean Air Act (CAA) requires that the EPA regulate emissions of nonroad engines and equipment. The EPA has issued some nonroad diesel emission standards and plans to issue more, with a new proposal in the spring of 2003 and final rules by the summer of 2004. Nonroad diesel engines are used in natural gas E&P and in gas processing operations. Increased costs of these engines because of stricter emissions controls, when added to other environmental costs, could affect some operations and limit gas development.

TCF Affected: Not estimated.

2.3.10 Ocean Discharge Criteria

Proposed amendments to existing rules implementing the ocean protection provisions of Section 403 of the CWA would strengthen existing ocean discharge criteria. These criteria must be considered in the issuance of individual or general National Pollutant Discharge Elimination System (NPDES) permits for offshore facilities. The proposal would designate "Healthy Ocean Waters" (waters beyond 3 mi offshore), and these waters would be protected by both a narrative statement of water quality and pollutant-specific numeric criteria and would be subject to an antidegradation policy. The proposal would also establish "Special Ocean Sites (SOSs)," where new and significantly expanded discharges would be prohibited.

TCF Affected: Not estimated.

2.3.11 Particulate Matter Regulations

In 1997, the EPA promulgated National Ambient Air Quality Standards (NAAQS) for fine particulate matter ($PM_{2.5}$, particulate matter with a mean aerodynamic diameter of 2.5 μm or less). The EPA is considering updating that standard, and some states are implementing stricter

regulations. Many diesel-powered engines used at CBM production sites emit PM, and if those emissions were further restricted, more costly new, alternative, or refitted power sources might be required. Depending on the type of regulation, limits on particulate emissions from diesel and gasoline engines could slow the development of CBM.

TCF Affected: 7.2

2.3.12 Pipeline Gathering Line Definition

The Pipeline Safety Act of 1992 requires the U.S. Department of Transportation (DOT) to define the term "gathering line" and to consider the merits of revising pipeline safety regulations for such lines. The issue is complex, and the current definition, adopted in 1970, lacks clarity. The definition could require more lines and facilities to become subject to the federal gas pipeline regulations, which could be costly for small operators and could affect upstream gas flows.

TCF Affected: Not estimated.

2.3.13 Regional Haze Rule

In July 1999, the EPA promulgated final regional haze regulations for protecting visibility in national parks and Wilderness Areas. These rules require states to establish goals for improving visibility in these areas and to develop long-term strategies for reducing emissions of air pollutants that cause visibility impairment (e.g., sulfur dioxide [SO_2], NO_x, and particulates). The goal is to reduce visibility impairment in these areas to natural levels by 2065.

TCF Affected: Not estimated.

2.3.14 Spill Prevention Control and Countermeasures

On July 17, 2002, the EPA issued a final rule that amended the spill prevention, control, and countermeasures requirements originally promulgated in 1974 under the EPA's Oil Pollution Prevention regulations in the *Code of Federal Regulations*, Title 40, Part 112 (40 CFR Part 112). While the expanded scope and relatively short compliance deadlines of the new rule would primarily affect oil production and operations, natural gas drilling and production operations would also be affected, potentially causing some small operators to leave the business, and limiting the ability to rework some existing properties to extract additional gas resources.

TCF Affected: Not estimated.

2.3.15 Standards for Decommissioning or Closing Wells

As gas production from a producing well diminishes or becomes uneconomical, the well must be decommissioned or closed according to the regulations set forth by the appropriate state environmental regulatory agency or oil and gas commission. Typically, these regulations specify contaminant-specific concentrations that cannot be exceeded after closure is complete. These concentrations can vary from state to state, and they are usually set on the basis of technology, background concentration, or other non-risk-based measures. Thus, they can be overly protective and costly to implement, without providing significant gains in environmental or human-health protection.

TCF Affected: Not estimated.

2.3.16 Storm Water Construction Permits

The EPA has proposed extending the deadline for obtaining storm water permits under the CWA by 2 years, from March 10, 2003, to March 10, 2005, to determine the appropriate NPDES requirements, if any, for constructing oil and gas E&P facilities of 1 to 5 acres. If all oil and gas and E&P facilities of 1 to 5 acres were required to obtain such permits, as originally proposed in 1999, the costs and delays to oil and gas production could reduce the number of wells drilled and the amount of gas produced.

TCF Affected: 5.75 per year

2.3.17 TMDL Regulations Targeting Oil and Gas Wells

Gas (and oil) wells may be targeted for TMDL limits because large point sources are already regulated, and technical and political factors argue against imposing limits on large nonpoint sources such as agricultural lands. Also, proposed changes to the TMDL rule could limit the use of nationwide construction permits under Section 404 of the CWA.

TCF Affected: Not estimated.

3 ISSUE DISCUSSIONS

This section provides additional detail and discussion for the environmental policy and regulatory constraints summarized in Chapter 2. For each issue, the following information, where available, is presented:

- *Summary.* Brief summary of the issue.
- *Source of constraint.* The constraint can arise from statutes; regulations written to implement a statute; Executive Orders; or from agency implementation of the regulation, statute, or order.
- *Impact.* The impact of the constraint can be one or more of the following: lack of access (unavailability of gas), delays, or increased costs.
- *Phase.* The constraint can affect one or more of the following phases of the natural gas production cycle: exploration, production, or transportation.
- *Category.* The constraint can affect one or more categories of activity, including access, leasing, permitting, and operations.
- *Estimated affected natural gas resources.* Estimates of the amount of gas affected by the constraint, in TCF, were derived from information collected by other sources, such as the USGS and the MMS.
- *Estimate type.* Because not all estimates are reported in the same terms, the type of estimate is identified. Most frequently, the estimates are reported as technically recoverable resources; however, sometimes estimates are reported as economically recoverable amounts or in other terms used by the organization preparing the estimates.
- *Estimate date.* The date of the estimate of the TCF affected.
- *Estimate reference.* The source of the TCF affected estimate.
- *Estimate comments.* Notes that help explain the TCF estimates.
- *Statutory/regulatory citation.* The specific source of the constraint, which can include specific statutes, regulations, proposed regulations, Presidential Memos, etc.
- *Lead player(s).* The agency or other player that has control over the constraint can include various federal regulatory agencies (e.g., EPA, BLM, COE), states, the President, or Congress.

- *Issue discussion.* A discussion of the nature of the constraint, how it evolved, its status, and other information relevant to understanding the constraint. The discussion includes references.

Table 1 lists each constraint, grouped by source of constraint, and identifies lead player(s), category(ies), and production cycle phase(s). Table 2 lists the constraints, grouped by type of impact, and indicates the estimated TCF affected, and the estimate type, date, and reference. Many of these issues have multiple impacts; to prevent duplication in presentation, constraints are grouped according to the impact deemed to be the most significant. The data for each constraint are stored in a Microsoft® Access database to facilitate updating and sorting according to various criteria.

TABLE 1 Environmental Regulatory Constraints, by Source of Constraint[a]

Source of Constraint	Constraint	Lead Player	Category	Phase
Statutory/ regulatory/agency implementation	CZMA consistency provisions	NOAA	Access, leasing, permitting	E&P, transportation
Statutory	Bans on Great Lakes drilling	COE, states	Access, leasing	E&P
	Wilderness Areas	BLM	Access	Exploration
Regulatory	CBM-produced water management	EPA, states	Permitting	Production
	Cooling-water intake structures	EPA	Permitting	Production
	Electronic reporting and record-keeping requirements	EPA	Operations	Production
	Fracturing operations	EPA, states	Operations	Production
	Lack of incentives to go beyond compliance	BLM	Permitting	Production
	Louisiana E&P Waste Disposal Regulations	State	Operations	Production
	MACT rules	EPA	Operations	Production, transportation
	Mercury discharge regulations	EPA	Permitting	E&P
	Nationwide permits	COE	Permitting	Production, transportation
	NEPA integration and lawsuits	States, BLM, FERC	Access, leasing, permitting	E&P, transportation
	NO_x PSD increment consumption	EPA, states	Permitting	Production
	Noise regulations	States, local governments, BLM	Operations	Production, transportation

TABLE 1 (Cont.)

Source of Constraint	Constraint	Lead Player	Category	Phase
Regulatory (Cont.)	Nonroad Diesel Rule	EPA	Operations	E&P
	Ocean discharge criteria	EPA	Permitting	Production
	Particulate matter regulations	EPA, states	Permitting	Production
	Pipeline gathering line definition	OPS	Operations	Production, transportation
	Pipeline safety (integrity management)	OPS	Operations	Transportation
	Regional haze rule	States, EPA	Operations	Production
	Roadless Rule	FS	Access	Exploration
	Spill prevention control and countermeasures	EPA	Permitting	Production
	Standards for decommissioning or closing wells	States	Operations	Production
	Storm water construction permits	EPA	Permitting	E&P
	TMDL regulations targeting oil and gas wells	EPA	Permitting	E&P
	Wetlands mitigation	COE, states	Permitting, operations	Production, transportation
Presidential, statutory	OCS Moratoria — Atlantic Ocean	President, Congress	Access, leasing	E&P
	OCS Moratoria — Eastern Gulf of Mexico	President, Congress	Access, leasing	E&P
	OCS Moratoria — West Coast	President, Congress	Access, leasing	E&P
Presidential	Monument designations	President	Access	Exploration
	Ocean policy	President, Congress	Access, leasing, permitting, operations	E&P, transportation
Agency implementation	Drilling permits	BLM	Permitting	Production
	ESA	USFWS	Access, leasing, permitting, operations	E&P
	Essential fish habitat	NMFS	Permitting	E&P, transportation
	Forest Service restrictions	FS	Access	Production

TABLE 1 (Cont.)

Source of Constraint	Constraint	Lead Player	Category	Phase
Agency implementation (Cont.)	Outdated BLM land use plans	BLM	Leasing, permitting	E&P
	Lease stipulations	BLM, FS	Leasing	Production
	Permit restrictions	BLM	Access	E&P
	Pipeline certification	FERC, others	Permitting	Transportation

[a] BLM = Bureau of Land Management; CBM = coal bed methane; CZMA = Coastal Zone Management Act; COE = U.S. Army Corps of Engineers; E&P = exploration and production; EPA = U.S. Environmental Protection Agency; ESA = Endangered Species Act; FERC = Federal Energy Regulatory Commission; FS = USDA Forest Service; MACT = maximum achievable control technology; NEPA = National Environmental Policy Act of 1969; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; NO_x = nitrogen oxides; OCS = Outer Continental Shelf; OPS = Office of Pipeline Safety; PSD = Prevention of Significant Deterioration; TMDL = total maximum daily load; USFWS = U.S. Fish and Wildlife Service.

TABLE 2 Environmental Regulatory Constraints and Estimated Amounts of Gas Affected[a]

Issue Impact	Constraint	TCF Affected	TCF Type	TCF Date	TCF Reference
Unavailable gas, delay, cost	Ocean policy	Not estimated	NA	NA	NA
	Lease stipulations	108	Undeveloped gas resources	01/1998	NPC (1999)
Unavailable gas, delay	CZMA consistency provisions	362.2	Undiscovered conventionally recoverable resources	01/1999	MMS (2000)
	ESA	Not estimated	NA	NA	NA
	Outdated BLM land use plans	120.3	Technically recoverable	01/2003	DOI (2003)
Unavailable gas	Forest Service restrictions	10–30	Natural gas resources	01/2001	Fisher (2001)
	Monument designations	1	Technically recoverable	01/1995	Wilderness Society (2002)
	OCS Moratoria — Atlantic Ocean	28.0	Technically recoverable	01/2000	EIA (2001b)
	OCS Moratoria — Eastern Gulf of Mexico	11.3	Technically recoverable	01/2000	EIA (2001b)

TABLE 2 (Cont.)

Issue Impact	Issue	TCF Affected	TCF Type	TCF Date	TCF Reference
Unavailable gas (Cont)	OCS Moratoria — West Coast	18.9	Technically recoverable	01/2000	EIA (2001b)
	Permit restrictions	86 6	Technically recoverable	01/2003	DOI (2003)
	Bans on Great Lakes drilling	1.1	Possible and probable reserves	09/2001	Shirley (2001)
	Roadless Rule	11	Technically recoverable	11/2000	Eppink (2000)
	Wilderness Areas	9	Technically recoverable	01/2003	DOI (2003)
Delay, cost	CBM-produced water management	74	Technically recoverable	01/1998	NPC (1999)
	Fracturing operations	293	Unproved technically recoverable	01/2000	EIA (2001b)
	Pipeline safety (integrity management)	Not estimated	NA	NA	NA
	Wetlands mitigation	Not estimated	NA	NA	NA
Delay	Drilling permits	311.2	Assessed additional resources	01/1998	NPC (1999)
	Essential fish habitat	174.5	Technically recoverable	01/2000	EIA (2001b)
	Nationwide permits	Not estimated	NA	NA	NA
	NEPA integration and lawsuits	464.5	Technically recoverable	01/2000	EIA (2001a)
	Pipeline certification	23.3	Annual gas consumption	01/2003	EIA (2003)
Cost	Cooling-water intake structures	Not estimated	NA	NA	NA
	Electronic reporting and record-keeping requirements	Not estimated	NA	NA	NA
	Lack of incentives to go beyond compliance	86.6	Technically recoverable	01/2003	DOI (2003)
	Louisiana E&P waste disposal regulations	Not estimated	NA	NA	NA
	MACT rules	Not estimated	NA	NA	NA
	Mercury discharge regulations	Not estimated	NA	NA	NA

TABLE 2 (Cont.)

Issue Impact	Issue	TCF Affected	TCF Type	TCF Date	TCF Reference
Cost (Cont.)	NO_x PSD increment consumption	Not estimated	NA	NA	NA
	Noise regulations	Not estimated	NA	NA	NA
	Nonroad Diesel Rule	Not estimated	NA	NA	NA
	Ocean discharge criteria	Not estimated	NA	NA	NA
	Particulate matter regulations	7.2	Technically recoverable	01/1995	Whitney (2001)
	Pipeline gathering line definition	Not estimated	NA	NA	NA
	Regional haze rule	Not estimated	NA	NA	NA
	Spill prevention control and countermeasures	Not estimated	NA	NA	NA
	Standards for decommissioning or closing wells	Not estimated	NA	NA	NA
	Storm water construction permits	5.75 per year	Economically recoverable	09/2002	Texas Alliance of Energy Producers (2003)
	TMDL regulations targeting oil and gas wells	Not estimated	NA	NA	NA

[a] Abbreviations: BLM = Bureau of Land Management; CBM = coal bed methane; CZMA = Coastal Zone Management Act; E&P = exploration and production; DOI = U.S. Department of the Interior; EIA = Energy Information Administration, ESA = Endangered Species Act; MACT = maximum achievable control technology; MMS = Minerals Management Service; NA = not applicable; NEPA = National Environmental Policy Act of 1969; NO_x = nitrogen oxides; NPC = National Petroleum Council; OCS = Outer Continental Shelf; PSD = Prevention of Significant Deterioration; TCF = trillion cubic feet; TMDL = total maximum daily load.

3.1 ISSUES LIKELY TO LIMIT ACCESS

3.1.1 Coastal Zone Management Act Consistency Provisions

Summary: The CZMA requires that each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone must be undertaken in a manner consistent "to the maximum extent practicable" with the enforcement policies of approved state CMPs. Nonfederal applicants for federal licenses or permits must comply with

state CMP enforcement policies. Federal approvals may not be granted until the state concurs, or, if the state objects, until the Secretary of the Department of Commerce, on appeal by the applicant, overrides the state's CMP objections. These provisions have caused duplications and costly delays to federal leasing and production activities. Also, once a lease has been obtained, the CZMA can still limit/prevent exploration, development, and production for that lease. (See related issue, OCS Moratoria — West Coast.)

Source of Constraint: Statutory, regulatory, agency implementation

Impact: Unavailable gas, delay

Phase: E&P, transportation

Category: Access, leasing, permitting

Estimated affected natural gas resources (TCF): 362.2

Estimate type: Undiscovered conventionally recoverable resources

Estimate date: 01/1999 **Estimate reference:** MMS (2000)

Estimate comments: This estimate is MMS's mean estimate for all OCS areas. The low estimate is 292.1 TCF, and the high estimate is 468.6 TCF. The breakdown for mean estimates is as follows: Alaska, 122.6; Atlantic, 28.0; Gulf of Mexico, 192.7; Pacific, 18.9. Note that the specific example of OCS Lease Sale 181 in Florida prevented drilling for an estimated 1.45 TCF because of the downsizing of the lease area in July 2001.

Statutory/regulatory citation: CZMA (Section 307, 16 USC 1456); CZMA Federal Consistency Regulations, Final Rule, *Federal Register*, Volume 65, page 77124 (65 FR 77124), December 8, 2000, and Proposed Rule (68 FR 34851), June 11, 2003

Lead player: NOAA

Issue discussion: The CZMA created a national program to encourage states to manage and balance competing uses of, and impacts on, coastal resources. The oil and gas industry suggests that over the years, the law has been used to stall or halt offshore development by using loosely worded passages in the law that require a "seemingly endless loop of permit approvals" (Fry 2001). A coastal state with a federally approved CMP can block or delay offshore E&P plans by claiming that the federal lessee's activity will have some effect on resources in the coastal zone. If the lessee's activity will have an effect, the activity must be consistent with the state's CMP. The coastal zone itself generally extends only 3 mi offshore, except for the Gulf of Mexico off Texas and Florida, where it extends 9 mi. However, the "effects test" can extend a state's reach to greater distances.

The MMS issues OCS mineral leases under the authority of the Outer Continental Shelf Lands Act (OCSLA; 43 USC 1331 et seq). Under the OCSLA, an OCS lessee prepares a Plan of

Exploration (POE) as part of the exploration stage of lease activity. If recoverable resources are found, the lessee may then submit to the MMS a Plan of Development and Production (POD) to continue on to the production stage. In filing either plan, the OCSLA stipulates that the OCS lessee will certify that its activities will be consistent with the CMP of any affected state that has such an approved program. (43 USC 1340(c) addresses applying CZMA certification requirements to POEs; 43 USC 1351(h) addresses applying the requirement to PODs.)

Under the CZMA consistency provisions, a federal agency is prohibited from granting any further permits to conduct activities under a POE or POD unless the state has concurred that such activities are consistent with its approved CMP. If the state does not concur, the lessee faces considerable delay in appeal before the Secretary of Commerce, which can "override" the state's objection. In recent years, a number of states, including North Carolina, California, and Florida, have used their consistency determination authorities to limit oil and gas leasing, exploration, and development. The Secretary of Commerce has upheld certain controversial state CZMA objections, thus thwarting further OCS development. Even in instances where the Secretary has overridden the state's objection. appeals involving OCS activity have taken from 16 months to 4 years from the state's initial objection to the final override decision (Wyman 2001).

Chief risks associated with current CZMA implementation include escalating compliance costs resulting from unexpected interpretations of vague policies in state CMPs, delays caused by lengthy appeals before the Department of Commerce, and the risk of losing lease rights without compensation when a state authority changes a plan requirement (Young 2001). Existing challenges take an average of 2 years to review (Inside EPA 2001c). A 1996 amendment to the CZMA, adding 16 USC Section 1465 (appeals to the Secretary), was designed to expedite the override decision-making process. But lengthy agency commenting continues to draw out appeals (Wyman 2001).

Other issues include the policy of allowing states to conduct consistency reviews of activities outside their own geographic boundaries; delays caused by lack of coordination among federal agencies in processing permits for OCS activities, and delays involving separate state consistency reviews for those permits; state requirements for multiple information requests with the related use of "lack of information" to deny consistency certifications; and lengthy appeals processes, exacerbated by overlong agency commenting and by the Department of Commerce's requirement that the decision-making period not begin until after the Administrative Record is "closed" (Wyman 2001).

OCS Lease Sale 181. An example of how the CZMA can restrict drilling and production of natural gas is OCS Lease Sale 181. Federal OCS Lease Sale 181, in the Eastern Gulf of Mexico Planning Area, off the coast of Florida, was scheduled for December 2001. In the early to mid-1990s, the MMS had comprehensive consultations with Alabama, Florida, and other coastal states about leasing in the eastern Gulf of Mexico. Both Alabama and Florida expressed concerns and requested that the leasing not occur within certain distances of their shores (15 mi for Alabama and 100 mi for Florida.) MMS designed Lease Sale 181 to meet these criteria and placed it on the current 5-year schedule. Subsequently, Congress ratified the MMS decision through the appropriations process. (The lease area is not subject to the OCS moratorium.) Industry then began to accumulate seismic data, review geological trends, and conduct

preliminary engineering studies in anticipation of the sale. Florida tried to block the sale on environmental grounds, even though the lease sale had existing infrastructure that could be used with a minimum amount of turnaround time. The lease was also near one of the most rapidly growing population areas in the United States, and many argued that the streamlined development of Lease Sale 181's gas resources could prevent energy supply and delivery disruptions in the area (Fry 2001).

On June 21, 2001, the U.S. House of Representatives approved an amendment to House Resolution (H.R.) 2217, the Interior Appropriations bill that bars the spending of funds to execute a final lease agreement for oil or gas in Area 181 before April 1, 2002, effectively blocking the sale of Lease 181. On July 2, 2001, the Bush Administration announced that Secretary of the Interior, Gale Norton, would seek to allow drilling on 1.47 million acres (256 leases) of Lease Sale 181, about one-fourth of the original acreage of 5.9 million acres (1,033 leases) first proposed for leasing by the Clinton Administration in 1997. The revised area is estimated to contain 1.25 TCF of natural gas, whereas the original site holds an estimated 2.7 TCF (Ferullo 2001a).

The original sale area also contained acreage near infrastructure and in moderate water depths, allowing for 1- to 2-year projects. The revised sale area is farther from existing infrastructure and in ultra-deepwater depths, requiring projects with cycle times of 4 to 10 years. The revised sale area eliminates all acreage in less than 6,500-ft depths, with most of the available acreage in depths greater than 7,000 ft. Thus, the sale is an ultra-deepwater sale, where state-of-the-art development tools are required. There may be limited equipment to drill and produce in these waters in the near term (Young 2001).

The lease sale for the modified OCS Lease Sale 181 was conducted in December 2001. Ninety-five of the 256 available leases were sold, and the remaining leases in the scaled-back OCS 181 lease will be auctioned as part of the 2002–2007 5-year plan (MMS 2002a). These auctions, which will cover about 0.8 million acres, are scheduled to occur in December 2003 (Lease Sale 189) and March 2005 (Lease Sale 197). Both are currently in the NEPA process. A draft EIS was issued in November 2002, and a final EIS is expected in June 2003. Consistency determinations will be made roughly 5 months before each sale has been prepared (MMS 2002b). Drilling in areas sold in the December 2001 reduced area could begin within 2 to 10 years, but the remaining 4.4 million acres (1.45 TCF) of the original OCS Lease 181 would not become available for leasing until at least 2007.

Destin Dome. The Destin Dome area is another example where the CZMA functioned to prohibit drilling. Between 1984 and 1989, the MMS sold drilling rights to 11 parts of the Destin Dome area for about $20 million. However, Florida rejected the development and production plan submitted by the lessees, saying that the plan would not be consistent with the state's CMP. Neither the EPA nor the NOAA would issue the permits required for drilling; each argued that it needed clearance from the other before it could issue its own permit (Inside EPA 2001b). The oil company lessees appealed to the Department of Commerce to overturn Florida's objections, but action was never taken. On May 29, 2002, the President announced that the U.S. Department of the Interior (DOI) would pay $115 million to buy back the Destin Dome oil and gas leases to settle the legal dispute and appease state and local officials who objected to energy exploration in

the state. The settlement covered the costs for leasing, exploration, and gas in the ground that they would be unable to sell. The estimated amount of these resources varies from 0.7 TCF (DOI estimate) to 2.6 TCF (DOE estimate) (Ferguson 2002). A representative of the Natural Gas Supply Association stated that the Destin Dome area is one of the largest fields in the Gulf of Mexico.

Regulatory issues. Recent changes made to the implementing regulations could limit or delay gas (and oil) exploration and development. On December 8, 2000, the NOAA published final rules revising the regulations implementing the federal consistency provisions of the CZMA. (The regulations had been in place since 1979, and the NOAA needed to update them to reflect changes made to the federal consistency provisions in Section 307 resulting from the Coastal Zone Protection Act of 1996 and the Coastal Zone Act Reauthorization Amendments of 1990.) Sections 930.120 through 930.131 of 15 CFR describe the procedures for appeals to the Secretary of Commerce for reviews of consistency decisions related to national security interests. Before the changes, 15 CFR 930.121 required that a successful appeal must include the specific finding that "[t]he challenged activity furthers one of the national objectives or purposes of the [CZMA]." However, the new CZMA rules have added the requirement that the challenged activity must further the national interest requirements in a "significant or substantial" manner. According to testimony before the House Resources Committee, Subcommittee on Fisheries Conservation, Wildlife, and Oceans, this change to the "national interest" criterion could have substantial detrimental impacts. The preamble to the December 8, 2000 rule cites examples of activities that significantly or substantially further the national interest as the siting of energy facilities or OCS oil and gas development (DOC 2000).

While these examples give OCS lessees some comfort regarding the new criterion's application to OCS development, they do not provide the same level of comfort for exploration. The distinction is significant, as demonstrated by recent override decisions by the Secretary of Commerce. For example, the Secretary's POE and NPDES permit override decisions in a North Carolina leasing project, the Manteo project, specifically found, contrary to longstanding Secretarial precedent, that the drilling of an exploration well in an important frontier OCS area would only provide a "minimal contribution" to the national interest. Emphasizing that the Manteo POE had indicated that there was a 10% chance of actually finding mineral reserves (which, in the industry, is a solid chance for even conservative decision making), the Secretary found that the supposedly small chance of exploratory success diminished the Manteo project's contribution to the national interest. Therefore, it is possible that the Secretary of Commerce could use the new override criterion to reject the importance of OCS exploratory activity in frontier areas (Wyman 2001).

The December 8 rule also provided for the review and preclusion of a federal action (e.g., a leasing or permitting decision) based on a state's objection, even if that state was not the one in which the activity would occur. According to 15 CFR 930.151, states can object to an activity on the basis of any "reasonably foreseeable" direct or indirect effect resulting from a federal action occurring in the state or on any coastal use or resource of another state that has a federally approved management plan.

One of the recommendations of the NEPDG in its National Energy Policy of May 2001 was for the Department of Interior and Commerce to "re-examine the current federal legal and policy regime (statutes, regulations, and Executive Orders) to determine if changes are needed regarding energy-related activities and the siting of energy facilities in the coastal zone and on the Outer Continental Shelf" (NEPDG 2001). On June 11, 2003, the NOAA published a proposed rule to address these CZMA-related recommendations. The proposal seeks to clarify some sections of and provide greater transparency and predictability to the federal consistency regulations (NOAA 2003).

3.1.2 Endangered Species Act

Summary: The ESA can limit access to gas resources and cause delays in permitting on both federal and private lands. Court-interpreted definitions have expanded the scope of what is considered a "take" under the ESA to include habitat modification, such as clearing or similar development, which often occurs with natural gas E&P. Similarly, the USFWS, an implementing agency for the ESA, often treats sensitive species as requiring the same or similar protections as species that are actually listed as endangered or threatened.

Source of Constraint: Agency implementation

Impact: Unavailable gas, delay

Phase: E&P

Category: Access, leasing, permitting, operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: ESA (16 USC 1531 et seq.)

Lead player: USFWS

Issue discussion: Under the ESA, the USFWS or the NMFS lists certain plant and animal species as endangered or threatened, depending on their assessed risk of extinction. The ESA prohibits the "take" of an endangered species. The definition of take, which includes, among other things, harming, harassing, or pursuing, has been interpreted broadly. For example, in 1995, the Supreme Court determined that significant habitat modification, which could include clearing or development, was a reasonable interpretation of the term "harm." Once a species is listed, the USFWS is to designate critical habitat for that species, and federal agencies must avoid "adverse modification" to these areas. Section 7 of the ESA requires any federal actions that may affect a listed species to ensure that those actions are "not likely to jeopardize the continued existence" of any endangered or threatened species, nor to adversely modify critical habitat. Federal agencies must consult with the Secretary of Interior or Commerce for such actions, and if the Secretary finds that an action would jeopardize a listed species, he or she must

suggest alternatives. Until the consultation process is completed, agencies are limited in what they may approve.

The designation of critical habitat can have significant cost and schedule impacts on gas development. For example, in comments on the July 2002 rule designating critical habitat for wintering piping plovers, one petroleum company estimated that the critical habitat designation could cause natural gas project delays resulting from Section 7 consultations of 6 months to 2 years. It also estimated that the net present value cost of the designation over 30 years would be $261 million to $979 million to the local economy (USFWS 2001).

Failure to conduct Section 7 consultations can lead to legal action. In November 2001, for example, environmental groups sued the FS and the BLM for issuing leases encompassing grizzly bear habitat in the Shoshone National Forest without conducting formal consultation with the USFWS regarding the impacts of such leasing on the habitat (DEN 2001).

Although critical habitat issues are important, the broad interpretation of the law by its implementing agencies means that the mere listing of a species can have nearly as much of an impact as a critical habitat designation. A Congressional Research Study found that "as a practical matter, critical habitat has not been designated for many listed species because the USFWS regards listing as providing the bulk of species protection, while critical habitat adds only a marginal increment" (Buck and Corn 2001). In February 2002, the USFWS proposed listing three species of snails and one species of amphipod as endangered in the Roswell Basin of Southeastern New Mexico. The proposal noted that oil and gas extraction activities in the area were potential threats to these species and that stipulations on permits to drill may be necessary to protect aquatic habitat from contamination or degradation (USFWS 2002).

The Cooperating Industries Forum has also reported a tendency among BLM and FS land managers to apply the same stringent standards that apply to listed species to "watch," "candidate," or "sensitive" species. Substantial acreage can be set aside for wildlife species that are considered sensitive, and, therefore, given the same status as listed species, delaying projects for months. Also, drilling operations can be delayed to allow surveys to be conducted during narrow windows in the spring or summer when plants are in bloom (DuVall 1997).

The BLM has acknowledged that ESA consultations can delay the permitting process. On April 25, 2001, Peter Culp, Assistant Director of Minerals, Realty, and Resource Protection at the BLM, noted that although the BLM is coordinating with other federal agencies, there is room for much improvement. ESA consultations and similar coordination issues can cause the BLM to miss the 30-day processing time applications to drill (Culp 2001).

ESA requirements can potentially affect all gas resources in lands that are designated critical habitat or where listed or even sensitive species are present.

3.1.3 Forest Service Restrictions

Summary: Forest Service restrictions contained in RODs for development of natural gas resources in three areas — Beaverhead National Forest, Helena National Forest, and Lewis and Clark National Forest — are limiting the ability to access and produce natural gas.

Source of Constraint: Agency implementation

Impact: Unavailable gas

Phase: Production

Category: Access

Estimated affected natural gas resources (TCF): 10 to 30

Estimate type: Natural gas resources

Estimate date: 01/2001 **Estimate reference:** Fisher (2001)

Estimate comments: 10 to 30 TCF in three national forests (Beaverhead, Helena, and Lewis and Clark)

Statutory/regulatory citation: National Forest Management Act; Forest Service Plans

Lead player: FS

Issue discussion: RODs issued by the FS have restricted access to potentially rich natural gas areas in the NFS. Combined, three recent decisions cover 5,009,453 acres of national forest. Of these, 3,738,095 acres (75%) are legally available, but only 440,600 acres (94% of which are in the Beaverhead National Forest) are available with standard lease terms. In testimony presented to the House Resources Committee in 2001, the Montana Petroleum Association indicated that the combined decisions have potentially cost 10 to 30 TCF in natural gas production. The statement also reported that the FS's decision to disallow further oil and gas exploration on the Rocky Mountain Front was based "primarily on the will of the people (Fisher 2001). The three decisions and their impacts are highlighted below.

- In 1996, the FS issued a ROD for the EIS for the Beaverhead National Forest. Of the 1,636,900 total acres, 76% are administratively available. However, of these, 22% have no surface occupancy (NSO) restrictions, 35% have controlled surface use (CSU) or timing limitations (TLs), and the remainder (19% of the total) have BLM standard lease terms (Fisher 2001).

- In 1997, a ROD was issued for 1,862,453 acres in the Rocky Mountain Division and the Jefferson Division of the Lewis and Clark National Forest. Of the 67% that are administratively available, none are available with

standard lease terms. The administratively available lands have the following designations: no lease offered (19.1%), NSO (19.5%), CSU (21.1%), CSU/TL (7.3%) (Fisher 2001).

- In 1998, a ROD was issued for the Helena National Forest covering roughly 997,700 acres. Of these, 85.52% were found to be administratively available; however, of these, only 2.48% (24,700 acres) are available with standard lease terms. The remainder are designated as follows: 185,100 acres (18.6%), discretionary unavailable; 384,700 acres (38.6%) NSO; and 258,700 acres (25.9%) CSU/TL (Fisher 2001).

The greatest concern for the industry following these FS decisions is the perceived threat to resource development and basic access, particularly the no-lease decision in the Lewis and Clark Forest (Fisher 2001). According to the FS, the Rocky Mountain Division of the Lewis and Clark Forest in the Montana Thrust Belt has the potential to contain a minimum of 2 and up to 11 TCF of gas. The Montana Thrust Belt is rated third in the country for potential conventional gas reserves and second for potential deep gas reserves. Montana's overthrust province may hold 20 TCF or more of CBM, but is currently inaccessible because of recent FS decisions (Fisher 2001). Independent producers testifying at another House Resources Committee hearing stated that under the current circumstances and attitudes of the government, these reserves would not be explored and produced. There have been no FS leases in Montana since 1981. Under the preferred alternative for the Lewis and Clark Forest in the draft EIS, the area would remain open for leasing. These leases, however, would be so severely restricted in stipulations, including NSO, that for all practical purposes the 1.2 million acres have been taken out of play (Nance 1997). In July 2002, the chairman of the Independent Petroleum Association of America (IPAA) testified before the House Resources Committee that the forest manager for the Lewis and Clark National Forest concluded that natural gas development was inconsistent with the development of the forest because it violated "a sense of place" and prohibited new leasing. There is no administrative mechanism to appeal such a judgment despite there being no such basis for denying the use of this multiple use federal land. Court action to overturn the decision failed because the courts concluded that the decision was within the discretion of the forest manager (True 2002).

A similar concern came to fruition in Wyoming in the recently released Preferred Alternative for the Bridger-Teton Forest. The FS decision to adopt a "no lease" policy (even after a 10-year process to prepare the Bridger-Teton Land and RMP) disregards the science and planning that underlie the document. This decision places another 370,000 acres in a "de facto" wilderness classification and more resources off limits (Fisher 2001).

3.1.4 Outdated BLM Land Use Plans

Summary: The FLPMA established land use planning requirements on federal lands, and 43 USC 1701(a)(7) states that it is the policy of the United States to manage public lands under the principles of multiple use and sustained yield. Land use plans and planning decisions provide the basis for every land action undertaken by the BLM, but many have been prepared without

considering natural gas resource potential. If the land use plan is out of date with respect to anticipating the cumulative impacts of gas development, substantial delays in the permitting of new wells can occur as a new environmental analysis (typically an EA or EIS) is completed and the plan updated. Today, many land use plans need to be updated to recognize the use of the land for natural gas development before additional development can occur.

Source of Constraint: Agency implementation

Impact: Unavailable gas, delay

Phase: E&P

Category: Leasing, permitting

Estimated affected natural gas resources (TCF): 120.3

Estimate type: Technically recoverable

Estimate date: 01/2003 **Estimate reference:** DOI (2003)

Estimate comments: Theoretically, gas under all BLM lands that are not yet leased or are leased but do not have permits to drill would be affected. These lands include potentially significant CBM resources. Estimates were calculated by subtracting currently leased acreage from total BLM acreage in Colorado, Montana, New Mexico, Utah, and Wyoming, and multiplying by the average TCF per acre derived from DOI (2003), p. xv, Table ES-1.

Statutory/regulatory citation: FLPMA (43 USC 1701, et seq.)

Lead player: BLM

Issue discussion: BLM has been preparing land use plans since the 1960s. In 2000, the BLM had 162 plans covering nearly 264 million acres of public lands and 758 million acres of mineral estate (BLM 2000). Some of the BLM's land use plans are current, but others date to the mid-1970s and do not meet the requirements of current BLM program requirements. Plans were developed to guide management for a 10- to 20-year period (Colorado BLM 2001), and they did not forecast the dramatic and accelerated changes that are now occurring in the West. Thus, the average life span (or period of usefulness) of these plans has diminished to 7 years. In the Powder River Basin in northeastern Wyoming, for example, the land use plan has been updated twice in the past 2 years and is currently being updated for a third time (Smith 2001). In the Buffalo, Wyoming, Field Office, thousands of permits are not being accepted by the BLM because of limitations of the RMPs for the area. This is because the reasonably foreseeable development estimates of future development failed to recognize the interest in developing CBM (Rubin 2001).

Most plans need updating to reflect current conditions and statutory requirements; they must also be adaptable to changing conditions and demands. The BLM's land use plans (RMPs)

take about 3 years to complete. The process whereby land managers rewrite or amend land use plans has become cumbersome and detailed, resulting in marked delays in decision making; in addition, the time to rewrite or amend an RMP has increased from about 1 year to an average of 3 years (Smith 2001). Funding for land use planning has compounded the problem. From a typical budget of $10 million in the early 1990s, the planning budget reached a historic low of $6.6 million in 2000. The planning organization of the BLM is being rebuilt to handle the workload of eliminating the backlog and preventing future backlogs. In 2001, the BLM's planning budget increased to $25.8 million, and budget increases have followed in every year since; in 2004, $48 million was appropriated for land use planning.

3.1.5 Lease Stipulations

Summary: Two categories of restrictions limit access to onshore public lands. Some lands, such as Wilderness Areas and areas with specific geological attributes or unique or significant natural or cultural resources, are completely off limits because of statutory, Executive Order, or other administrative requirements. Other lands, while technically available for development, are subject to stipulations imposed by the BLM or the FS to implement statutory or regulatory requirements. Some of these stipulations, which can affect large geographic areas, can prevent development without providing obvious commensurate environmental benefit (Rubin 2001). Combinations of individual stipulations applied to the same area can effectively prevent access to key natural gas resources (Russell 2000). The EIA has estimated that federal lease stipulations increase development costs by 6% and add 2 years to development schedules (EIA 2001b). Operators report a growth in stipulations and note that when land managers impose a stipulation in one area, there is a tendency to impose the same stipulation in surrounding areas (Martin 1997).

Source of Constraint: Agency implementation

Impact: Unavailable gas, delay, cost

Phase: Production

Category: Leasing

Estimated affected natural gas resources (TCF): 108

Estimate type: Undeveloped gas resources

Estimate date: 01/1998 **Estimate reference:** NPC (1999)

Estimate comments: The affected 108 TCF consist of proven reserves and unproven resources on public lands available for leasing but governed by nonstandard lease stipulations in the Rocky Mountain states. This represents nearly one-third of the total 340 TCF of unproven resources in the area. An additional 29 TCF in national parks, national monuments, and Wilderness Areas are completely unavailable for development, and about 203 TCF are subject to standard lease terms

(NPC 1999). The Energy Policy and Conservation Act (EPCA) Report (DOI, USDA, and DOE 2003) presented results on the nature and extent of leasing restrictions in five specific areas within the Rocky Mountain region. It concluded that of the 138.5 TCF of technically recoverable resources on federal lands in the five areas, 36.0 TCF were subject to nonstandard leasing restrictions, 86.6 were subject to standard leasing stipulations, and 15.9 were completely unavailable for leasing.

Statutory/regulatory citation: FLPMA, Resource Management

Lead players: BLM, FS

Issue discussion: Lease stipulations are derived from RMPs (BLM) and Forest Plans (FS). Categories of lease stipulations imposed on federal lands include the following:

- "Standard stipulations" or "standard lease terms." These are provisions within standard federal oil and gas leases regarding the conduct of operations or conditions of approval given at the permitting stage. These include prohibitions against surface occupancy within 500 ft of surface water and or riparian areas; on slopes exceeding 25% gradient; construction when soil is saturated; or within 1/4 mi of an occupied dwelling. These are generally applied to all BLM oil and gas leases.

- "Seasonal" or other "Special" stipulations. These prohibit mineral exploration and/or development activities for specific periods, in, for example, sage-grouse nesting areas, hawk nesting areas, or calving habitat for wild ungulate species. These are often imposed at the request of state wildlife officials or the USFWS to protect sensitive species.

- NSO leases prohibit operations directly on the surface overlaying a leased federal tract to protect some other resource that may be in conflict with surface oil and gas operations, for example, underground mining operations, archeological sites, caves, steep slopes, campsites, or important wildlife habitat. These leases may be accessed from another location via directional drilling.

The following examples illustrate the severity and impact of lease stipulations.

Short drilling windows. The layering of wildlife protection and other environmental restrictions in part of the year limits periods in which drilling can occur. Deep wells that require more time to drill than the allowed drilling window will either not be drilled, or must be drilled in inefficient phases over more than 1 year (Hackett 2001).

Impact of restrictions. The NPC estimates that 137 TCF of natural gas resources under federal lands in the Rocky Mountains are either off limits to exploration or heavily restricted. This amount, which does not include the 11 TCF placed off limits by the FS Roadless Rule, is 48% of the natural gas resources on federal land in this region. Independent oil and gas

producers, who drill more than 85% of the wells in the United States and produce nearly two-thirds of America's natural gas, resist doing business on many federal lands because of the lack of access, uncertainty of permits, and costly regulations (Nance 1997). Surveys conducted by the IPAA indicate that independents are not increasing their activities on federal lands even though government reports, supported by private and industry studies, indicate that one of the last frontiers for unexplored onshore oil and gas reserves lies beneath public lands.

Onerous restrictions over large areas. In testimony before the House Committee on Resources Subcommittee on Energy and Mineral Resources on April 25, 2001, Mark Murphy, representing the IPAA and the National Stripper Well Association, stated that federal land managers generally impose excessively onerous restrictions on large geographic areas. He cited an example of a BLM-imposed moratorium on operations on 380,000 acres of land in southeastern New Mexico from April through June to avoid disruptions to prairie chicken mating, referred to as the "booming" season. After industry insisted on a scientific study of the issue, the BLM indicated that it may reduce the area to 196,000 acres. Mr. Murphy stated that industry does not object to reasonable restrictions in areas where species are "truly being affected" by its activities; industry does object; however, to "unfounded restrictions on overly broad geographic areas" (Murphy 2001).

Lack of agency guidance/authority of individual land managers. The decisions of a single individual within a land management office can cost thousands or millions of dollars and lead to supply disruptions. As reported in April 25, 2001 testimony, federal land managers have not been given clear instructions for considering the impacts of their actions on energy development. Each land manager must assign his or her own value to the importance of energy development on a case-by-case basis, and the effect of such decisions on energy supply is not necessarily considered. Mixed messages and a lack of accountability have led to a focus on the process of land management practices, with limited regard for their outcome (Stanley 2001). In Southwestern Lea County, New Mexico, for example, a local BLM geologist is requiring operators to set an additional 700 to 800 ft of surface casing (which is estimated to cost an additional $30,000 to $40,000 per well) to protect water zones in the area. However, there is no proof that such zones exist, and the New Mexico regulatory agency charged with protecting groundwater has neither stated a similar concern nor proposed modifying its long-standing surface casing requirements (Murphy 2001).

3.1.6 Monument Designations

Summary: The Antiquities Act of 1906 allows the President, at his discretion, to declare by public proclamation, historic landmarks and historic and prehistoric structures owned or controlled by the government of the United States. Between 1996 and 2001, the Administration, under the authority of the Antiquities Act, designated 19 new national monuments and expanded 3 others. The 22 designations collectively cover about 5.6 million acres of federal land, much of which may contain natural gas resources; this land, however, is off limits to development.

Source of Constraint: Presidential

Impact: Unavailable gas

Phase: Exploration

Category: Access

Estimated affected natural gas resources (TCF): 1

Estimate type: Technically recoverable

Estimate date: 01/1995 **Estimate reference:** Wilderness Society (2002)

Estimate comments: The Wilderness Society estimates that the amount of economically recoverable gas in five selected national monuments, based on USGS low- and high-price scenarios for gas, is 0.27 to 0.42 TCF, representing 21 to 42% of the technically recoverable gas in these national monuments.

Statutory/regulatory citation: Antiquities Act of 1906 (16 USC 431, et seq.)

Lead player: President

Issue discussion: The USGS estimates that of the 22 national monuments designated or expanded, 5 have significant hydrocarbon potential. These are the California Coastal National Monument, Canyons of the Ancients National Monument in Colorado, Carrizo Plain National Monument in California, Hanaford Reach National Monument in Washington, and Upper Missouri River Breaks National Monument in Montana (Lorenzetti 2001). Although the national monument designation only prohibits new leases and does not affect existing leases, operators are concerned that the designations will nonetheless affect existing leases. For example, according to testimony presented to the House Committee on Resources on March 7, 2001, the newly designated Canyons of the Ancients National Monument in southwestern Colorado encompasses McElmo Dome, a significant source of natural gas used for advanced oil and gas recovery in Colorado, New Mexico, and Texas. Of the 183,000 acres within the monument's boundary, nearly 155,000 have active federal leases, 141,000 of which are held by production or are included in four federal production units. When the monument was designated, the BLM proposed stringent surface use restrictions on 79,000 acres, including a NSO stipulation. Oil and gas companies are concerned that given "BLM's predilection for restricting access," the RMP to be developed for the monument will create even more uncertainty for production (Stanley 2001).

The designation also provides an avenue for legislative restrictions. For example, in June 2001, the House passed a DOI spending bill that banned drilling in national monuments.

As with other blanket bans to leasing access, the monument designations do not consider the ability of natural gas operators to apply technologies and drilling practices that minimize harm to the environment or that land managers could designate specific areas in which drilling should be banned, as opposed to banning leasing of all covered areas. Some observers note that

the designations have locked up large areas, when, according to the Antiquities Act, the smallest amount of acreage possible should have been designated.

3.1.7 OCS Moratoria — Atlantic Ocean

Summary: Moratoria deny access to broad areas of natural gas reserves and resources. Major natural resources have been discovered off the Canadian Coast, and this resource potential could extend southward. The moratoria were implemented primarily because of past oil spills; however, they also constrain natural gas E&P.

Source of Constraint: Presidential, statutory

Impact: Unavailable gas

Phase: E&P

Category: Access, leasing

Estimated affected natural gas resources (TCF): 28.0

Estimate type: Technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001b)

Estimate comments: Estimates are for undiscovered technically recoverable resources. The EIA notes that the estimates come from the MMS's *Outer Continental Shelf Petroleum Assessment, 2000*, and are mean estimates with values adjusted to reflect 1999 new field discoveries.

Statutory/regulatory citation: OCSLA (43 USC 1331, et seq.); Presidential Memo (06/12/1998)

Lead players: President, Congress

Issue discussion: In June 1990, President George H.W. Bush, acting under the authority of the OCSLA (43 USC 1341(a)), issued a directive to withdraw three general areas from new leasing and development until the year 2000. These areas included the West Coast, the southeastern coast of Florida, and the North Atlantic Coast. In August 1992, President Bush issued a memorandum to the Secretary of the Interior confirming his 1990 directive as implemented in the 5-year OCS Oil and Gas Program for 1992–1997. These regions of the OCS were included in President Clinton's broader 1998 Executive Order forbidding leasing of most of the OCS in the contiguous United States until 2012. That order prohibits the Secretary of the Interior from leasing off the East and West Coasts, in the North Aleutian Basin in Alaska, and in most of the eastern Gulf of Mexico prior to June 30, 2012.

Even assuming that application of advanced technology results in substantial increases in natural gas production, it is difficult to see how future U.S. demand for natural gas will be met without production from OCS areas currently under moratoria. One of the more promising frontier areas is the North Atlantic OCS. Major discoveries have been made off the coast of Canada at Sable Island and Panuke. The former is now in production. The estimated undiscovered natural gas potential off the east coast of Canada is 63 TCF. This gas play may continue south into U.S. waters. OCS oil production has impacts that gas production does not, and the Atlantic resources are viewed primarily as gas (not oil). Advances in technology and knowledge have changed the baseline used to deny access to OCS lands. Innovative technologies have revolutionized the means of finding and producing natural gas so that disturbances to the environment are minimal and temporary. For example, three-dimensional (3-D) seismic processes that analyze geological structures with greater precision and directional and horizontal drilling technologies that allow a variety of productive reservoirs to be accessed from one location mean that more gas can be produced with fewer wells. A 1999 DOE report, *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, states that "...innovative E&P approaches are making a difference to the environment. With advanced technologies, the oil and gas industry can pinpoint resources more accurately, extract them more efficiently and with less surface disturbance, minimize associated wastes, and, ultimately, restore sites to original or better condition....[The industry] has integrated an environmental ethic into its business and culture and operations...[and] has come to recognize that high environmental standards and responsible development are good business..." (DOE 1999).

The TCF estimates are based on little or no historical exploration and could be greater if exploration were allowed. The NPC (1999) estimated that as of January 1, 1998, 31 TCF were affected by the moratoria.

3.1.8 OCS Moratoria — Eastern Gulf of Mexico

Summary: Moratoria covering most of the eastern part of the Gulf of Mexico deny access to broad areas of natural gas reserves and resources. They were implemented primarily because of past oil spills; however, they also constrain natural gas E&P.

Source of Constraint: Presidential, statutory

Impact: Unavailable gas

Phase: E&P

Category: Access, leasing

Estimated affected natural gas resources (TCF): 11.3

Estimate type: Technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001b)

Estimate comments: Estimates are for undiscovered technically recoverable resources and assume that OCS Lease Sale 181 (estimated to contain 1 TCF) occurs. If OSC Lease Sale 181 is not fully leased, the restricted estimate would be 12.3 TCF. The EIA notes that the estimates come from the MMS's *Outer Continental Shelf Petroleum Assessment, 2000*, and are mean estimates with values adjusted to reflect 1999 new field discoveries.

Statutory/regulatory citation: Presidential memos, directives

Lead players: President, Congress

Issue discussion: In June 1990, President George H.W. Bush, acting under the authority of the OCSLA (43 USC 1341(a)) issued a directive to withdraw three general areas from new leasing and development until the year 2000. These areas included the southeastern coast of Florida. In August 1992, President Bush issued a memorandum to the Secretary of the Interior confirming his 1990 directive as implemented in the 5-year OCS Oil and Gas Program for 1992–1997. These regions of the OCS were included in President Clinton's broader 1998 Executive Order forbidding leasing of most of the OCS in the contiguous United States until 2012. That order prohibits the Secretary of the Interior from leasing, among other areas, most of the eastern Gulf of Mexico prior to June 30, 2012.

Analyses conducted by the NPC, EIA, and Gas Research Institute (GRI) project that natural gas demand will increase from 21 TCF in 1998 to 30 to 32 TCF by 2015. To meet projected 2015 demand, the NPC analysis envisions that the Gulf of Mexico will produce about 8 TCF of natural gas in 2015, a 33% increase from current production. However, on March 15, 2001, an MMS representative testified before the House Subcommittee on Energy and Mineral Resources that the Service had serious concerns regarding the ability of the Gulf of Mexico to meet this projected growth rate. Data recently published by the MMS indicate an optimistic natural gas production for the Gulf peaking in 2002 at about 5.2 TCF (Condit 2001). Even assuming that application of advanced technology results in substantial increases in natural gas production, it is difficult to see how future U.S. demand for natural gas will be met without production from OCS areas currently under moratoria.

OCS oil production has impacts that gas production does not, and the Eastern Gulf resources are viewed primarily as gas (not oil). Advances in technology and knowledge have changed the baseline used to deny access to OCS lands. The API states that technology has revolutionized how natural gas is found and produced, resulting in minimal and temporary disturbances to the environment. "We can produce more gas with fewer wells thanks to 3-D seismic processes that analyze geological structures with greater precision and directional and horizontal drilling technology that allows a variety of productive reservoirs to be accessed from one location" (API 2000). DOE's 1999 report states that "...innovative E&P approaches are making a difference to the environment. With advanced technologies, the oil and gas industry can pinpoint resources more accurately, extract them more efficiently and with less surface disturbance, minimize associated wastes, and, ultimately, restore sites to original or better condition....[The industry] has integrated an environmental ethic into its business and culture and operations...[and] has come to recognize that high environmental standards and responsible development are good business...." (DOE 1999).

On May 16, 2001, U.S. representatives from Florida and California introduced resolutions to oppose any new offshore drilling in areas currently under development moratoria. Also on May 16, 2001, Representative Lois Capps (D-CA) reintroduced the Coastal States Protection Act, which would place a federal moratorium on new offshore oil development along coasts where existing state moratoria are in effect (Najor 2001).

The 1999 NPC study reports affected TCF estimates due to moratoria to be 24 TCF or roughly one-half of the estimated 49 TCF of undiscovered technically recoverable resources, which include proven reserves (6 TCF) and unproven resources (43 TCF). The EIA estimate of 11.3 TCF is as of 2000 and assumes that the estimated 1 TCF in Lease Sale 181 would be accessible. If Lease Sale 181 is not allowed, the total TCF affected by moratoria in the eastern gulf would be 12.3 TCF.

The TCF estimates are based on little or no historical exploration and could be greater if exploration was allowed. In the western and central Gulf of Mexico areas, estimates have significantly increased after exploration (Young 2001).

Estimated total undiscovered, technically recoverable natural gas resources as of January 1, 2000, in the entire lower 48 OCS consists of 233.7 TCF. The currently inaccessible portion of the total amounts to 58.2 TCF, with 18.9 TCF in the Pacific, 28.0 TCF in the Atlantic, and 11.3 TCF in the eastern Gulf of Mexico. The remaining 175.5 TCF of fully accessible lower 48 OCS resources are located almost entirely in the western and central Gulf of Mexico, with 1 TCF in the eastern Gulf of Mexico (EIA 2001b).

3.1.9 OCS Moratoria — West Coast

Summary: Moratoria deny access to broad areas of natural gas reserves and resources. They were implemented primarily because of past oil spills; however, they also constrain natural gas E&P. On the West Coast, recent legal action has also limited production on existing leases.

Source of Constraint: Presidential, statutory

Impact: Unavailable gas

Phase: E&P

Category: Access, leasing

Estimated affected natural gas resources (TCF): 18.9

Estimate type: Technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001b)

Estimate comments: Estimates are for undiscovered technically recoverable resources. The EIA notes that the estimates come from the MMS's *Outer Continental Shelf Petroleum Assessment, 2000*, and are mean estimates with values adjusted to reflect 1999 new field discoveries.

Statutory/regulatory citation: OCSLA, Presidential Memo (06/12/1998)

Lead players: President, Congress

Issue discussion: The OSCLA specifies the conditions under which the Secretary of the Interior, through the MMS, grants the rights to explore for, develop, and produce oil and gas. It issues leases every 5 years, and over the years, the MMS has extended the life of the 5-year leases by granting "suspensions" to their termination dates. Moratoria were first enacted in the fiscal year (FY) 1982 Interior Department Appropriations Act (Pub. L. 97-100) for leasing off central and northern California. In June 1990, President George H.W. Bush, acting under the authority of the OCSLA (43 USC 1331, et seq.), issued a directive to withdraw three general areas from new leasing and development until the year 2000. These areas included the West Coast, the southeastern coast of Florida, and the North Atlantic Coast. In August 1992, President Bush issued a memorandum to the Secretary of the Interior confirming his 1990 directive as implemented in the 5-year OCS Oil and Gas Program for 1992–1997. These regions of the OCS were included in President Clinton's broader 1998 executive order forbidding leasing of most of the OCS in the contiguous United States until 2012. That order prohibits the Secretary of Interior from leasing off the East and West Coasts, in the North Aleutian Basin in Alaska, and in most of the eastern Gulf of Mexico prior to June 30, 2012.

In addition to the moratorium on E&P, recent legal actions have limited production on existing federal oil and gas leases off the coast of California. Between 1968 and 1984, the MMS issued 36 leases off the central coast for exploration of new deposits of gas (and oil). Valued at $1.25 billion, the leases are estimated to contain about 0.5 TCF of gas (and a billion barrels of crude oil). Not subject to the OCS leasing ban Congress includes annually in the Interior appropriations bill, these are the only leases along the entire West Coast that could be developed until 2012, when the leasing moratoria expire. In November 1999, as they were about to expire, the Clinton administration granted "suspensions" to extend the leases. The orders accompanying the extension required the oil and gas companies to complete, and allowed the state to review, studies before drilling could occur. However, the State of California sued, arguing that the leases were outdated because of stricter state laws and that the state had a right under NEPA and the CZMA to review the leases for consistency with state laws, and that the review should be at the beginning of the process, not at the end.

In June 2001, the U.S. District Court for the Northern District of California ruled in favor of the state. It said that the DOI illegally extended the leases because it did not give the state the opportunity to determine if development of the leases was consistent with the California CMP and ordered the leases terminated pending an environmental impact study. In the summer of 2002, the Bush administration appealed the district court's decision, arguing that extending a lease was not the same as issuing it, and therefore did not require the same level of state involvement. In December 2002, a three-judge appellate court panel denied the appeal. It stated that because the leases were issued prior to the 1990 amendments to the CZMA, that they had

never been reviewed by the state; it also affirmed the lower court's finding that the MMS violated NEPA because it failed to consider the environmental impacts of developing the leases. In January 2002, the DOI challenged the ruling. In May 2002, after the Bush administration announced that the government was paying oil companies to drop drilling plans in the Destin Dome area of the Gulf of Mexico, California officials urged the administration to retire the California leases in a similar way (Whetzel 2002a). On June 7, the Secretary of the Interior rejected the request, explaining that the situations were different and that litigation was underway (Whetzel 2002b). The FY 2003 DOI appropriations bill includes language that would ban drilling on the 36 leases as well (Holly 2002).

Even assuming that application of advanced technology results in substantial increases in natural gas production, it is difficult to see how future U.S. demand for natural gas will be met without production from OCS areas currently under moratoria, such as the Southern California planning area.

The TCF estimates are based on little or no historical exploration and could be greater if exploration were allowed. In the western and central Gulf of Mexico areas, estimates have significantly increased after exploration (Young 2001).

3.1.10 Permit Restrictions

Summary: Once leasing access has been obtained and a permit to drill has been issued, restrictions in the permit may be so severe that access is effectively prohibited. These federal and state restrictions can be site- or BLM- or FS-Office-specific.

Source of Constraint: Agency implementation

Impact: Unavailable gas

Phase: E&P

Category: Access

Estimated affected natural gas resources (TCF): 86.6

Estimate type: Technically recoverable

Estimate date: 01/2003 **Estimate reference:** DOI, USDA, and DOE (2003)

Estimate comments: Estimated to be the amount of gas in areas inventoried and reported by the interagency study of oil and gas resources in five U.S. basins that are available for lease under standard lease terms (DOI, USDA, and DOE 2003, p. 3-5). This is an estimate; the Interagency EPCA study does not address restrictions after a permit has been issued.

Statutory/regulatory citation: FLPMA

Lead player: BLM

Issue discussion: Permitting constraints that can limit development include overlying habitat management plans that prevent production and restrictions over unnecessarily large geographic areas that are not based on science. For example, the BLM imposed a moratorium on operations on 380,000 acres in Southeastern New Mexico from April through June of each year to avoid disrupting the prairie chicken mating season. Citing a lack of scientific evidence that field operations disrupt the mating season, industry requested a scientific study of the issue. Because of the study, the BLM is considering reducing the acreage subject to the moratorium to 196,000 acres. In another example, a local New Mexico operator had begun leasing and exploration near Roswell, New Mexico, in the 1980s, obtained permits to drill, and began producing in 1997. The operator then requested, and 11 months later obtained, drilling permits for additional confirmation wells; however, the BLM conditioned the approval with onerous stipulations, which meant that the approval to produce was not granted. Similarly, although planning documents deem certain lands as accessible, in reality they are not, because of restrictions, such as a requirement to use horizontal or directional drilling for depths for which such drilling is physically impossible. Also, BLM geologists can, without scientific proof that drilling may contaminate water zones, determine that operators must set hundreds of additional feet of surface casing and at an estimated incremental cost of $30,000 to $40,000 per well (Murphy 2001).

3.1.11 Bans on Great Lakes Drilling

Summary: Recently enacted state and federal temporary and permanent drilling bans in the Great Lakes have effectively stopped exploration and new production of natural gas in the Great Lakes.

Source of Constraint: Statutory

Impact: Unavailable gas

Phase: E&P

Category: Access, leasing

Estimated affected natural gas resources (TCF): 1.1

Estimate type: Possible and probable reserves

Estimate date: 09/2001 **Estimate reference:** Shirley (2001)

Estimate comments: Consists of 0.4 TCF possible and 0.6 TCF probable reserves in Ohio's portion of Lake Erie alone (Shirley 2001).

Statutory/regulatory citation: The Energy and Water Development Appropriations Act, 2002 (H.R. 2311) (Pub. L. 107-66); Michigan H.B. 5118, 2002

Lead players: COE, states

Issue discussion: None of the Great Lakes states allow drilling from offshore rigs on the water. Ontario, Canada, however, allows directional drilling under the Great Lakes and has about 500 natural gas wells on the bottom of Lake Erie. While it prohibits offshore drilling, Michigan is the only state in the United States that has leased directionally drilled wells under the Great Lakes. Between 1979 and 1997, 13 oil and gas wells were drilled directionally; 7 of these wells are producing and have safe operating records. In 1997, public opposition arose when a company proposed to drill three new wells. At the governor's request, a suspension of drilling was issued and the Michigan Environmental Science Board reviewed the issue. It reported that environmental risks associated with directional drilling were minimal and did not recommend banning drilling under the lakes. Rather, it recommended certain restrictions such as a 1,500-ft setback from the shoreline, and prohibiting wells in sensitive coastal environments. The Michigan Department of Natural Resources implemented the regulations, and in July, the governor recommended lifting the ban on directional drilling. In September 2001, the state lifted the 4-year suspension and began to move forward on four lease sales for directional drilling. A Michigan Senator (Debbie Stabenow) tried to convince state officials to ban future oil and gas drilling. In early 2002, both houses of the Michigan state legislature passed H.B. 5118, which prohibits new slant drilling beneath the Great Lakes except in cases of a state energy emergency. The governor opposed the bill, but it became law without his signature on April 5, 2002. Ms. Stabenow also introduced federal legislation to amend the Energy and Water Appropriations Bill of 2002, to include a 2-year ban on drilling in the Great Lakes (Taylor 2002).

In October, both houses passed the bill, with the amendment, and on November 12, 2002, the President signed the legislation. The Energy and Water Development Appropriations Act, 2002 (H.R. 2311) (107 Pub. L. 66), implements a 2-year drilling ban until September 30, 2003, in the Great Lakes. The ban includes both directional and offshore drilling. It also instructs the COE to conduct and submit to Congress a study that examines the known and potential environmental effects of oil and gas drilling activity in the Great Lakes. At the conclusion of the study, Congress could extend the moratorium or lift it if the analysis shows that oil and gas could be extracted from the Great Lakes without endangering the freshwater supplies or compromising the lakes' importance to the economic well-being of the region and the nation (National Driller 2001).

An official from the Michigan Department of Environmental Quality notes that under Michigan law, the leases issued to date have provided $15 million, which the state uses to buy and maintain parks; if the drilling ban were lifted, an additional $100 million in state revenues for these purposes would be generated (Heartland Institute 2001). Drilling bans may be implemented without acknowledgment of the safety of existing offshore producing wells in Michigan (Greenwire 2001).

3.1.12 Roadless Rule

Summary: On January 12, 2001, the FS promulgated a rule that prohibits road construction in IRAs on NFS lands. These areas compose about one-third of the NFS, or about 58.5 million acres (FS 2001). The Roadless Rule denies access to approximately 11 TCF of potential natural gas resources in the Rocky Mountain region. The rule has been subject to numerous lawsuits and may be revised to allow for assessment of impacts and the ability to build roads on a more local, forest-by-forest level.

Source of Constraint: Regulatory

Impact: Unavailable gas

Phase: Exploration

Category: Access

Estimated affected natural gas resources (TCF): 11

Estimate type: Technically recoverable

Estimate date: 11/2000 **Estimate reference:** Eppink (2000)

Estimate comments: Within the IRAs, natural gas resources are concentrated in four provinces/basins: the Uinta/Piceance (3.9 TCF), the Wyoming Thrust Belt (3.2 TCF), Southwestern Wyoming (2.0 TCF), and the Montana Thrust Belt (1.6 TCF). The range of total resources affected by the Roadless Rule is 3.5 to 23.1 TCF.

Statutory/regulatory citation: 66 FR 3244, January 12, 2001, Final Rule and ROD, Special Areas; Roadless Area Conservation

Lead player: FS

Issue discussion: Multiple-use federal lands, such as FS lands, contain unexplored, as yet, nonproducing gas resources that will be important for meeting projected natural gas demands. Although the Roadless Rule does not affect existing leases, it will prevent expansion of existing leases and exploration and development of new leases on FS lands that require road construction or reconstruction in IRAs (Phillips 2001). According to a study prepared for DOE, the Roadless Rule will prevent access for E&P of an estimated 3.5 to 23.1 TCF of yet undiscovered gas in the FS's IRAs (Eppink 2000). Of the mean estimate of 11 TCF underlying roadless areas, 1.9 TCF are under no access lands, 2.4 TCF are under access-restricted lands, and 7.0 TCF are under lands with standard lease terms. As a result, implementation of the Roadless Rule would add 9.4 TCF to that considered to be "no access" in the 1999 NPC study (Eppink 2000) and raise the NPC's estimates at 29 TCF for natural gas resources closed to development to 38 TCF (NPC 1999). The rule, which covers all IRAs with a "one-size fits all" approach, ignores requirements of The National Forest Management Act for the FS to manage the NFS areas

outside designated Wilderness Areas with full consideration of resource values. (The FLPMA has the same requirements for BLM-managed lands.) The rule also appears to ignore the fact that prior to leasing, an EA or EIS must be conducted that will consider the impacts of any required road building on the environment. According to the API, because of the distribution of the natural gas resources within the Rocky Mountain region, access to roughly 83% of the affected gas resources could have been preserved by a reduction of less than 0.5% in the roadless acreage (Rubin 2001).

In February 2001, the Bush Administration reviewed the rule and allowed it to proceed, with the goal of revising it later to consider local needs and access issues. The rule was to become effective on May 12, 2001. On May 4, 2001, the USDA announced that it would examine whether it would amend the rule, since it was intended as a temporary ban on building new roads within the 58.5 million acres until the FS developed revisions based on local, forest-by-forest input. On May 10, 2001, a federal judge in Idaho issued an injunction blocking the rule, stating that it violated NEPA, did not allow for sufficient public participation, and would harm local economies. Environmental groups appealed the decision to the Ninth Circuit Court. On July 10, 2001, the FS announced that it was reopening the rule for public comment. On December 12, 2002, a three-judge panel of the Ninth Circuit Court found that the Idaho judge erred when granting the injunction, and it remanded the case for trial on whether the rule violates NEPA or the Administrative Procedure Act. With the injunction lifted, the Roadless Rule went into effect, and nine lawsuits in seven other states proceeded (Ferullo 2002). On June 9, 2003, the FS announced that it would propose a rule allowing state governors to seek exceptions to the Roadless Rule for "exceptional circumstances," which would include road-building activities to protect human health and safety, wildfire protection and habitat restoration, maintenance of dams and other existing facilities, and to make technical corrections to boundary adjustments. The rule is expected to be proposed in the fall of 2003 and made final by the end of 2003 (Ferullo 2003).

3.1.13 Wilderness Areas

Summary: Under the FLPMA, the BLM was charged with identifying and managing lands as potential Wilderness Areas. As required by the law, the BLM completed the inventory in 1991 and submitted its recommendations to the President, who endorsed and submitted them to Congress. However, of the roughly 26.5 million acres identified as WSAs, Congress has yet to make decisions on 16.3 million acres. In addition, since 1991, some western states, for example, Colorado and Utah, have "reinventoried" potential Wilderness Areas, adding more acres to those that are managed as, although not officially designated as, WSAs. Until Congress acts, all of these areas — both Wilderness Areas and WSAs — will continue to be off limits to gas (and oil) leasing, even though they may contain substantial resources.

Source of Constraint: Statutory

Impact: Unavailable gas

Phase: Exploration

Category: Access

Estimated affected natural gas resources (TCF): 9

Estimate type: Technically recoverable

Estimate date: 01/2003 **Estimate reference:** DOI (2003)

Estimate comments: The estimate is for five Rocky Mountain areas studied in the EPCA report (DOI, USDA, and DOE 2003) and includes TCF unavailable for leasing because of national park, national monument, or wilderness designation. (The EPCA report does not break out TCF unavailable due to Wilderness Area designations. The estimate does not include TCF in WSAs, which are treated as Wilderness Areas, pending final designation.)

Statutory/regulatory citation: FLPMA (16 USC 1712 and 1782); Wilderness Act of 1964 (16 USC 1131, et seq.)

Lead player: BLM

Issue discussion: The Wilderness Act of 1964 established a National Wilderness Preservation System to protect wilderness lands for future use and enjoyment and preserve their wilderness character. The Wilderness Act required that the National Park Service, the FS, and the USFWS determine the number of acres under their respective jurisdictions that met the wilderness criteria, also defined in the act. The agencies were required to recommend to Congress those areas believed to be appropriate for wilderness designation. Until Congress acted to either designate a WSA as a Wilderness Area or allow it to revert to its prior status, the agencies were to manage and protect the wilderness character of those lands, which put them off limits for leasing. In 1976, Congress passed the FLPMA, which, among other things, extended the Wilderness Area designation process to the BLM. Under the law, the BLM had 15 years to conduct its inventory and make its recommendations to Congress. Between 1977 and 1980, the BLM identified more than 700 WSAs covering roughly 26.5 million acres. These areas were placed under BLM's Interim Management Policy to be managed to protect their wilderness values pending final action by Congress (Hatfield 2002). Between 1980 and 1991, the BLM studied its WSAs and in 1991, transmitted its recommendation to the President, which was that 9.7 million acres of BLM-managed public lands in 330 units were suitable for inclusion in the National Wilderness Preservation System. (Subsequent congressional actions reduced the remaining acreage recommended as suitable to approximately 6.5 million acres.) The President endorsed the recommendations and submitted them to Congress. However, Congress has yet to act on 16.3 million of the WSA acres, thereby preventing them from being leased.

In addition, the BLM has "reinventoried" lands in Utah and Colorado for additional Wilderness Areas. In Utah, the BLM identified 800,000 acres as WSAs by 1980. Appeals by environmentalists to the DOI Board of Land Appeals led the BLM to declare 3.2 million acres in Utah as WSAs, of which the BLM recommended 1.9 million acres for Congress to designate as Wilderness Areas. In 1986, a citizen-based study recommended 5.7 million acres to be designated as wilderness in Utah. In 1996, the Secretary of the Interior, at the behest of the Chair

of the House Subcommittee on National Parks and Public Lands, ordered the BLM to verify these findings (Utah Wilderness Coalition 2000). In February 1999, the BLM released its results, which found that 5.8 million acres met the criteria. Since then, a subsequent citizens' reinventory identified an additional 2.6 million acres that were on lands not reviewed by the BLM. If the BLM offers leases on any of the 2.6 million acres in the new citizens' inventory, the Southern Utah Wilderness Alliance has vowed to continue protesting every lease offered within the proposal (McHarg and Thomas 1999).

In Colorado, the BLM also identified 800,000 acres as WSAs, and in 1991, recommended that Congress designate 388,000 acres as wilderness. In 1994, citizens' groups released a Citizens' Wilderness Proposal that recommended 1.3 million acres of BLM lands for wilderness designation. The BLM agreed to stop issuing oil and gas leases in citizen-proposed areas pending further review, and in 1996, agreed that 120,000 acres within the citizen-proposed areas possessed wilderness values. In 1999, citizens began to identify additional lands and added 300,000 more acres. The Sierra Club and others have advocated designating and reinventorying additional lands in Wyoming as wilderness lands (Tipton 1997).

Oil companies and state and federal lawmakers have challenged the legality of the BLM conducting reinventories on lands already surveyed under the FLPMA; the lack of public involvement in these citizens' surveys; and the treatment of the citizen-proposed lands as WSAs, which denies access to gas resources. In 2002, Representative C.L. Otter (R-ID) introduced a bill (H.R. 4620) that would accelerate the wilderness designation process by requiring the release of WSAs after 10 years, or when the Secretary of the Interior or Agriculture determines them as not being suitable.

3.1.14 Ocean Policy

Summary: The U.S. Commission on Ocean Policy, established under the Oceans Act of 2000, is charged with developing recommendations to submit to the President on a coordinated and comprehensive national policy for oceans and coastal areas. Preliminary recommendations include the establishment of an ocean policy framework and expanded authorities to address the use and stewardship of ocean and coastal resources. It is too early to estimate the impacts of the new policy and its ramifications on offshore natural gas E&P, but the development and implementation of specific recommendations will be important to follow.

Source of Constraint: Presidential

Impact: Unavailable gas, delay, cost (possible)

Phase: E&P, transportation

Category: Access, leasing, permitting, operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: Oceans Act of 2000 (33 USC 857-19)

Lead players: President, Congress

Issue discussion: Congress passed the Oceans Act of 2000 on July 25, 2000, and the President signed it into law on August 7, 2000. The law established a commission, which, in coordination with the states, a scientific advisory panel, and the public, is required to establish findings and develop a National Oceans Report that makes recommendations to the President and Congress on ocean and coastal issues and on a coordinated and comprehensive national ocean policy. The President is to respond to these recommendations in a "National Ocean Policy" to be submitted to Congress. The report is to assess the cumulative effect of federal laws; examine the supply and demand for ocean and coastal resources; review the relationships between federal, state, and local governments and the private sector and the effectiveness of existing federal interagency policy coordination; and recommend modifications to federal laws and/or federal agency structures.

The commission held its first meeting in September 2001, and subsequently heard from 440 presenters in 10 cities over 11 months. After completing its fact-finding phase in October 2002, it entered its deliberative phase, which will continue into early 2003. At the November 2002 meeting, the commission discussed various policy options to address key issues associated with developing a comprehensive and coordinated national ocean policy. Some of the options discussed may have significant impacts for natural gas development in the offshore and coastal areas. For example, the draft options report listed a number of guiding principles that include, among others, sustainability, participatory governance (all stakeholders are an integral part of the decision-making process), ecosystem-based management, and the precautionary approach. The precautionary approach requires that where threat of serious or irreversible damage exists, the lack of full scientific certainty should not be used as a reason for postponing action to prevent environmental degradation. The draft also noted the importance of habitat protection and restoration, encouraging greater use of land conservancies in coastal management, and the need to reverse trends in biodiversity reduction (Ocean Commission 2002).

Because the ocean policy has not yet been established, no TCF estimates can be made. However, the policy could affect both offshore and coastal natural gas production.

3.2 ISSUES LIKELY TO PRODUCE DELAYS

3.2.1 CBM-Produced Water Management

Summary: Regulations are being written to address the potential impacts of discharging or disposing of produced water generated during CBM production. There are significant unknowns regarding the actual impacts of produced water, and many of the regulations may be costly to implement, resulting in delayed or reduced production.

Source of Constraint: Regulatory

Impact: Delay, cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): 74

Estimate type: Technically recoverable

Estimate date: 01/1998 **Estimate reference:** NPC (1999)

Estimate comments: Could affect all CBM resources. The estimate is from the 1999 NPC study and includes all technically recoverable resources in the lower 48 states.

Statutory/regulatory citation: Federal Water Pollution Control Act (FWPCA) (33 USC 1251, et seq.), generally known as the Clean Water Act (CWA); state regulations

Lead players: EPA, states

Issue discussion: Large volumes of CBM-produced water are pumped to the surface to release gas trapped in coal seams. This produced water is discharged to the land surface and to surface water, stored in evaporation ponds, used for stock or wildlife watering, reinfiltrated, injected back into the aquifer, or treated for various uses. CBM-produced water can affect the receiving environment. For example, because it can contain concentrations of chemicals higher than those of the receiving waters, it can lead to soils becoming dispersed, less permeable, and more prone to erosion. Also, high levels of soil salinity can reduce crop yields, and hydrologic changes resulting from CBM operations may adversely affect fisheries. The USFWS has expressed concern that CBM-produced water can contain selenium levels that are toxic to birds and fish (Baltz 2002a). However, the cumulative effects of CBM-produced water on fisheries, crops, and other environmental resources, and the factors that influence those effects, are not well understood.

Regulations exist and are being developed to address the potential problems associated with CBM-produced water. For example, in the Powder River Basin Controlled Groundwater Area, CBM operators must follow standards for drilling, completing, testing, and production of CBM wells adopted by the Board of Oil and Gas Conservation. The Montana Department of Environmental Quality (MDEQ) has prepared a General Discharge Permit for CBM-Produced Water, the purpose of which is to authorize discharges of CBM-produced water to specially constructed impoundments (holding ponds) for the specific beneficial use of livestock or wildlife watering. (Irrigation of agricultural fields or rangeland with CBM-produced water is not considered a beneficial use.) Applicants must submit chemical analyses of more than 20 constituents in the proposed discharge, monitor the produced water for various parameters, and cease discharging if impoundment waters exceed upper bound criteria.

Montana currently approves CBM production on a well-specific basis using a narrative standard aimed at protecting public health and safety. However, the one permit issued has been the subject of three lawsuits (Beattie 2002). The MDEQ states that current CBM drilling practices likely produce water with a salinity level "well above almost all" current levels in the four rivers that traverse Montana's portion of the Powder River Basin. Thus, the department has new numeric limits that are likely to be stricter than current controls. Implementing any of the proposed numeric caps could directly impact the number of CBM wells approved not only in Montana, but also in the upstream areas of Wyoming, where most of the CBM activity is located. The draft EIS for the Wyoming portion of the Powder River Basin projected that 50,000 wells would be developed in the Wyoming portion of the basin by 2010. Montana expects to receive applications for 20,000 wells in the near future, and regulators say they need firm, across-the-board limits.

Wyoming, which also uses narrative standards, has also begun discussing the development of numeric standards for pollutants discharged to surface water to address concerns of nearby states whose waters may be affected by CBM-produced water discharges (Compton 2001).

The EPA has not promulgated national-level effluent limit guidelines under the CWA specifically for CBM operations; EPA Region 8, however, has started to develop effluent limitations that represent the Best Available Technology Economically Achievable for CBM-produced waters. This information could form the basis for other states as they establish NPDES permits. The Rocky Mountain states, where the bulk of the near-term CBM drilling activity is projected to occur, have been delegated the authority to write their own NPDES permits under the CWA.

Individual permits and decision documents also contain environmental requirements intended to mitigate potential impacts. For example, RODs can specify that CBM-produced water must be treated or stored to ensure that pollutant constituents in rivers will not be elevated beyond current baseline levels at the state line. RODs could also require dispersal of CBM-produced water in the upper reaches of drainages via the installation of stock tanks or transport of the produced water to distant discharge points to avoid sensitive soils, agricultural areas, or areas of potential accelerated erosion.

There are numerous unknowns about the effects of produced water, and developing such regulations requires a sound understanding of the science, transport and fate mechanisms, and interactions among various constituents that may not be available to state regulators. Many of these requirements may increase costs to the point that the pace of development could be slowed and the amount of production reduced. Also, as the number of applications increases (the NPC forecasts that a significant portion of the natural gas demand will be met by CBM), the backlog of applications will slow production. One CBM expert testified before a House Committee investigating CBM development that the severe restrictions being faced for discharge permits have caused operators to reduce the drilling pace. In some areas it takes 4 to 6 months to obtain permits, and it is estimated that more than 1,000 currently drilled wells are waiting for NPDES permits. These wells could represent more than 250 MMCF of gas per day in production (George 2001).

3.2.2 Drilling Permits

Summary: Once the BLM has issued a gas lease on federal land, no drilling can occur until the BLM issues a permit to drill. In the gas-rich basins of the Rocky Mountain region, backlogs for permits to drill and ROWs are growing. Many RMPs are outdated, and revisions, which often require additional environmental analyses, are required before gas leasing or development can occur. Insufficient staffing, combined with the number of plans needing updating and the recent increase in permit applications spurred by gas price increases, compounds the delays. Citizens' suits also contribute to permitting delays. These delays will be particularly important for CBM.

Source of Constraint: Agency implementation

Impact: Delay

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): 311.2

Estimate type: Assessed additional resources

Estimate date: 01/1998 **Estimate reference:** NPC (1999)

Estimate comments: Rocky Mountain region resources that can be leased. According to the 1999 NPC report, there are 340.5 TCF in the Rocky Mountain region; of this, 29.3 TCF are unavailable because no access is allowed. The remaining 203.3 TCF are subject to standard lease terms or are "high-cost" resources (108 TCF). Note that the amount could be higher, since drilling permit delays can also apply in non-Rocky Mountain states, such as Ohio.

Statutory/regulatory citation: FLPMA; State (Montana Environmental Protection Act [MEPA])

Lead player: BLM

Issue discussion: The BLM uses a staged decision-making process to accommodate the speculative and costly nature of gas (and oil) exploration and development. The stages generally include (1) determination of lands available for leasing (after evaluation using the BLM's multiple-use planning process according to procedures outlined by NEPA and FLPMA); (2) authorization for leasing on specific lands; (3) application and approval of permit to drill (APD); and (4) analysis of field development, if oil and gas are discovered. The BLM is required to process the APD within a 30- or 35-day period or advise the applicant of the reasons for the delay or disapproval. The Assistant Director of the BLM's Minerals, Realty, and Resource Protection Division suggests that the BLM meets the 30-day standard about 25% of the time, and the average is likely around 60 to 120 days (Culp 2001). (For operations on NFS lands, the BLM must obtain the consent of the FS before approving APDs.) Because most of the area available

for development has limited access for only 6 months of the year, a 1-month delay may result in a 1-year delay before wells can be drilled and natural gas is produced (Watford 2001). Companies exploring for natural gas on a southwestern Wyoming federal lease have very short windows in which to drill wells because of surface use and seasonal restrictions. If the BLM has not processed the permits in time to meet the window of opportunity, the company will have to release the drilling rig they have contracted and wait another year before drilling (Stanley 2001).

Recent Public Lands Advocacy and IPAA surveys found that APDs are delayed by up to 7 months when no additional environmental analysis is needed, and can take several years to approve when such analysis is required. Applications for ROWs are also delayed, causing supply bottlenecks, where gathering lines and pipelines cannot be installed (Smith 2001). The time required for well permitting and drilling on private land is 3 months, while the time required for well permitting and drilling on federal land ranges from 1 to 3 years (Stanley 2001).

Permitting backlogs have slowed supply to market in most of the active Rocky Mountain basins (e.g., Green River, Uinta, Powder, Piceance, San Juan, Williston) (Smith 2001). An internal 1996 BLM study identified factors contributing to delays in processing APDs that included the following: conflicting priorities, poor understanding of national APD priorities, conflicting resource demands, unclear directives or guidance, insufficient agency resources, and poor or inadequate BLM and FS planning documents. (See related issue, outdated BLM land use plans.)

BLM staffing has not kept pace with increased leasing activity in the West. The fluid mineral program staff has shrunk from 1,800 employees in the mid-1980s to 695 in 2001 (Smith 2001). In the Rawlins, Wyoming, BLM Field Office, thousands of applications for permits to drill await action because of manpower shortages (Rubin 2001). A related issue is that staffing reflects field office priorities, and many may not be focused on energy; state offices have little influence over the field offices (Smith 2001). The FS may have worse staffing problems than the BLM. It takes the FS a minimum of 6 months to permit a single well, as opposed to 30 to 45 days for the BLM (Stanley 2001).

Lack of coordination between state and federal agencies and within federal agencies also contributes to delays. It is difficult to reconcile the missions of various agencies when some are multiple-use land management agencies (BLM, FS) and others are single-purpose agencies (EPA, USFWS) whose focus is not on balancing multiple uses on public lands. Also, other agencies (USGS, DOE) have information on energy trends, which, if shared with the other agencies, could help land managers plan for future development activity (Smith 2001). The BLM has manuals for land use planning and processing APDs, but different interpretations occur among the various field offices (Culp 2001). In the Monongahela National Forest in West Virginia, for example, inconsistency in the directives given by FS specialists in the preparation of an EA caused 10 revisions over a 2-year period. Some revised drafts duplicated previous drafts that had been rejected by FS personnel (Hackett 2001). In the Wayne National Forest in Ohio, a small oil and gas producer applied for a permit from the BLM to drill a development well on a federal lease tract in February 2000. Since then, the producer has waited while the FS has conducted an EA to account for new information, if any, regarding endangered species and the relationship of that information to the Forest Plan. The producer already operates

two other wells on the property, and continuous operations have existed in the area since 1860. While waiting for the federal process to issue a permit, the requisite permits issued by the State of Ohio have been issued and expired (Stewart 2001).

Citizens' suits can also contribute to permitting delays. Opponents to projects often use environmental laws to delay or block permits. For example, in Montana, citizen advocates and agency officials can challenge a permit under the MEPA's EIS requirements clause. Inappropriate use of MEPA adds an extra level of authority to block permits, when its only purpose is to provide requirements for EIS preparation (Inside EPA 2001a).

Timely permitting of gas wells on federal lands is critical because long-term sustainable gas production can only be achieved through the orderly development of frontier areas such as those in the Rockies. Improved permitting processes are needed for industry to meet the growing demand (Smith 2001).

3.2.3 Essential Fish Habitat

Summary: EFH regulations issued in 2002 require assessments and consultations that can duplicate the environmental requirements of other federal agencies. This duplication can delay leasing or permitting decisions, because federal agencies undertaking activities that could adversely affect EFH (e.g., permitting) must prepare EFH assessments; undertake consultation with the NMFS; and, in some cases, implement mitigation strategies that could add further costs and delays.

Source of Constraint: Agency implementation

Impact: Delay

Phase: E&P, transportation

Category: Permitting

Estimated affected natural gas resources (TCF): 174.5

Estimate type: Technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001b)

Estimate comments: The Entire Gulf of Mexico is considered an EFH; it is conceivable that all the gas in this area could be subject to permitting delays. The EIA estimated, using the MMS's *Outer Continental Shelf Petroleum Assessment, 2000*, that the western gulf holds 74.2 TCF and that the central gulf holds 100.3 TCF. These areas are not restricted by leasing moratoria and are thus theoretically accessible, but would be subject to the NMFS regulations that could limit actual E&P.

Statutory/regulatory citation: 67 FR 2343-2383, January 17, 2002, Final Rule, codified at 50 CFR Part 600; Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq., as reauthorized on October 11, 1996)

Lead player: NMFS

Issue discussion: The Magnuson-Stevens Fishery Conservation and Management Act of 1976 provided a national framework for conserving and managing U.S. fishery resources. The 1996 amendments, known as the Sustainable Fisheries Act, added provisions, which, among other things, require fishery management plans to identify as EFH those areas that fish need for their basic life functions. EFH regulations, which are implemented by the NMFS, are intended to promote the protection, conservation, and enhancement of EFH. These regulations require assessments and consultations that can duplicate the environmental requirements of other agencies, including the COE, the EPA, and the MMS. This duplication can lead to costly delays in leasing or permitting decisions because federal agencies undertaking activities that could adversely affect EFH (e.g., permitting) must prepare EFH assessments; undertake consultation with the NMFS; and, in some cases, implement mitigation strategies that could add further costs and delays. The implementing legislation calls for consultations and coordination but does not require the written assessments and conservation recommendations called for by the regulations. Agency coordination activities required by the regulations can divert federal agency staff from normal permitting and operational duties. Also, disagreements between the NMFS and another agency will require time to settle, and potential mitigation costs can further delay leasing and permitting decisions.

The act established eight fishery management councils and required them to "describe and identify essential fish habitat" and "encourage the conservation and enhancement of such habitat." The law requires the Secretary of Commerce to establish requirements to assist councils in identifying EFH and to coordinate with and provide information to other federal agencies to further and enhance the conservation of fisheries.

The NMFS, within the NOAA within the Department of Commerce, issued final regulations to implement these provisions in January 2002. The NMFS regulations are controversial. Development entailed 5 separate public comment periods, 20 public meetings and workshops, and receipt of about 3,300 written comments. The regulations tend to go beyond the act's requirements. For example, the regulations require fishery councils to interpret information collected for determining EFH in "a risk-averse fashion to ensure adequate areas are identified as EFH for managed species." This approach is not based on science and does not consider economic, social, and perhaps other environmental issues, meaning that cost-effective decisions are not assured. Further, it can lead to the establishment of so many EFHs that those truly needing protection may not be addressed. EFH include essentially the entire Gulf of Mexico, adjacent wetlands, and inland areas along waterways.

The regulations also require a consultation process on any EFH that could be adversely affected by federal agency actions. Agency actions can include permitting, leasing, renewals, reviews, and emergency actions. The consultation process is similar to that required for the ESA; once it is determined that an agency action may adversely affect EFH, consultation is mandatory.

The consultation process requires that the federal agency prepare a written EFH assessment and that the NMFS provide conservation recommendations. Such recommendations can include measures to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH. For example, the NMFS could recommend not drilling during certain months when winter flounder are spawning and eggs are developing. The interaction of multiple stipulations could significantly shorten the drilling windows in some areas. Federal agencies must also prepare written responses to the conservation recommendations provided by the NMFS. The regulations allow the NMFS to request additional time to review federal agency actions that are contrary to NMFS recommendations. In many cases, there is significant overlap between EFHs and areas covered by other environmental programs that regulate the natural gas industry, including the COE's wetlands programs, CMP requirements, and MMS and EPA impact assessment requirements. Often individual agencies, including the NMFS, have consultation privileges on the regulatory activities of other agencies, for example, on COE Section 404 wetlands permits. States also have their own regulatory programs that overlap with the EFH consultation requirements. The additional federal agency and NMFS requirements for EFH may unnecessarily burden oil and gas leasing and permitting activities, which are already heavily regulated in the Gulf of Mexico and other offshore areas. Leases could be delayed, denied, or otherwise restrict natural gas production in the Gulf.

3.2.4 Fracturing Operations

Summary: Hydraulic fracturing is a process producers use to increase the flow of natural gas (and oil) from rocks whose natural permeability does not allow the gas to reach the wellbore at sufficient rates. It is commonly used to release methane from coal beds, where the gas is held in the rock by hydraulic pressure. During fracturing, a fluid (usually a water-sand mixture) is pumped into the reservoir to split the rock and create drainage pathways. Typically, it is a one-time practice. The NPC estimates that 60 to 80% of all the wells drilled in the next decade to meet natural gas demand will require fracturing. The practice is controversial, with environmentalists arguing that it needs more regulation. Federal or increased state regulation could delay gas production or make it uneconomical, thereby reducing the amount available at reasonable prices (Stewart 2001).

Source of Constraint: Regulatory

Impact: Delay, cost

Phase: Production

Category: Operations

Estimated affected natural gas resources (TCF): 293

Estimate type: Unproved technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001b)

Estimate comments: The Rocky Mountain region contains approximately 293 TCF of unproved technically recoverable natural gas resources. Most of these resources, however, need to be subjected to a significant degree of stimulation (e.g., hydraulic fracturing). The estimate has not been adjusted to reflect the resources that are inaccessible due to access restrictions. According to the EIA, 202 TCF are accessible in the Rocky Mountain region, with lease stipulations or under standard lease terms.

Statutory/regulatory citation: Safe Drinking Water Act (SDWA), Underground Injection Program

Lead players: EPA, states

Issue discussion: When Congress enacted the SDWA in 1974, the states had already developed extensive underground injection control (UIC) programs to manage liquid wastes from oil and gas operations and the reinjection of produced water. In 1980, recognizing that a federal program could not provide the flexibility needed to deal with varying circumstances in different states, and that the existing state programs were well structured, Congress modified the SDWA, giving primacy to the state programs. In 1994, the Legal Environmental Assistance Foundation (LEAF), arguing that the fracturing fluid interacted with groundwater supplies and contaminated nearby drinking water sources, sued the EPA to regulate hydraulic fracturing for CBM development under the UIC program. The EPA rejected LEAF's claim, arguing that Congress never intended UIC to cover hydraulic fracturing. LEAF appealed to the 11th Circuit Court. In 1997, the 11th Circuit Court found that the plain language of the statute could include hydraulic fracturing as underground injection, and that hydraulic fracturing of coal beds in Alabama must be regulated under the SDWA as underground injection. The EPA then required Alabama to develop a UIC regulation, which the state subsequently did. In 1999, the EPA approved the revisions. According to the IOGCC, the mandated changes have increased costs to the state by about $300,000 per year, and the requirement that operators use federally certified drinking water for fracturing has significantly increased their costs (IOGCC 2001a). (Such water must be purchased and trucked to the well development operations [Stewart 2001].) LEAF then filed a second case, arguing that the EPA violated SDWA requirements when it approved Alabama's UIC program. LEAF stated that the EPA should have required the State of Alabama to regulate hydraulic fracturing under Section 1422 of the SDWA, a provision with strict requirements, rather than allowing the state to regulate the process under the more flexible Section 1425 (Inside EPA 2002b). The court decision prompted the EPA to conduct a nationwide study of the impacts of hydraulic fracturing on underground sources of drinking water. Although the EPA was under no legal requirement to issue a national standard for hydraulic fracturing, it planned to use the results of the study to determine if it should do so.

On December 21, 2002, the 11th Circuit Court, in the second LEAF case, held that (1) the EPA's decision to use the approval route under Section 1425 was based on a permissible construction of the statute; (2) the EPA's decision to classify hydraulic fracturing of coal beds to produce methane as a "Class II-like underground injection activity" was inconsistent with the EPA's well classification scheme; and (3) the Alabama UIC program regulating hydraulic fracturing of coal beds complied with the requirements of the SDWA. The court remanded the case to the EPA to determine if Alabama's revised UIC program complied with the requirements

for Class II wells. LEAF then petitioned for a rehearing by the full 11th Circuit Court, arguing that the court did not adequately enforce a statutory requirement that all applicants seeking to inject underground fluids as part of the hydraulic fracturing process must first prove that their processes will not affect human health (Inside EPA 2002a). In March 2001, the 11th Circuit Court denied LEAF's petition for a rehearing. On June 12, 2002, LEAF petitioned its case to the Supreme Court; on October 21, 2002, however, the Supreme Court declined to hear the challenge.

In 2004, LEAF filed a petition directing the EPA to determine immediately whether Alabama's revised UIC program complied with the requirements for Class II wells. The EPA argued that the petition should be denied in light of the Agency's reasonable progress and schedule toward reaching a final determination.

In June 2004, the EPA published the final version of its hydraulic fracturing study (EPA 2004a). During its study, the EPA reviewed more than 200 peer-reviewed publications, interviewed roughly 50 state and local government agency employees, and communicated with about 40 citizens concerned that CBM production had affected their drinking water wells. The EPA also searched for confirmed incidents of drinking water well damage. After reviewing this information, the EPA concluded that the injection of hydraulic fracturing fluids into CBM wells poses little or no threat to underground sources of drinking water and does not warrant additional study. On July 15, 2004, the EPA published a notice in the *Federal Register* announcing its final determination that "the hydraulic fracturing portion of the state's [Alabama] UIC program relating to coalbed methane production, which was approved under Section 1425 of the SDWA, complies with the requirements for Class II wells within the context of Section 1425's approval criteria" (EPA 2004b).

The controversy over the regulation of hydraulic fracturing continues, and it is possible that additional suits over the fracturing issue could be filed in federal courts. Because of the "plain language" finding of the original LEAF case, these subsequent suits could lead to federally imposed regulations in those states where such cases are filed (Stewart 2001). Regulations that would require the use of drinking water as the fluid could increase the price of gas and thereby reduce supply (Russell 2000).

3.2.5 Nationwide Permits

Summary: Section 404 of the CWA requires that any activities that result in the discharge of dredged or fill material into waters of the United States (which include most wetlands) must be approved via a permit issued by the COE. Obtaining an individual permit can take 1 year or more (Bleichfeld et al. 2001). To reduce the burden caused by permitting many small, inconsequential projects, the COE has established nearly 40 general, or NWPs, for categories of activities that will have minimal adverse effects on the environment. The processing time for activities approved under a general permit averages about 14 days (Copeland 1999). Recent regulatory changes have limited the activities covered by NWPs, meaning that more gas-related activities will require individual permits. Also, recent court cases and other actions have resulted in changes to the definitions of wetlands; thus the scope of activities and areas requiring a permit

has been in a state of flux, leading to additional delays caused by conflicting definitional interpretations.

Source of Constraint: Regulatory

Impact: Delay

Phase: Production, transportation

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CWA (Section 404, 33 USC 1344); 33 CFR Part 330

Lead player: COE

Issue discussion: Two key issues have the potential to increase the number of permits and the permitting times required to gain approval to develop natural-gas-related projects (e.g., drilling platforms, pipelines) in wetlands. The first is the recent elimination of NWP 26, and the second is the definition of water bodies that will require permits. NWP 26 was a general permit established by the COE in 1977 that authorized discharges in headwaters or isolated waters (nontidal waters with a flow rate of less than 5 ft^3/s, or nontidal waters that are neither part of nor adjacent to a surface water system). Headwaters and isolated waters can be difficult to identify as wetlands because they may be dry for much of the year or lack the types of vegetation commonly associated with wetlands. Unlike other NWPs, NWP 26 did not restrict nor authorize specific activities, such as minor dredging or bank stabilization. Instead, it authorized discharges to certain types of waters on the basis of acreage and lack of hydrologic connection to navigable waters. Environmental groups had long been concerned that NWP 26 was overly broad, subject to abuse by applicants through segmenting of projects, and responsible for large amounts of unmonitored wetland losses. Industry groups viewed NWP 26 as an important mechanism for minimizing regulatory burdens on small businesses and other permit applicants, and as a means of limiting development delays and associated costs.

On March 9, 2001, the COE issued final regulations that included the elimination of NWP 26 (COE 2000). The rules "replaced" NWP 26 with five new NWPs. However, many activities formerly authorized by NWP 26 are not covered by any of the new or existing permits, so that individual permits must now be obtained. (NWP 26 permits composed between one-quarter and one-third of all NWPs authorized annually, and 90% of all NWP 26 actions involved areas of less than 3 acres (Copeland 1999). On August 9, 2001, the COE issued a proposal to reissue all existing NWPs, general conditions, and definitions, with some modifications (COE 2001). On January 15, 2002, the COE issued its final rule, which incorporated the more than 2,000 comments it received in response to the proposal (COE 2002). The five new NWPs established in the final rule to replace NWP 26 cover only a limited portion of the range of activities formerly covered by NWP 26. The most broadly applicable new permit was NWP 39. This permit authorizes many of the activities previously authorized by NWP 26. It

authorizes fills for the construction or expansion of certain building foundations or pads, but specifically excludes oil and gas wells from coverage. The final rules also made substantial changes to NWP 12 (utility crossings, including pipelines), subjecting such crossings to new size, notice, and geographical restrictions. These changes lowered the threshold for NWP approvals from 3 acres to 1/2 acre, reduced the preconstruction notification and mitigation threshold for NWP activities from 3/10 to 1/10 of 1 acre, and limited the use of NWPs within floodplains and in critical waters. Because of these changes, projects that would have previously qualified for approval under an NWP are now subject to the more time-consuming and costly individual permit process.

In addition to these complex and restrictive new NWP limits and conditions, the 35 COE District Offices are preparing supplemental regional conditions that will be imposed on various NWPs in states and regions. Gas operations in different regions or states, will thus be required to comply with varying regional NWP conditions applicable to each region. Estimates of the additional costs to comply with the new restrictions range from $32 million to $300 million per year (Miller 2001). In addition, the delays are expected to be significant, as the COE is required to process many more individual permits. The COE's cost analysis of the proposal to issue five new and modify six existing NWPs to replace NWP 26, estimated that the number of individual permit applications would increase by 4,656 annually (50% over current amount), the direct compliance costs to the regulated community would increase by about $48 million annually, and the time to process the permits would increase by three to four times (Institute for Water Resources 2000). The analysis did not estimate indirect costs.

The second issue, the definition of federal water bodies, is significant because the COE definition determines what activities will require a permit. It can lead to prohibitions on activities that pose a threat to the water bodies or to permit conditions that require a permittee to undertake projects to mitigate environmental damage. On October 11, 2001, a COE district office expanded its definition of water bodies that fall under the jurisdiction of its NWP program when it stated that a nearby streambed that fills with water only in certain times of the year would now come under the review of the COE. This definition could force all COE district offices to accept additional streambeds, as under federal jurisdiction, thereby significantly expanding the scope of areas requiring permits. This action came after the U.S. Supreme Court ruled in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* to limit the COE's authority to regulate isolated wetlands. This ruling has required the COE and the EPA to redefine what constitutes a water of the United States that comes under federal control. The discussion of the Spill Prevention Control and Countermeasures constraint (Section 3.3.14) contains more information on the definition of waters of the United States.

Changes to the NWP system and to the definition of waters requiring permits would delay gas production and distribution from facilities in wetlands that require permits; amounts of potentially affected TCF were not estimated.

3.2.6 NEPA Integration and Lawsuits

Summary: NEPA requires federal agencies to evaluate the human and environmental impacts of federal activities and projects, including leasing and other activities on federal lands. Various levels of jurisdiction and decision making under the law often produce unnecessary project delays. Also, NEPA-related lawsuits can lead to the preparation of "appeal-proof" documentation, which can further delay project review and approval.

Source of Constraint: Regulatory

Impact: Delay

Phase: E&P, transportation

Category: Access, leasing, permitting

Estimated affected natural gas resources (TCF): 464.5

Estimate type: Technically recoverable

Estimate date: 01/2000 **Estimate reference:** EIA (2001a)

Estimate comments: All natural gas resources will theoretically go through at least one NEPA review, and most, if not all, will go through a pipeline that requires a NEPA assessment. This TCF estimate is for all accessible, technically recoverable onshore and offshore resources.

Statutory/regulatory citation: NEPA (42 USC 4321 et seq.); ESA; state; local

Lead players: States, BLM, FERC

Issue discussion: NEPA integration concerns often relate not so much to the law itself, but to federal agency implementation of the law. Delays and inefficient expenditures of resources and capital often result from the following:

- Inadequate integration of NEPA compliance with other federal, state, and local permitting requirements, particularly ESA and National Historic Preservation Act (NHPA) requirements;
- Overlapping and inconsistent federal, state, and local permitting and mitigation requirements;
- Inadequate communication and coordination among participating agencies and the use of inconsistent procedures and data elements across responsible agencies;

- Lack of clarity in the roles and responsibilities of participating agencies;
- Decisions made on the basis of data that are not accurate, objective, or relevant;
- Duplicate environmental documentation;
- Limited use of categorical exclusions even when previous analyses would cover such exclusions; and
- NEPA-related lawsuits and the threat of additional suits, which can lead agencies to prepare lengthy, time-consuming, and costly EISs and EAs that go beyond the basic requirements.

In announcing an interagency agreement to improve coordination and cooperation on the permitting of natural gas transmission pipelines, the Chairman of the Council on Environmental Quality (CEQ) stated in October 2002, that one of the largest constraints to expanding the use of clean-burning natural gas relates to production and pipeline constraints. For pipeline projects, FERC is required to certify construction and operation of interstate natural gas pipelines, and numerous agencies can be involved in the review process.

For many pipeline projects, the various federal, state, and local compliance efforts are completed independently, leading to inconsistent conclusions and requirements, schedule and cost delays, and inefficiencies. For example, NHPA or ESA compliance assessments may require the use of one pipeline routing, while the NEPA compliance assessment could require a different routing. Even though CEQ regulations require timely coordination by federal agencies in dealing with interagency issues (40 CFR 1501.6) and avoiding duplication in tribal, state, county, and local procedures (40 CFR 1506.2), duplication and lack of coordination often occur. CEQ regulations require integration of analyses required by other laws into a single analysis (CEQ 1997). Although all interested parties are to become involved early and remain involved until solutions are found, sometimes such coordination does not occur.

Agencies have different (and conflicting) timetables, requirements, and statutory missions. For example, according to testimony provided by Wyoming Governor Jim Geringer, the BLM had been developing an EA for an additional 2,500 permits for CBM wells in Wyoming's Powder River Basin. Following its approved procedures, the BLM had completed its work and given assurances to leaseholders that the additional permits would be available by March 1, 2001. At the last moment, the USFWS reported that it had not completed its required assessment of impacts and would delay the issuance of permits. The lack of coordination and cooperation between two divisions within the single Department (of Interior) delays access to much-needed natural gas supplies. "Federal activity is primarily focused on process rather than results, and there is no accountability for improper decisions" (Geringer 2001).

Litigation associated with NEPA implementation has resulted in allowing the courts to determine the intent of NEPA and requirements for compliance. Environmental and other groups and individuals have accused federal agencies of failing to comply with NEPA requirements by

issuing leases and other approvals without proper NEPA review. To respond to or avoid challenges to their NEPA activities, federal agencies have gone beyond statutory NEPA requirements and prepared "appeal-proof" EISs and EAs. These, in turn, require time-consuming, overly broad studies, inventories, and analyses, which result in lengthy, cumbersome documents that require lengthy review periods, further delaying the NEPA process (Moseley 2002). "The move toward immunizing decisions from challenges and away from gathering scientific evidence on which to base a decision is beginning to erode the utility of the NEPA process" (Hopkins 2002).

An example of such a lawsuit is *Southern Utah Wilderness Alliance v. Norton*, December 6, 2001. In this case, the National Resources Defense Council and the Southern Utah Wilderness Alliance filed suit in the U.S. District Court for the District of Columbia charging that the BLM failed to conduct critical EAs before issuing 12 leases (in September 2001) that cover 10,500 acres in Utah's Redrock Canyon region. The lawsuit alleged that the BLM failed to fully evaluate and disclose the impacts of the leases and asked the court to force the BLM to conduct an environmental review and rescind the leases until the study was completed. The environmental groups said that the BLM's determination of NEPA adequacy was flawed; they conceded, however, that prior to actual drilling, the BLM requires more extensive environmental impact analyses (Ferullo 2001b; Beattie 2001). The plaintiffs stated that they plan to challenge BLM activities in other regions, such as Wyoming's Red Desert-Bridger Teton National Forest that may also be in violation of environmental laws (Beattie 2001).

A more recent case could further increase the pressure for additional study as a part of NEPA compliance. On October 15, 2002, the DOI's Board of Land Appeals upheld an April 26, 2002, ruling that the BLM erred in issuing three CBM permits for Wyoming without conducting sufficient NEPA analysis. The April ruling found that the sale of the three leases was illegal because the BLM failed to update a 17-year-old EIS that authorized continued gas and oil development in lands near Buffalo, Wyoming. The board said that although the Buffalo RMP and EIS addressed general oil and gas exploration, production, and development, it did not specifically address CBM extraction and development. The affirmation of the April ruling could be used to challenge existing and pending CBM leases in the Powder River Basin, as those leases were granted under the same Buffalo RMP/EIS (Baltz 2002c).

3.2.7 Pipeline Certification

Summary: According to the Interstate Natural Gas Association of America (INGAA), about 200 major new pipeline construction projects (valued at about $2.5 billion per year) will be required over the next 10 years to support projected natural gas demands. The lead time to obtain permission to build new pipeline facilities can be lengthy. FERC must approve all new and expansions to existing interstate pipelines. The process requires approvals from numerous federal, state, and local agencies that have little incentive to work together to approve applications in a timely manner (INGAA 2001). For interstate pipelines, INGAA estimates that it takes an average of 4 years to obtain approvals to construct a new natural gas pipeline.

Source of Constraint: Agency implementation

Impact: Delay

Phase: Transportation

Category: Permitting

Estimated affected natural gas resources (TCF): 23.3

Estimate type: Annual gas consumption

Estimate date: 01/2003 **Estimate reference:** EIA (2003)

Estimate comments: All projected natural gas not already in system. Projected annual increases in consumption over the next 10 years; assumes gas consumed goes through pipelines.

Statutory/regulatory citation: Natural Gas Act of 1938 (15 USC 717); NEPA (42 USC 4321, et seq.)

Lead players: FERC, others

Issue discussion: The interstate pipeline approval process involves numerous agencies. FERC is usually the lead agency because it must approve interstate pipeline projects under the Natural Gas Act. FERC must determine (under NEPA) whether an EA or a full EIS is necessary. FERC must also evaluate the effect of the proposed project on cultural and historic properties and on threatened and endangered species. The COE issues permits for major water crossings under the CWA, Section 404. The USFWS may need to issue a "biological opinion" and a statement on incidental takes of protected species under the ESA, Section 7. The EPA evaluates projected air emissions. State agencies are responsible for issuing erosion and sediment permits, hydrostatic test water acquisition and discharge permits, and for approving stream and river crossings, threatened and endangered species preservation, air emissions, and noise. Local agencies must approve building and road crossing permits.

In most cases, the approval steps include the following: (1) the applicant gathers and submits information to the agency; (2) the agency performs a preliminary assessment of the project and may seek comment from other government entities and the public; (3) the agency issues a final analysis; and (4) the agency considers the analysis in making its decision on whether to issue a permit (or certificate). A study by the INGAA Foundation found that both pipeline applicants and agency reviewers experience problems coordinating the environmental permitting process. The study found that federal agencies often have inconsistent information on the project review process, possibly arising from the different personnel interfacing with the applicant (INGAA 1999). A related issue pertains to the handling of plan modifications subsequent to the approval of the EA or EIS. After EA or EIS approvals, unexpected field conditions or opportunities to further reduce impacts and costs can require that the plans be modified. Often, in such situations, the pipeline company, the FERC-designated environmental

coordinator, and the cooperating agencies reach an on-scene agreement. However, without the clear authority to approve a change in plans, field personnel may decide to implement a less desirable option, if such an option would require no further approvals (INGAA 1999). Interstate pipeline operators believe the environmental regulatory review of new pipeline proposals should be streamlined and coordinated to reduce the excessive delays now experienced and to facilitate permitting for new pipeline projects. There has been some activity at the federal level to expedite certification and permitting, but much of the problem is at the state and local levels, where reviews and approvals must also occur (AGA 2000).

The majority of individual permits required for infrastructure expansion are state and local. Although state and local regulations are necessary and add oversight, only a few states effectively coordinate the natural gas pipeline permitting process, and state and local regulatory activities can add months or years to the time required to build a pipeline. Also, state and local regulations sometimes overlap, as do requirements across different state agencies (IOGCC/NARUC 2001).

The NPC report projects a need for more than 38,000 mi of new transmission lines and 263,000 mi of new distribution lines to meet future natural gas demands. These increases will exacerbate existing pipeline permitting delays (NPC 1999).

3.2.8 Pipeline Safety (Integrity Management)

Summary: Recent natural gas pipeline incidents involving loss of life and property, a perceived lack of effectiveness on the part of the federal agency charged with implementing statutory mandates regarding pipeline safety, and the realization that increased gas demands can only be met with increased pipeline capacity have contributed to increased natural gas pipeline safety requirements. Federal-level safety, or integrity management, standards for natural gas transmission pipelines are being written that could increase costs and result in temporary supply disruptions. In addition, states can issue regulations more stringent than the federal regulations for intrastate pipelines.

Source of Constraint: Regulatory

Impact: Delay, cost

Phase: Transportation

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: The Pipeline Safety Improvement Act of 2002 (H.R. 3609); 49 USC 60101, et seq., "High Consequence Areas for Gas Transmission Pipelines," Final Rule (67 FR 50824), August 6, 2002; "Pipeline Integrity Management in High Consequence Areas (Gas Transmission Pipelines)," Final Rule (68 FR 69778), December 15, 2003

Lead players: DOT, Research and Special Programs Administration (RSPA), Office of Pipeline Safety (OPS)

Issue discussion: INGAA estimates that by 2015, nearly 50,000 mi of new transmission lines will need to be built to meet the projected demands for natural gas in the United States. Currently, there are about 180,000 such miles (Boss 2002). Over the past 7 years, the OPS has investigated cost-effective ways of improving the safety, security, and reliability of natural gas pipelines, and over the past 3 years, Congress has been trying to reauthorize existing pipeline safety legislation and further increase the safety of pipelines. The OPS has undertaken a two-part rulemaking procedure that (1) defines high consequence areas (HCAs), or areas where the consequence of a gas pipeline accident could cause considerable harm to people or property, and (2) sets requirements to improve the integrity of interstate gas transmission pipelines located in these HCAs. On August 6, 2002, the OPS issued the final HCA rule.

On November 15, 2002, Congress passed the Pipeline Safety Improvement Act (H.R. 3609), and on December 17, 2002, President Bush signed the legislation. Among other things, the new law (49 USC 60109) mandates safety inspections for pipelines in HCAs to prevent leaks and ruptures within the next 10 years and reinspections within 7 years, stiffens penalties for violations, increases state oversight, and establishes a permit streamlining program. It uses a risk-based approach to target more problematic pipelines for inspection within the first 5 years. On December 15, 2003, the OPS issued final integrity management regulations for gas transmission lines in HCAs (DOT 2003).

Both the legislation and the rule contain prescriptive requirements, the implementation of which could increase prices, or even cause supply or delivery problems. Specific areas of concern include the following: the new law allows the DOT to require operators to take corrective action, including repairing and replacing equipment, if there is a potential safety-related condition (Section 7). While much of the bill uses risk as a criterion for action, this provision gives the Secretary much more latitude in what can be required of operators. The law also requires the DOT to study and report to Congress on preserving environmental resources with regard to pipeline ROWs to determine ways to address and prevent hazards and risks to the public, pipeline workers, and the environment, and to address how to best preserve environmental resources in conjunction with maintaining ROWs (Section 11).

The inspection schedules in the rule are tight, and the need for smaller operators to implement new inspection programs could delay delivery if finite resources are directed toward such implementation and away from delivery. Making lines piggable, conducting the actual tests and retests, and addressing needed repairs will remove pipelines from service for periods ranging from a few days for an inline inspection test, to 30 days or more for installing necessary fittings and pipe modifications. The lack of flexibility in integrity management requirements and the "one-size fits all approach" for all pipelines regardless of size may preclude the use of more cost-effective integrity management measures that would limit supply disruptions. Projected natural gas demand increases, which will add strain to the systems, can be expected to exacerbate the effects of inspection-induced delays.

Potentially all gas that goes through interstate transmission lines located in HCAs could be affected by the pipeline safety requirements. However, no specific estimates of the amounts of gas affected are available.

3.2.9 Wetlands Mitigation

Summary: Recent COE regulation and guidance for mitigating impacts to wetlands has taken a watershed approach, which allows case-specific exemptions to the one-for-one mitigation-to-impact requirement and expands options for conducting mitigation. Environmental opposition may result in a review and rethinking of these revisions, which could increase the time and money associated with obtaining permits and implementing strategies to mitigate impacts to wetlands caused by natural gas E&P, development, transportation, and construction activities.

Source of Constraint: Regulatory

Impact: Delay, cost

Phase: Production, transportation

Category: Permitting, operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CWA (Section 404, 33 USC 1344); 67 FR 2020, January 15, 2002; U.S. Corps of Engineers Regulatory Guidance Letter 01-1, October 31, 2001

Lead players: COE, states

Issue discussion: Section 404(a) of the CWA (FWPCA, 33 USC 1344(a)) authorizes the COE to issue permits regulating the discharge of dredged or fill material into the waters of the United States, including wetlands. Typically, the permit requires mitigation to offset the impacts. A June 2001 National Academy of Sciences Report criticized the COE's mitigation approach, citing failures of mitigation projects and other problems. On October 31, 2001, the COE issued Guidance Letter 01-1 to improve mitigation conditions required in COE permits. The guidance adopts a watershed management approach that includes provisions for compensatory mitigation such as off-site mitigation and case-by-case exceptions to a one-for-one functional replacement. The guidance is designed to improve mitigation consistency across districts. On January 15, 2002, the COE modified its General Condition 19, which addresses mitigation for NWPs, or general permits. This modification also takes a watershed approach, and although it adheres to the "no-net-loss" of wetlands policy by requiring a one-for-one mitigation for wetlands impacts at the district level, exceptions can be made on a case-specific basis. A variety of mitigation approaches, including mitigation banking, are allowed. Environmentalists, the EPA, and the USFWS have raised concerns about the revisions; some view these revised mitigation policies as moving away from the "no-net-loss" policy and as loosening the standards. Legal action may be taken against the COE, with the argument that the COE has insufficient data to make a

determination that the programs revisions will result in a minimal impact on the environment (Inside EPA 2002c).

Natural gas production and transportation may be facilitated by the COE's revisions to mitigation policies, since they allow for case-by-case exceptions to the one-for-one mitigation requirements and since they expand the actions that qualify for compensatory mitigation. Attempts to retract the provisions or to have states implement more stringent legislation and regulations could cause delays to projects or increased costs for more costly mitigation approaches. Wetlands issues, regulations, and policies are constantly undergoing discussion and review by Congress, the COE, environmental groups, and others. Wetlands-related actions stemming from these discussions could delay access to natural gas or increase costs of obtaining the gas. Estimates of the number of potentially affected TCF are not available, but gas at any exploration, production, or transportation facility that needs a wetlands permit could be affected.

3.3 ISSUES LIKELY TO INCREASE COSTS

3.3.1 Cooling-Water Intake Structures

Summary: Section 316(b) of the CWA requires that cooling-water intake structures reflect the best technology available for minimizing adverse environmental impacts. The EPA is developing national regulations to implement these requirements. It has issued final Phase I and II regulations for existing power plants and for new power plants and manufacturing facilities. The EPA published proposed Phase III regulations for existing manufacturing facilities, including oil and gas extraction facilities, and for new offshore oil and gas extraction facilities in November 2004. Final Phase III regulations must be published by June 2006. Impacts of the final 316(b) Phase III regulations on oil and gas production are not known at this time.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CWA, Section 316(b); 69 FR 68444-68565, November 24, 2004

Lead player: EPA

Issue discussion: For several years, the 316(b) requirements have been implemented on a site-by-site basis, without federal standards. Following settlement of a lawsuit, the EPA is now developing national regulations in three phases: Phase I for new facilities, Phase II for existing

electric utilities that use large amounts of cooling water, and Phase III for electric utilities using smaller amounts of cooling water and other industries, which include existing and new offshore and coastal oil and gas extraction facilities. These extraction facilities typically use cooling systems for their engines and brakes.

Entities affected by the 316(b) rules use cooling-water intake structures to withdraw water for cooling purposes and have, or are required to have, a NPDES permit issued under Section 402 of the CWA (33 USC 1342). The regulations apply to the intake of water and not the discharge. Major goals of the regulations are to minimize impingement, which occurs when fish and other aquatic life are trapped against cooling-water intake screens, and entrainment, which occurs when aquatic organisms, eggs, and larvae are drawn into a cooling system through the heat exchanger and then pumped back out. Cooling water intake requirements are performance standards implemented through NPDES permits, which are based on the best technology available to minimize impingement and entrainment.

The EPA published proposed "Phase I" regulations for cooling-water intake structures at certain new industrial facilities on July 20, 2000, and final Phase I regulations on November 9, 2001. It published proposed "Phase II" regulations for approximately 550 existing electric power generating plants on February 28, 2002, and final Phase II regulations on July 9, 2004. It published proposed "Phase III" regulations for certain existing industrial facilities, including oil and gas extraction facilities, and for new offshore oil and gas extraction facilities on November 24, 2004. The EPA must publish final Phase III rules by June 1, 2006.

Preliminary EPA information indicated that about 200 offshore oil and gas platforms and mobile drilling units could be subject to the Phase III regulations (EPA 2002c). The EPA estimated that the final Phase I regulations for new electricity-generating facilities would affect 121 facilities to be built over the next 10 years and cost about $48 million per year (EPA 2001a). The U.S. Coast Guard estimated that retrofits for drill ships and semisubmersibles that use "seachests" as the cooling-water intake structure could cost approximately $8 million to $10 million and require several weeks to months for dry-docking operations. The Independent Association of Drilling Contractors reported that the cost of converting a jack-up modular offshore drilling unit from sea water cooling to closed-loop air cooling is roughly $1.2 million and requires a six-month lead time to obtain the required equipment (EPA 2001b). Impacts to the scheduling of offshore drilling rigs, such as the downtime needed for retrofitting, could adversely affect the availability of natural gas to consumers.

The proposed Phase III requirements published in November (EPA 2004g) would apply to existing facilities that withdraw more than 50 million gal/day of water; existing facilities that withdraw less than 50 million gal/day would continue to be subject to 316(b) permit conditions established on a case-by-case, best professional judgment basis. Because few, if any, existing offshore oil and gas extraction facilities withdraw more than 50 million gal/day, compliance with the proposed rule is not expected to generate significant impacts for existing facilities. However, the proposed Phase III regulations also establish requirements for new offshore oil and gas extraction facilities. (The EPA had specifically excluded these facilities from the scope of the Phase I new facility regulations so that it could collect additional data on them.) According to the proposed rule, new offshore and coastal oil and gas extraction facilities with cooling-water intake

structures that have a design intake flow of greater than 2 million gal/day to withdraw from waters of the United States would be subject to the rule's requirements. Impacts of the proposed rule and of the eventual final rule on new oil and gas offshore extraction facilities are not known.

3.3.2 Electronic Reporting and Record-Keeping Requirements

Summary: On August 31, 2001, the EPA's Office of Environmental Information published its proposed CROMERRR, which describes conditions under which the EPA would "allow" submission of electronic documents and maintenance of electronic records to satisfy federal EPA reporting and record-keeping requirements (EPA 2001f). The rule is touted as voluntary, but any entity that reports or maintains records electronically would have to follow certain requirements, which could require the installation of costly new systems incompatible with current electronic data management systems. The API estimated that the financial impact of the proposed rule on the petroleum industry alone would be comparable to what the industry spent on Y2K — about $1 billion.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: 66 FR 46162, August 31, 2001

Lead player: EPA

Issue discussion: The EPA's apparent intent in proposing this rule was to remove existing regulatory obstacles to electronic reporting and record keeping across EPA programs to comply with the requirements of the Paperwork Reduction Act by the deadline of October 2003. However, the proposal, as written, goes beyond those requirements and is burdensome. The proposal would impose mandatory, extensive, and difficult-to-implement requirements on essentially all environmental records at all facilities subject to environmental regulation. The EPA received more than 180 comments on the proposal, most of which were directed toward the record-keeping requirements, finding them to be overly burdensome, not voluntary, and too prescriptive. For example, a given facility may have dozens of different data collection systems that would have to be evaluated and set up to meet the CROMERRR criteria. As of June 2002, the EPA was considering decoupling the record-keeping portions of the rule from the reporting portions, thus allowing for timely compliance with the Paperwork Reduction Act for reporting, but postponing the record-keeping portions to a later date.

The rule would probably be most costly for small producers. Although it would not directly affect gas production, it could be an additional economic burden that some, especially small, operators could not afford. Added to other regulatory burdens, this rule could put some small operators at risk.

3.3.3 Lack of Incentives to Go beyond Compliance

Summary: Permitting and regulatory processes generally lack incentives for companies to provide environmental protection beyond standard operating practices. Proposals that would provide environmental protection beyond legal requirements and proposals that could provide equal protection at lower costs have been rejected by local, state, and federal authorities. Such rejections constrain environmental progress and preclude opportunities to reduce costs. They can also discourage natural gas operators who may otherwise be willing to take voluntary action in the E&P areas, where additional regulations, expected in response to increased activity and attendant environmental impact, will add to the workload of already burdened regulatory staff, further exacerbating production delays.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): 86.6

Estimate type: Technically recoverable

Estimate date: 01/2003 **Estimate reference:** DOI (2003)

Estimate comments: Estimated to be the amount of gas in EPCA I areas that are available for lease under standard lease terms. This estimate is based on the assumption that the lack of incentives applies to any federal land. It could also apply to state and private lands and could apply in other areas in addition to the Rocky Mountain region.

Statutory/regulatory citation: FLPMA; Mineral Leasing Act (30 USC 209)

Lead player: BLM

Issue discussion: Operators have suggested mitigation approaches regarding habitat protection, but they are typically not allowed because of "department policy" (Watford 2001). An example of a missed opportunity for going beyond compliance was described to the House Resources Subcommittee on Energy and Minerals on April 25, 2001, by the president of Ultra Petroleum Corporation, an independent E&P company with core operations in Wyoming. Ultra Petroleum

had proposed such an approach during the preparation of an EIS for gas drilling operations in the Pinedale Anticline in Wyoming. In this case, discussions with the BLM and the Wyoming State Game and Fish Department indicated that some of the greatest benefits to the affected wildlife would come from protecting habitat in areas away from the proposed project area (i.e., other critical wintering areas or riparian areas that had a high probability of being subdivided and therefore of having a greater adverse impact on the species than oil and gas development). Ultra offered to establish an "off-site" mitigation fund whereby the BLM and the State of Wyoming could spend industry dollars, on a per-well-drilled basis, to mitigate impacts to affected species in the locations that would render the greatest environmental protection for the dollars spent, even if those locations were outside the project boundary. However, the BLM stated that a DOI solicitor's opinion and department policy prohibited any off-site mitigation, regardless of the potential environmental benefit (Watford 2001).

In another example, on the basis of information produced during the NEPA process, which showed that reducing disturbance to the surface and the habitat was one of the best ways to minimize the significant impacts from operations, Ultra analyzed the option of drilling several wells directionally from the same pad. Because the cost of directional drilling is significantly higher than that of drilling a traditional well bore, Ultra sought a legal interpretation to determine if royalty rate reductions could be applied for the voluntary use of directional drilling. According to the Mineral Leasing Act (30 USC Section 209), the Secretary of the Interior is authorized to grant reductions in production royalties as follows: "The Secretary of the Interior, for the purpose of encouraging the greatest recovery of . . . oil, gas . . . and in the interest of conservation of natural resources is authorized to . . . reduce the rental, or minimum royalty on an entire leasehold, or on any tract or portion thereof segregated for royalty purposes, whenever in his judgment it is necessary to do so in order to promote development, or whenever in his judgment the leases cannot be successfully operated under the terms therein provided." The BLM responded, however, that the DOI solicitor had issued an opinion prohibiting the department's ability to utilize an ecoroyalty relief program as an incentive for such environmental protection. "It appears that capitalizing on or creating incentives in the marketplace or within the bureaucracy to better ease or quicken the NEPA process is grossly neglected by the Federal Government and that valuable opportunities for improvement are foregone" (Watford 2001).

3.3.4 Louisiana E&P Waste Disposal Regulations

Summary: Amendments to the State of Louisiana's E&P waste storage and disposal rules passed on November 20, 2001 may increase costs and delay natural gas E&P schedules in the state. Louisiana is the first state to adopt such regulations, and because many oil and gas states follow Louisiana's lead, the requirements may set precedents for other states, with attendant costs for natural gas E&P operations.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: Louisiana Statewide Order No. 29-B, AC 43:XIX, Subpart 1, Chapter 5 (501 et seq.)

Lead player: State

Issue discussion: On November 20, 2001, a new rule, Statewide Order No. 29-B, took effect in Louisiana. The rule responds to citizen complaints since 1984 in Grand Bois, Louisiana, where a local land-treatment facility handled gas plant wastes that allegedly caused health and pollution problems. Among other things, the amendments require generators to characterize the E&P wastes they generate, set maximum permissible limits on the benzene concentration in gas plant wastes, and increase the sizes of buffer zones near waste facilities. The rules result from a comprehensive waste evaluation and health risk analysis of oil field wastes managed at commercial facilities. Waste generators are responsible for proper handling and transportation of E&P waste taken off site for storage, treatment, or disposal. The fiscal and economic impact statement accompanying the proposed rule estimated impacts to the regulated community of $940,000 or higher for costs to dispose of gas plant wastes. Comments on the proposed rule indicated that the costs would be much higher — on the order of $5 million to commercial facilities — and that the provisions for design criteria for commercial facilities (Section 509 A) would be "virtually impossible to comply with and could cause the closure of many facilities." Other comments suggested that the one-time costs, per disposal company, for such items as injection wells, retention basins, and levees, would be $6,600,000; operating costs and lost revenue were estimated at $1,600,000 per year (Louisiana Docket IMD-01-11-2001). Presumably, these costs would be passed along to the natural gas operators. A requirement that an independent consultant or laboratory (third party) perform the sampling would also add to operator costs. Whether the impacts would be enough to limit production, particularly for smaller operators, is not known.

Risk-based regulations can lead to rules that are generally fair and science-based, because they tend to reflect actual events and consider both the degree of hazard as well as the likelihood of the hazard occurring. In contrast, some regulations reflect only the hazard or potential for hazard without considering the likelihood of the hazard occurring. However, the benefits of using a risk-based approach can be lost if the assumptions are overly conservative and if the risk assessment assumes these overly conservative assumptions in all cases. A risk-based evaluation of E&P wastes was used to develop the new Louisiana rules. However, some commenters noted that the series of overly conservative assumptions used in developing the rules could never occur in actual operations, and that taken together, they not only compound the conservatism of the results but can set an improper precedent for developing other risk-based regulations.

The new rules also require public notification requirements for routine operational changes, which could delay production with little if any environmental benefit. For example, the

newly adopted revisions require that any application to recomplete a Class II commercial disposal well into a new disposal zone must be advertised in the legal ad section of the official state journal and in the official parish journal where the facility is located. According to comments filed on the proposed rule, recompletion of an existing injection well into a new disposal zone typically becomes necessary based on something discovered during a well workover. The public notice provision will require that the operator dismiss the workover rig from the site, submit the application, and advertise as required. Since there is no defined public comment period, the length of time allotted for comments is unknown. At a minimum, it would likely be 15 days, during which time the well would be shut in and the rig moved off site. If the application is approved after the allotted public comment period, the rig must be remobilized and the well reworked. Before the new rules were implemented, the procedure had been to handle the application administratively, with relatively little delay. The final rule retained the public notification requirement citing federal EPA requirements.

The E&P waste disposal regulation could affect all gas produced in the State of Louisiana. Although it would not prohibit or limit access, it could increase production costs. Combined with other regulatory actions that could increase costs, the rule could reduce the incentive for some producers to continue or start operations.

3.3.5 Maximum Achievable Control Technology (MACT)

Summary: MACT rules regulate emissions of HAPs from stationary and mobile sources. Final MACT rules exist for oil and gas production facilities and for natural gas transmission and storage facilities. Recently, the EPA has signed final MACT rules for turbines, process heaters, and reciprocating internal combustion engines, which may affect gas operations. Compliance with these rules, for example, a 95% reduction in emissions at major sources, could impact the economics of natural gas operations.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production, transportation

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CAA (Section 112(d), 42 USC 7412 (d)); Final MACT rules

Lead player: EPA

Issue discussion: The EPA has estimated relatively small economic and energy impacts associated with implementation of the production, transmission, and storage rules. However, the potential impacts of additional MACT regulations on future natural gas and CBM operations are

uncertain. The sources affected by the recently signed MACT rules — turbines, process heaters, and reciprocating internal combustion engines — are used in natural gas production and transmission. The degree of impact depends, to a large degree, on whether sources are considered major or not. A major source is defined as any stationary source or group of stationary sources located within a contiguous area and under common control with the potential to emit 10 tons per year or more of any HAP, or 25 tons per year or more of any combination of HAPs. To determine whether a gas production facility is a major source, HAP emissions from combustion turbines, reciprocating internal combustion engines, glycol dehydrators, and tanks that have the potential for flash emissions will be aggregated (EPA 2002a).

Although combustion turbines and reciprocating internal combustion engines are efficient combustion devices, products of incomplete combustion form HAPs, including formaldehyde. Combustion turbines are used at compressor stations, and internal combustion engines are necessary for producing and processing natural gas and transporting it to market. A large turbine or reciprocating internal combustion engine could emit about 10 tons per year of combined HAPs, with formaldehyde accounting for about half of the HAP emissions. Combustion turbines are used to maintain pressure in gas pipelines, and the EPA estimates that there are about 8,000 existing turbines in the United States, ranging in size from 1 to 200 MW (1 MW equals about 1,200 hp). The EPA estimates that about 20% of the existing and new turbines will be located at major sites. In addition to adding controls, covered sources would be required to monitor HAP emissions.

On June 15, 2004, the EPA issued final MACT standards for reciprocating internal combustion engines (EPA 2004c). These rules are expected to affect natural gas transmission, natural gas production, and natural gas liquids production. On February 26, 2004, the EPA signed final MACT rules for process heaters and boilers (not yet published). These rules apply to, among other sectors, natural gas extraction operations. On March 5, 2004, the EPA issued final MACT standards for stationary combustion turbines (EPA 2004d). Among other activities, these rules will affect natural gas transmission, natural gas production, and natural gas liquids production.

Because the EPA rules only apply to major sources, they are not expected to affect small producers, who typically are the most susceptible to economic impact (i.e., they may have to close operations). However, as more gas is produced and shipped, the size of the affected sources may increase, bringing more of them under control. Also, the HAP requirements in some states, such as Oklahoma, are more stringent than the federal requirements. Some state minor source requirements can burden small operators who lack the personnel and expertise to determine compliance with a state's air emission requirements and must hire consultants to make these determinations. While the MACT rules are not expected to prevent gas from being produced or shipped, they could increase costs.

3.3.6 Mercury Discharge Regulations

Summary: Discharges of mercury-containing drilling muds from gas (and oil) drilling operations in the Gulf of Mexico have generated concern that such mercury may convert to toxic

methylmercury, which can accumulate in the food chain and poison fish. Such concerns may expand to other onshore and offshore geographical areas, leading to strengthened or new mercury regulations.

Source of Constraint: Regulatory

Impact: Cost

Phase: E&P

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: NPDES permits, possible new federal or state regulations, federal interagency task force

Lead player: EPA

Issue discussion: Recent newspaper articles in Mobile, Alabama, and New Orleans, Louisiana, have cited studies by the MMS suggesting that oil and gas rigs in the Gulf "amount to islands of intense mercury contamination," which could spread to fish attracted to drilling rigs for feeding (Rains 2002). The articles state that the contamination results from the discharge of barite-containing muds used to cool and lubricate drill bits during initial exploration, rather than from ongoing operations. Barite often has high mercury concentrations. When certain microscopic organisms ingest mercury, methylmercury, a potent neurotoxin, is formed. The article reports that hundreds of thousands of pounds of mercury could have been released around the 4,000 rigs drilled in the Gulf over the past several decades. Federal regulations require a permit for the discharge of all barite-containing drilling muds in U.S. waters. These permitted discharges must contain less than 1 part per million (ppm) of mercury, and no discharges are allowed within 3 mi of the shore. According to the articles, however, more than 1,000 lb of mercury could still be legally discharged from the 1,200 new wells projected to be drilled annually.

The IOGCC notes that while the articles are aimed at off-shore Gulf of Mexico drilling platforms, it "may be only a small step" to make such claims about other regional offshore or onshore oil and gas operations (Carl 2002).

The MMS responded to the articles, stating that it provided misinformation and that studies supported by the MMS, EPA, and DOE have demonstrated that mercury around drilling platforms does not result in mercury levels in marine organisms living near the platforms that are greater than those for marine organisms living far from the platforms (Querques 2002).

In May 2002, the White House announced the formation of an interagency federal task force to determine whether mercury discharges in the Gulf and other areas pose a threat. EPA regional sources stated that the EPA could change its permitting regulations for discharges if

further study indicates that mercury is being converted to methylmercury. The State of California is also pursuing additional regulations, with legislation introduced to launch a state task force to evaluate the effects of mercury from drilling rigs (Superfund Report 2002).

Regulations could affect gas from wells that are drilled using mercury-containing muds or that produce mercury-containing cuttings. The regulations could potentially affect any new wells drilled in the Gulf of Mexico, and perhaps in other onshore and offshore areas. Additional regulations that would require the hauling of the drilling muds to shore or the use of alternative formulations could significantly increase drilling costs, with the possibility that the increased costs could limit natural gas drilling operations.

3.3.7 NO_x Prevention of Significant Deterioration Increment Consumption

Summary: An increasingly important air quality issue that can affect natural gas production in the West is the potential for new regulations to limit NO_x emissions. The Air Quality Act limits emissions in PSD areas, most of which exist in the West, where the number of combustion sources that create such emissions is growing. Many of these combustion sources are from oil and gas drilling, and particularly CBM drilling, which is expected to increase significantly over the next few years.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CAA, PSD Regulations (40 CFR 51.166 and 52.21)

Lead players: EPA, states

Issue discussion: State and NAAQS set upper limits for specific air pollutant concentrations, including NO_x. The New Source Review PSD program is designed to limit the incremental increase of specific air pollution concentrations (e.g., NO_x) above a legally defined baseline level, depending on the classification of the location. Class I areas have more stringent limits than Class II and Class III areas. Western governors and state environmental agencies have recognized that the increased growth of combustion sources in their states is leading to increased emissions of criteria air pollutants. Many are concerned that growing releases of NO_x associated with increased drilling operations could affect state compliance with the PSD NO_x increment, even though most individual sources alone would be too small to trigger the PSD increment. The Wyoming Air Quality Division is "processing thousands of permits for compressor engines, and there is no end in sight" (Easton and McVehil 2001). To determine how much of the NO_x

increment is being used, the Wyoming Department of Environmental Quality is conducting a large-scale study of emission sources in the Powder River Basin, including oil and gas development in addition to the more traditional NO_x sources of mining and mineral processing. Because the state already requires Best Available Control Technology in permits for all but insignificant sources, a finding that suggests a high consumption of the NO_x increment could mean much more aggressive source control. If the Wyoming study indicates excessive increment consumption, the EPA is likely to dictate the next steps, which could include limits on combustion sources or lower emission limits. These requirements would slow the rate of natural gas development in those states where the PSD limits are being met (Easton and McVehil 2001).

At a meeting of the Western Governors' Association, the cochair of the Western Regional Air Partnership (WRAP) Program stated that NO_x emissions will most likely be the next major area of concern, and other participants noted the importance of assessing nonutility sources (e.g., oil and gas producers) (Baltz 2002b). (WRAP is an organization of 13 states, 9 tribes, and 3 federal agencies established to address air quality issues in the western states.)

The West is not the only area for which NO_x emissions from natural gas operations are of concern. In 1988, a gas pipeline company installed four new engines at a compressor station in Illinois. In 1996, a state environmental inspection discovered that the engines were emitting NO_x at levels that triggered control requirements under the PSD program and fined the company $1.0 million. (The state environmental agency had proposed a $2.2 million penalty for the violation, but the pollution control board lowered it [Bologna 2001].)

As E&P drilling increases and as more pipelines are built to move the gas, the need to maintain low levels of NO_x emissions could limit the production and delivery of gas. Also, the process for developing new E&P and pipeline operations can be expected to lengthen as more sources apply for permits.

Potentially all new gas being developed, produced, or transported in PSD areas could be affected by NO_x limitations, but neither the specific PSD areas nor the TCF resources within them have been estimated.

3.3.8 Noise Regulations

Summary: As E&P and transportation of natural gas increase in response to increased demand, the number of drilling rigs, processing plants, and pipelines will also increase. These increases will require additional equipment, particularly compressors and drilling equipment, both of which generate high levels of noise. To date, most drilling and producing operations and pipelines have been located away from population centers, so that noise has not been a major issue. However, as thousands of wells are drilled (particularly for CBM in the West) and as new pipelines are built, noise is expected to become an issue that could lead to regulation and subsequently higher operating and transportation costs. Noise also affects wildlife, and its effect on otherwise quiet areas will continue to be a subject of concern and potential regulation.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production, transportation

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: County ordinances, proposed state legislation

Lead players: States, local governments, BLM

Issue discussion: Noise from gas operations, particularly compressors at pipelines and increasingly from CBM operations, has generated concern and action by local residents. Some areas have implemented regulations or introduced legislation to limit noise and others may follow, especially as the numbers of wells and pipelines increases. This emerging issue is most likely to be the subject of local or site-specific regulations that may prove costly, as operators are required to develop quieter equipment or increase the use of muffling techniques.

Pipeline compressor stations contain three to four compressors. Noise from this equipment can be heard up to 5 mi away. Anecdotal evidence indicates that pipeline compressors can disrupt nearby residents' lifestyles, leading to cease-and-desist orders being filed against pipeline companies and proposed regulations to limit noise. Members of the State of Wyoming's Coal Bed Methane Coordination Coalition, which consists of five counties and two conservation districts in Wyoming where CBM development is occurring, state that they would consider supporting noise regulations for pipeline compressors (Billings Gazette 2001). In Michigan, legislation has been introduced to reduce noise and nighttime nuisance by allowing counties to adopt ordinances that regulate hours during which gas, oil, brine, or any other substance can be transported to or from a gas (or oil) well (Stoneman 1995). The State of Arkansas is holding hearings on compressor noise and is studying the impact of compressor noise on the environment.

During CBM development, short-term noise impacts (2 to 5 days) result from drilling operations (rig operation, trucks, and other equipment). As development continues, additional compressor sites are required. These compressors are generally powered by large natural gas engines capable of producing high-decibel noise levels. The following examples illustrate the types of noise restrictions that can be expected in the future. Certain Colorado counties have compressor noise regulations that include installing mufflers, additional sound insulation or berms to prevent noise pollution, and location restrictions (Morrison 2002). Residents in other counties have begun circulating petitions requesting action to require controls to reduce noise from compressor stations. Noise regulations may be adapted not only to reduce impacts on humans, but also on wildlife. The ROD for the Hanna Draw Coal Bed Methane Exploration Project in Wyoming states that the BLM may require noise levels to be no greater than 10 dB(A) above background levels at greater sage-grouse leks. It also states that the BLM may require compressor engines to be enclosed in a building and located at least 600 ft from sensitive receptors or sensitive resource areas (BLM 2002).

Noise abatement regulations could increase costs to the point where prices are affected. It is also possible that schedules could be delayed if noise-sensitive habitat areas must be located as part of the permitting process. Noise regulations could potentially affect all new CBM wells and pipeline operations.

3.3.9 Nonroad Diesel Rule

Summary: Section 213(a) of the CAA requires that the EPA regulate emissions of nonroad engines and equipment. The EPA has issued some nonroad diesel emission standards and plans to issue more, with a new proposal in the spring of 2003 and final rules by the summer of 2004. Nonroad diesel engines are used in natural gas E&P and in gas processing operations. Increased costs of these engines because of stricter emissions controls, when added to other environmental costs, could affect some operations and limit gas development.

Source of Constraint: Regulatory

Impact: Cost

Phase: E&P

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CAA (Section 213 (a), 42 USC 7547(a)); Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel, Final Rule (69 FR 38957), June 29, 2004

Lead player: EPA

Issue discussion: Until relatively recently, emissions from nonroad diesel engines have not been regulated. On October 23, 1998, the EPA issued final emission standards for nonroad compression ignition (diesel) engines for engines over 50 hp (EPA 1998). In the preamble to that rule, the EPA stated that pursuant to the CAA, the agency was undertaking a technology review to determine whether more stringent standards are now feasible and to promulgate such standards if the findings are positive. The technology review will reassess the standards for NO_x and hydrocarbons and will set the next phase of PM standards for engines rated at 50 to 750 hp. In June 2002, the EPA announced that it would work closely with the Office of Management and Budget (OMB) and other experts and interested stakeholders in developing a nonroad diesel rule that could go beyond the requirements finalized in 1998 (Najor 2002).

In June 2002, the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials issued a report that found that nonroad engines represent one-third of the motor vehicle industry's fine particulate inventory. The report, *The Dangers of the Dirtiest Diesels: The Health and Welfare Impacts of Nonroad Heavy-Duty*

Diesel Engines and Fuels (Walsh 2002), also found that the disparity between onroad and nonroad PM emissions will grow as vehicles and engines comply with the EPA's recently adopted onroad heavy-duty diesel engines and fuel rules, which are to be phased in during 2006 to 2007. On September 3, 2002, the EPA released a report, *Health Assessment Document of Diesel Engine Exhaust* (EPA 2002b), which is the first comprehensive review of the potential health effects from ambient exposure to diesel engine exhaust. The study, which took 10 years to complete, is intended to be used as a tool in evaluating regulatory needs under the CAA. The report concluded that diesel exhaust contains large quantities of NO_x, SO_2, HAPs, and PM, and that the health impacts from these air pollutants include increased potential for lung cancer and exacerbated allergies and asthma symptoms.

On May 23, 2003, the EPA proposed to control emissions of air pollutants for nonroad diesel engines (EPA 2003a). The rule would apply to new diesel engines used in most types of construction and industrial equipment, including oil and gas field machinery and equipment. It would require such engines to be equipped with state-of-the-art emission control systems that would reduce PM emissions by 90% and NO_x emissions by 95%. Implementation would be phased in between 2008 and 2014. The rule is aimed at the manufacturers of nonroad diesel engines, but since it may result in increased costs for new engines and diesel engines are widely used in onshore and offshore E&P operations, it could lead to increased costs for the industry. Those costs, in combination with other increased costs and demands, could result in supply availability problems, especially for small producers. The EPA issued a final rule in 2004 (EPA 2004e).

The nonroad diesel engine rule could affect E&P for offshore and onshore wells using new diesel-powered engines; the number of TCF affected (by increased costs) was not estimated.

3.3.10 Ocean Discharge Criteria

Summary: Proposed amendments to existing rules implementing the ocean protection provisions of Section 403 of the CWA would strengthen existing ocean discharge criteria. These criteria must be considered in the issuance of individual or general NPDES permits for offshore facilities. The proposal would designate "Healthy Ocean Waters" (waters beyond 3 mi offshore), and these waters would be protected by both a narrative statement of water quality and pollutant-specific numeric criteria and would be subject to an antidegradation policy. The rule would also establish SOSs, where new and significantly expanded discharges would be prohibited.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: Prepublication Proposed Rule (EPA 2001d); Executive Order 13158; CWA (Section 403, 33 USC 1343), Ocean Discharge Criteria

Lead player: EPA

Issue discussion: Under the CWA, point-source discharges to waters of the United States must have a NPDES permit. The NPDES permit requires compliance with technology- and water-quality-based treatment standards. In addition, discharges to the territorial seas and beyond must comply with Section 403 of the CWA and meet additional requirements intended to ensure that sensitive ecological communities are protected.

In 1980, the EPA developed Ocean Discharge Guidelines (40 CFR Part 125, Subpart M [45 FR 65942], October 3, 1980), which specify the factors (ecological, social, and economic) for permit writers to consider when evaluating the impact of a discharge on the marine environment.

On May 26, 2000, then President Clinton issued Executive Order 13158, "Marine Protected Areas," which, among other things, required the EPA to "expeditiously propose new science-based regulations, as necessary, to ensure appropriate levels of protection for the marine environment."

On January 19, 2001, then EPA Administrator Carol Browner signed the prepublication version of the proposed rule to amend existing regulations implementing Section 403 of the CWA, the ocean discharge criteria (EPA 2001d). On January 20, the EPA withdrew the proposal from the *Federal Register* to give the new EPA Administrator an opportunity to review it. The proposal would establish baseline water quality standards for ocean waters beyond 3 mi offshore, designated as "Healthy Ocean Waters." Healthy ocean waters would be protected by both a narrative statement of water quality and pollutant-specific numeric criteria. Discharge permits for these waters issued or reissued after the effective date would need to comply with new water quality standards and an antidegradation policy. The rule would strengthen permit requirements to discharge to any ocean waters by requiring permit requesters to consider alternative disposal sites, and would require that no discharge permit be issued unless sufficient information exists to evaluate the impacts of the proposed discharge. The rule would also establish a new class of waters, SOSs, considered to be of outstanding value and within which new discharges and significant expansions (20% or greater increase in loadings) of existing discharges would generally be prohibited. The rule identifies four such areas and establishes a process for identifying and establishing additional SOSs. The rule would apply to any facility or activity where there is a discharge of a pollutant from a point source into ocean waters — that is, facilities that have or need an NPDES permit. It would apply both to individual permits and to general permits controlling discharges from oil and gas exploration, development, and production operations. The EPA estimates that 2,761 entities are covered under oil and gas general permits (EPA 2001d).

Ocean discharge requirements could have significant cost and schedule impacts on natural gas exploration and development projects. It is possible that some permits for offshore facilities could be denied. Amounts of potentially affected natural gas cannot be estimated until the EPA discusses or proposes actual requirements. The EPA has been "tweaking" the proposal and plans to send a revised proposal to OMB for review by the end of February 2002. OMB will have a 90-day review period. The May 2003 Regulatory Agenda indicated that the EPA had withdrawn the rule and plans no further action (EPA 2003b).

3.3.11 Particulate Matter Regulations

Summary: In 1997, the EPA promulgated NAAQS for fine particulate matter ($PM_{2.5}$). The EPA is considering updating that standard, and some states are implementing stricter regulations. Many diesel-powered engines used at CBM production sites emit PM, and if those emissions were further restricted, more costly new, alternative, or refitted power sources might be required. Depending on the type of regulation, limits on particulate emissions from diesel and gasoline engines could slow the development of CBM.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): 7.2

Estimate type: Technically recoverable

Estimate date: 01/1995 **Estimate reference:** Whitney (2001)

Estimate comments: The estimate is for technically recoverable CBM in the Rocky Mountain region. Any regulations that require the use of equipment and technologies to prevent exceeding NAAQS particulate standards could limit production in this area.

Statutory/regulatory citation: CAA; NAAQS; state regulations

Lead players: EPA, states

Issue discussion: PM consists of solid particles and liquid droplets found in the air. Particulates less than 2.5 μm in diameter ($PM_{2.5}$) are referred to as "fine" particles, and sources include fuel combustion from motor vehicles, power generation, and industrial facilities. They can also be formed when combustion gases are chemically transformed into particles. Particulates larger than 2.5 μm in diameter are referred to as coarse particulates. Sources of coarse particulates include

wind-blown dust, vehicles traveling on unpaved roads, materials handling, and crushing and grinding operations.

Nonattainment areas are geographic areas that do not meet the NAAQS for one or more of the criteria air pollutants, including particulates. As CBM and other natural gas resources are developed, the potential for increased particulate emissions grows, and with it the potential to push areas into nonattainment status, which could result in limiting emissions sources. Increased natural gas development and particularly CBM development, in areas not served by existing infrastructures, often leads to greater use of diesel-powered generators, new road construction, and new pipeline construction, all of which increase the generation of particulates and can affect visibility. Wyoming and Montana may begin regulating sources to prevent areas from becoming nonattainment, and such regulations could limit natural gas resource development in the Rocky Mountain region (Easton and McVehil 2001).

In 1997, the EPA added two new $PM_{2.5}$ standards: 15 $\mu g/m^3$ for the annual standard and 65 $\mu g/m^3$ for the 24-hour standard, which is designed to allow for unusual occasional daily spikes. The EPA is collecting data on $PM_{2.5}$ concentrations and is expected to designate areas that do not meet the new $PM_{2.5}$ standards as nonattainment. It may also propose new standards that may be more stringent than the existing standards, because new research indicates that there is no threshold below which serious health effects are not seen; measurable health impacts have occurred at concentrations as low as 2 $\mu g/m^3$. New standards are not expected before the spring of 2004, as the criteria document for PM is being revised and must undergo additional review before standards can be set.

Even without the EPA standard, states can issue standards that may affect natural gas production. For example, the Wyoming Department of Environmental Quality is investigating diesel-powered generators used during CBM production. The state recently became aware that about 300 portable diesel generators are used in drilling, and the emissions from so many generators could exceed state or federal standards. It is likely, that with increased CBM development, the number of such generators, along with the particulate emissions they release, is likely to increase. In June 2002, the California Air Resources Board approved a new annual average limit of 12 $\mu g/m^3$ for $PM_{2.5}$ (3 $\mu g/m^3$ lower than the federal standard) and new standards for PM.

3.3.12 Pipeline Gathering Line Definition

Summary: The Pipeline Safety Act of 1992 requires the DOT to define the term "gathering line" and to consider the merits of revising pipeline safety regulations for such lines. The issue is complex, and the current definition, adopted in 1970, lacks clarity. The definition could require more lines and facilities to become subject to the federal gas pipeline regulations, which could be costly for small operators and could affect upstream gas flows.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production, transportation

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: Pipeline Safety Act of 1992 (1996 Amendments) (49 USC 601)

Lead player: OPS

Issue discussion: Since 1974, the DOT's OPS has been working to clarify the definition of a gas "gathering line" to distinguish it from a transmission line and a distribution line, as the various lines are subject to different jurisdictions and regulatory requirements, with gathering lines being subject to less stringent requirements. In 1970, a definition was adopted as part of the Natural Gas Pipeline Safety Act of 1968 In 1974 and 1991, the OPS proposed rules to revise and clarify this definition, since it was interpreted inconsistently. In the 1996 amendments to the Pipeline Safety Act of 1992, Congress directed the DOT to define the term gathering line. In March 1999, the DOT issued a request for public input on whether and how to modify the definition of a gas gathering line and the regulatory status of such lines. The DOT was to have issued a new proposal for the definition by December 2002, but as of this writing, the original 1970 definition remains in effect.

The number and nature of lines included in the definition will affect the number of facilities that will be subject to federal pipeline safety standards. These standards are being developed for interstate transmission lines and will require risk analysis, periodic inspections and reinspections, and corrective action where necessary. These regulations may be very costly for small lines in remote areas where there are few risks of human injury from pipeline incidents. Expanding the requirements to rural gathering lines will likely impact marginal wells, because the increased compliance costs will be passed on to marginal well operators through pipeline gathering costs. These increased costs could lead to the plugging and abandonment of a significant number of these wells. Meeting nationwide construction and operating specifications may also be difficult in some cases where gathering lines are used. For example, in comments to the RSPA on the 1991 proposed gathering line definition, one association explained that its gathering lines were constructed to a safe, but different, standard from that required for transmission lines. It referred to the fact that at the request of the FS, many of the gathering lines in Ohio are plastic and were laid above ground to minimize environmental impact on the forest areas.

One definition of a gathering line suggested to the OPS was developed by the National Association of Pipeline Safety Representatives (NAPSR). The API has estimated that the NAPSR definition would reclassify 197,000 mi of existing rural gathering lines as transmission pipelines and could cost the industry $630 million in implementation costs and $105 million annually for compliance. An alternative definition, suggested by a coalition of several pipeline organizations, including the API, the Gas Processors Association, the IPAA, and the Appalachian Producer Organizations, is based on the function performed by the pipeline

(Simpson 1999). The OPS is currently evaluating data and information for development of the gathering line definition.

The regulation could affect a significant portion of gas gathering lines and result in increased costs or delays for gas in these lines. The amount of gas that could be affected was not estimated.

3.3.13 Regional Haze Rule

Summary: In July 1999, the EPA promulgated final regional haze regulations for protecting visibility in national parks and Wilderness Areas. These rules require states to establish goals for improving visibility in these areas and to develop long-term strategies for reducing emissions of air pollutants that cause visibility impairment (e.g., SO_2, NO_x, and particulates). The goal is to reduce visibility impairment in these areas to natural levels by 2065.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CAA (Sections 169A and 169B 42 USC 7491 and 7492); 64 FR 35713, July 1, 1999

Lead players: States, EPA

Issue discussion: The CAA enacted goals for visibility in many areas, and the 1977 CAA Amendments established the following national goal for visibility: to prevent any future and remedy any existing impairment of visibility that results from man-made pollution in mandatory Class I federal areas. (Class I areas include 156 specific national parks, Wilderness Areas, national memorial parks, and international parks.) The amendments also required that the EPA issue regulations to assure "reasonable progress" toward meeting the national goal. According to the EPA's July 1999 regional haze rule, states must develop new State Implementation Plans (SIPs) to reduce emissions contributing to regional haze, to improve visibility during significant haze pollution episodes, and to protect against degradation even on relatively clean days. SIPs are to require either the installation and operation of best available retrofit technology (BART) for certain sources, or alternative emission reduction programs. States must submit SIPs by 2008, although exact deadlines vary (depending on attainment status for particulates and whether the state is participating in a multistate regional planning effort). Subsequent SIP revisions are required in 2018 and every 10 years thereafter. With each revision, the state is to set new progress goals and strategies (EPA 1999d).

The CAA of 1977 also required the EPA to establish a Visibility Transport Commission for areas affecting the visibility of the Grand Canyon National Park. In 1991, the EPA established the Grand Canyon Visibility Transport Commission (GCVTC), and in 1996, the GCVTC issued a report containing recommendations for protecting visibility at 16 Class I areas on the Colorado Plateau. In its 1999 rule, the EPA allowed the nine transport region states to adopt the national rules promulgated by the EPA or those based on the work of the GCVTC, as well as additional requirements outlined in the rule. These requirements include quantitative emission reduction milestones for SO_2 (EPA 1999a). However, concerns exist regarding the models being used to set these milestones. Similar issues may exist for other regional and state planning bodies. As a result, there are significant concerns about how the states will actually implement the EPA rules, and natural gas operations are likely to be among the sources to which these new requirements will apply.

In general, the national regulations focus on BART, or retrofit technologies, while the GCVTC approach focuses on market trading. States must decide by 2003 which approach they will take. It is unclear at this point which approach would have a greater impact, but both are expected to significantly affect natural gas operations.

The principal man-made sources likely to be subject to emissions reductions are large manufacturing facilities, electric utilities, and mobile sources. However, for western states, where such sources are relatively few, other sources such as natural gas and CBM operations are likely to be targeted. Haze-forming pollutants can travel large distances, and states with no Class I areas are required to consider the effects of their emissions on Class I areas in other states. However, because the prevailing wind direction is from the West, it is not likely that emission reductions in the East would affect visibility impairment in the West, where natural gas production is projected to increase, further increasing the likelihood that emissions from natural gas operations will be targeted for emissions reductions (IOGCC 2001b).

Also, although the primary target is SO_2, if the milestones cannot be reached by reducing SO_2 emissions alone, states must look to other haze-forming pollutants such as NO_x and PM. NO_x in particular is emitted in large quantities from compressor stations and gas processing plants.

In February 2002, industry plaintiffs sued the EPA in the U.S. Court of Appeals for the District of Columbia, arguing that the EPA overreached its authority in issuing the haze regulations. On May 24, 2002, the Court found that the rule's BART provisions were inconsistent with the CAA. It said that the CAA requires states to consider the degree to which visibility will be improved when deciding whether a particular source should install BART controls, but that the rule does not allow states to consider visibility in forcing BART controls. As a result, the court is requiring that the EPA redraft the BART provisions, which used a "group approach" that would have required all sources in a geographical area to have controls rather than allowing states to determine BART requirements on an individual source basis. Nonetheless, the court affirmed the overall regional haze program. Because BART requirements pertain mostly to larger sources built before 1977, the remand is not likely to have a significant impact on natural gas operations. Indeed, if these sources are not required to implement BART,

greater emissions reductions may have to come from other sources, such as natural gas (Doman 2002).

In February 2002, the EPA released a congressionally mandated report on visibility improvements in Class I areas (required every 5 years) that found little progress in visibility improvement. Environmental groups are using this information to urge strong aggressive action to control regional haze (EPA 2001c).

On May 22, 2003, the EPA issued a final rule implementing the WRAP, which applies to nine western states and is intended to reduce SO_2 emissions by more than 40% from 1990 levels. The WRAP plan, or WRAP annex, uses a "nonregulatory" approach, in which participating states would implement measures to reduce SO_2 in order to meet annual milestones (EPA 2003c).

This issue could have significant cost impacts on natural gas operations in the West, possibly limiting production in some areas. Depending on how the states write their implementation plans, potentially large amounts of gas in the West could be at risk.

3.3.14 Spill Prevention Control and Countermeasures

Summary: On July 17, 2002, the EPA issued a final rule that amended the spill prevention, control, and countermeasures requirements, originally promulgated in 1974 under the EPA's Oil Pollution Prevention regulations at 40 CFR Part 112. While the expanded scope and relatively short compliance deadlines of the new rule will primarily affect oil production and operations, natural gas drilling and production operations will also be affected, potentially causing some small operators to leave the business and limiting the ability to rework some existing properties to extract additional gas resources.

Source of Constraint: Regulatory

Impact: Cost

Phase: Production

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CWA (Section 311, 33 USC 1321); 40 CFR 112; 67 FR 47042, July 17, 2002; 69 FR 48794, August 11, 2004

Lead player: EPA

Issue discussion: The July 17, 2002, rule, which applies to onshore and offshore gas E&P facilities, required amended Spill Prevention Control and Countermeasures (SPCC) plans to be

in place by February 17, 2003, and new plans to be in place by August 17, 2003 (EPA 2002d). An SPCC plan is required if a facility could cause a release of oil that would reach navigable waters. According to the IPAA, the terms "navigable waters" and "facility" are confusing to many E&P operators (IPAA 2003).

Some of the reported uncertainty stems from a series of judicial decisions relative to the definitional reach of the term "navigable waters." In 2001, the U.S. Supreme Court, in *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers,* 531 U.S. 159 (2001), overturned the COE's assertion of federal jurisdiction over certain isolated wetlands based on the presence of migratory birds. The Court held that the provision of the CWA that requires those who discharge fill material into navigable waters to obtain a permit from the COE does not extend to isolated, abandoned sand and gravel pits with seasonal ponds that provide migratory bird habitats. Chief Justice Rehnquist explained that "[t]he term 'navigable' has...the import of showing us what Congress had in mind as its authority for enacting the CWA: its traditional jurisdiction over waters that were or had been navigable in fact or which could reasonably be so made." Subsequent decisions at the circuit court level suggest conflicting approaches. The Court of Appeals for the Fourth Circuit and the Court of Appeals for the Sixth Circuit affirmed CWA jurisdiction over drainage ditches, intermittent tributaries, and isolated wetlands that have any type of surface water connection to regulated "navigable waters," no matter how attenuated — *United States v. Deaton*, 332 F.3d 698 (4th Cir. 2003); *United States v. Rapanos*, 339, F.3d 447 (6th Cir. 2003); *Newdunn Associates v. Army Corps of Engineers*, 344 F.3d 407 (4th Cir. 2003). The Court of Appeals for the Fifth Circuit, on the other hand, in cases involving the definition of navigable waters under the Oil Pollution Act, ruled that the SWANCC decision reigned in the historic expansion of the COE's jurisdiction — *Rice v. Harken Exploration Co.*, 250 F.3d 264 (5th Cir. 2001); *In re Needham*, 354 F.3d 340 (5th Cir. 2003). Because the U.S. Supreme Court has declined petitions to review the decisions by the Fourth and Sixth Circuits, some practitioners suggest that the COE will likely continue asserting jurisdiction over wetlands and other nonnavigable water bodies that are geographically remote from navigable surface waters but that have some hydrologic connection to those waters — through man-made ditches, culverts, and various types of seasonal or intermittent drainages.

On January 15, 2003, the EPA and the COE issued a joint memorandum to provide clarifying guidance regarding the SWANCC decision and to address several of the legal issues that had surfaced since SWANCC (COE and EPA 2003). However, consistent application of that guidance has been questioned (Fuller 2003).

Also on January 15, the EPA and the COE issued an advance notice of proposed rulemaking on the regulatory definition of "Waters of the United States" (COE and EPA 2003). The intent of these agencies was to develop proposed regulations that would "further the public interest by clarifying what waters are subject to CWA jurisdiction and affording full protection to these waters through an appropriate focus of federal and state resources consistent with the CWA." After receiving more than 125,000 comments on the advance notice, the EPA and the COE announced on December 16, 2003, that they would not pursue the rulemaking.

The uncertainty over the regulatory definition of navigable waters, questions about the guidance, and the conflicting court decisions can affect SPCC plans and any other regulations

that are triggered by actions that affect navigable waters. These include NWPs under the dredge and fill program, storm water construction permits under the NPDES program, and TMDL requirements under water quality standards and implementation plans.

Interpretation of the term "facility" is also a concern with the SPCC rule. According to the IPAA, the EPA estimates that roughly 144,000 oil and gas upstream operations would require SPCC plans. Most producers, however, believe that the SPCC definition of a facility would capture most of the estimated 870,000 producing oil and gas wells in the United States. The IPAA estimates that about 635,000 of these producing wells are stripper wells, which are highly vulnerable to the impact of excessive regulatory costs. It suggests that many of these wells could be shut down if the new SPCC plan requirements are too costly.

Other issues of potential concern to gas E&P operations include the following:

Consideration of costs. Although past interpretations of the SPCC plan requirement allowed operators to consider costs in determining the practicability of meeting the new requirements, the new regulation states that it is not appropriate to allow an owner or operator to consider costs in determining whether the secondary containment requirements can be satisfied. At $25.00 per barrel, the average marginal well, which produces 15 barrels per day or less, grosses about $20,000 annually and incurs operating costs of about $17,400. With estimated SPCC plan costs ranging from $5,000 to $20,000, the economic viability of marginal wells becomes of concern (IPAA 2003).

Produced water. According to the new rule, if produced water exhibits an oil sheen, it will be treated as oil and, therefore, included in the threshold to determine if an SPCC plan is required. An SPCC plan is required if more than 1,320 gallons of oil could reasonably be expected to be discharged from the facility to navigable waters. Independent gas operators suggest that even if compliance costs were as low as $3,000 per plan, this requirement could put some small operators out of business (Holliday 2003).

Newly purchased properties. The rule contains no provision that would allow an operator to buy an existing property and prepare a plan if one is not already in place. An existing property cannot be sold without an SPCC plan after a certain date. As a result, the ability to sell (and buy) oil- and gas-producing properties without existing SPCC plans will diminish, thereby limiting the amount of land acquired by many small independent operators for the purposes of extracting additional gas. The amount of gas for which access is denied by this provision is not known. However, it is estimated that thousands of properties are traded among small independent producers who have developed techniques to increase production at existing properties. Although the new rule may not significantly impact the number of new wells drilled (because the incremental cost of preparing a plan will not be great relative to the overall exploration and drilling costs), in cases where additional wells may be drilled to extract marginal gas from existing fields, the additional cost of preparing an SPCC plan may be enough to preclude the drilling of such wells.

On August 11, 2004, the EPA published a notice in the *Federal Register* extending the compliance date for amended SPCC plans to be in place to February 17, 2006, and stating that new plans be in place by August 18, 2006 (EPA 2004f).

3.3.15 Standards for Decommissioning or Closing Wells

Summary: As gas production from a producing well diminishes or becomes uneconomical, the well must be decommissioned or closed according to the regulations set forth by the appropriate state environmental regulatory agency or oil and gas commission. Typically, these regulations specify contaminant-specific concentrations that cannot be exceeded after closure is complete. These concentrations can vary from state to state, and they are usually set on the basis of technology, background concentration, or other nonrisk-based measures. Thus, they can be overly protective and costly to implement, without providing significant gains in environmental or human-health protection.

Source of Constraint: Regulatory

Impact: Cost

Phase: E&P

Category: Operations

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: State regulations

Lead player: States

Issue discussion: An estimated 400,000 to 600,000 E&P sites exist in the United States, many of which have been operating for 50 to 100 years. During their operations, hydrocarbons, inorganic salts, and drilling fluid constituents may have entered the surface and subsurface soils and groundwater at or near the sites. States generally set contaminant concentration limits for the different media. However, the lack of data on the risks of these contaminants often means that cleanup levels are set on the basis of available technologies, background concentrations, or other measures. As a result, they can often be set lower (more restrictive and costly to meet) than necessary to protect human health and the environment. For example, some states, such as Colorado, Louisiana, and Michigan, set standards for total petroleum hydrocarbons (TPH) in soil at 10,000 mg/kg, while other states, such as Wyoming, have levels as low as 250 mg/kg. Innovative methodologies for determining the risks associated with TPH indicate that TPH action levels of 1,000 mg/kg or less are overly conservative and should be reevaluated (Nakles et al. 1998). Similar studies may indicate similar results for other contaminants. Such findings suggest that the overly conservative, non-risk-based levels should be revised to consider land use and other risk factors to prevent unnecessarily costly remediation efforts that provide no significant environmental benefit. Risk-based concentrations will consider such factors as size

and location of operations (upstream operations can be small scale and remote, thereby posing lower risks than downstream operations that are closer to human population centers) and characteristics of the condensates (lighter hydrocarbons are present upstream, with the heavier hydrocarbons more likely to be found downstream). By using state-of-the-art approaches for risk assessment of contaminants at E&P closure sites, decommissioning standards can be developed that will provide for well closure in a cost-effective manner that results in acceptable risks to human health and the environment. Non-science-based closure requirements alone will likely have little impact on natural gas exploration, production, or transportation. However, for operators at the margin, additional costs because of such requirements, especially if combined with other requirements, could cause certain operators to cease production, thereby reducing the amount of gas produced, or ultimately increasing the price of that gas.

Decommissioning standards indirectly affect industry — if such requirements are too strict, some smaller operations may drop out.

3.3.16 Storm Water Construction Permits

Summary: The EPA has proposed extending the deadline for obtaining storm water permits under the CWA by 2 years, from March 10, 2003, to March 10, 2005, to determine the appropriate NPDES requirements, if any, for constructing oil and gas E&P facilities of 1 to 5 acres. If all oil and gas E&P facilities of 1 to 5 acres were required to obtain such permits, as originally proposed in 1999, the costs and delays to oil and gas production could reduce the number of wells drilled and the amount of gas produced.

Source of Constraint: Regulatory

Impact: Cost

Phase: E&P

Category: Permitting

Estimated affected natural gas resources (TCF): 5.75 per year

Estimate type: Economically recoverable

Estimate date: 09/2002 **Estimate reference:** Texas Alliance of Energy Producers (2003)

Estimate comments: The EPA states that there are 30,000 oil and gas well starts per year, but does not distinguish between gas and oil. At 15,773,600 MCF per day, the annual delayed production would be 5.75×10^9 MCF, or 5.75 TCF.

Statutory/regulatory citation: CWA Section 402 (p) (33 USC 1342(p)); 40 CFR 122.26

Lead player: EPA

Issue discussion: Section 402(p) of the CWA directed the EPA to develop a phased approach for regulating storm water discharges under the NPDES program. In November 1990, the EPA published a final regulation for Phase I of this program, which established permit application requirements for "storm water discharges associated with industrial activity." Under 40 CFR 122.26(b)(14)(x), construction activities that disturb 5 acres of land and greater are considered "industrial activity." On December 8, 1999, the EPA published final regulations (EPA 1999b) for Phase II of the storm water program, which covers sites disturbing between 1 acre and 5 acres (40 CFR 122.26(b)(15)(i)). The rule requires that discharges from these sources have permits by March 10, 2003 (40 CFR 122.26(e)(8)).

NPDES permitting authorities are to use existing Phase I permits to guide their development of Phase II permits. As such, expected requirements from applicants would include a Notice of Intent, a storm water pollution prevention plan with appropriate best management practices to minimize discharge of pollutants from the site, and a Notice of Termination. Because gas (and oil) E&P facilities are generally less than 5 acres, they have not been required to obtain storm water construction permits in the past; the Phase II rules would require such facilities to obtain the permits. NPDES permitting authorities can waive the requirements for operators of small construction activities if the site has (EPA-defined) low predicted rainfall potential or if the EPA determines that pollution load allocations are not needed to protect water quality. The EPA acknowledges, however, that many sites would be unable to take advantage of these waivers.

The Texas Independent Producers and Royalty Owners Association (TIPRO) estimates that an average NPDES permit would require at least 6 months to obtain and would include an ESA determination, an NHPA determination, and a site-specific storm water pollution prevention plan (TIPRO 2002). The Texas Alliance of Energy Producers states that most independent producers measure drilling plans in days rather than months, and that many smaller companies will find the new procedures so frustrating and time-consuming that they will not drill many of the wells they had planned (Texas Alliance of Energy Producers 2003). The Alliance also estimates that in the first year of implementation, U.S. natural gas production would decline by 15,773,600 MCF per day, and the number of gas (and oil) wells drilled would decrease to 25,034 from 38,527 in 2001, or by more than a third (Mills 2002). It further states that virtually all drilling sites are larger than 1 acre but smaller than 5 acres, and, therefore, all future drilling locations would be subject to the storm water regulations. The Alliance also estimated that the rules would result in a 70% reduction in drilling for independents and 40% for major companies. The dramatic decline for independents is because "Independents have had their staffs cut to the bone," do not have specialists that know the "ins and outs" of acquiring a federal permit, and will have to hire consultants to prepare the permit applications, which will increase costs and significantly delay the time before drilling can occur (Texas Alliance of Energy Producers 2003).

In addition to the immediate issues associated with obtaining storm water permits, there is a debate over whether construction activities at oil and gas E&P sites are covered by the exemption in CWA (33 *United States Code Annotated* [USCA] Section 1342(l)(2)), which states that no permit shall be required "for discharges of storm water runoff from mining operations or oil and gas exploration, production, processing, or treatment operations or transmission facilities, composed entirely of flows which are from conveyances . . . used for collecting and conveying precipitation runoff. . . . " Industry maintains that there is no definition or language in the act that

suggests construction activities should be considered separate from the terms exploration and/or production or in the regulations to support the EPA's position that such terms should be narrowly construed (Briggs 2002).

On March 10, 2003, the EPA extended the storm water permit deadline for oil and gas construction activity that disturbs 1 to 5 acres from March 10, 2003, to March 10, 2005. The EPA granted this extension at least in part because of information submitted by DOE and industry that said that each year about 30,000 oil and gas sites could be subject to the regulations (Bruninga 2003). Acknowledging the differences between the nature of construction at oil and gas sites and at residential and commercial property development sites, the EPA plans to determine whether these differences are significant enough to warrant different regulations for oil and gas sites. During the extension period, the EPA plans to analyze and better evaluate the impact of the permit requirements on the oil and gas industry. It will identify appropriate best management practices for preventing contamination of storm water runoff resulting from construction associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities, and assess the applicability of the exemption in the CWA to construction associated with these activities (EPA 2003d). The results of the analysis will help determine the extent to which oil and gas facilities will have to comply with the potentially costly and time-consuming requirements for obtaining storm water permits.

3.3.17 TMDL Regulations Targeting Oil and Gas Wells

Summary: Gas (and oil) wells may be targeted for TMDL limits because large point sources are already regulated, and technical and political factors argue against imposing limits on large nonpoint sources such as agricultural lands. Also, proposed changes to the TMDL rule could limit the use of nationwide construction permits under Section 404 of the CWA.

Source of Constraint: Regulatory

Impact: Cost

Phase: E&P

Category: Permitting

Estimated affected natural gas resources (TCF): Not estimated.

Statutory/regulatory citation: CWA Section 303(d) (33 USC 1313(d)); 40 CFR Part 9; 65 FR 43587 (July 13, 2000)

Lead player: EPA

Issue discussion: Although the EPA's point-source control program for water pollution has been successful, nonpoint source control has been elusive. The EPA's TMDL program is an effort to address nonpoint-source pollution of water bodies. Section 303(d) of the CWA requires states,

territories, and authorized tribes to identify (list) waters that are not meeting water quality standards and to establish pollutant budgets (TMDLs) to restore those waters. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources to a given stream segment. The calculation must include a margin of safety to ensure that the water body can be used for its designated purposes. The calculation must also account for seasonal variation in water quality. If a state, territory, or authorized tribal submission is inadequate, the EPA must identify the waters and establish the TMDL. Once a TMDL has been established, the state, territory, or tribe must allocate the TMDL to individual sources.

The gas (and oil) industry may be vulnerable to TMDL allocations. The reason is that for a typical stream, large point sources are likely to be sufficiently controlled, but agricultural and forest nonpoint source control will likely be deferred until technically and politically acceptable control strategies are developed. Thus, small, nonpoint sources, for example, gas (and oil) wells, could become targets, because the construction work they require can generate runoff, even when managed properly (Stewart 2001).

Potential changes to the existing rule could also impact natural gas operations. In August 1999, the EPA proposed changes to the TMDL, and on July 13, 2000, the EPA promulgated a final TMDL rule after considering more than 34,000 comments (EPA 2000). Several parties have since challenged the rule in court. On July 16, 2001, the EPA asked the District of Columbia Circuit Court to hold action for 18 months to allow the agency to review and revise the rule (Woods 2001). On October 12, 2001, the District Court agreed. On October 18, the EPA announced that the effective date for the revisions to the TMDL program published on July 13, 2000, would be April 30, 2003 (EPA 2001e). The effective date had been October 31, 2001. The delay will allow the EPA to incorporate recommendations made by the National Research Council into the TMDLs. In addition, the rule revises the date on which the next list of impaired waters is to be submitted from April 1, 2002, to October 1, 2002. The states and the EPA continue to develop TMDLs under the original rules issued in 1992. As of November 2002, more than 22,000 impaired waters had been reported, and 6,644 TMDLs had been approved nationwide.

According to the American Gas Association (AGA 2000), changes to the existing (1992) TMDL rules proposed in 2000 would have, among other things, expanded the scope of impaired waters by including waters impaired for "unknown causes" (EPA 1999c). Nearly 2000 state CWA 303(d) lists include impaired waters for which the parameter of concern is "unknown." Many listings with unknown causes may be based on limited observations, faulty assumptions, or outdated information. Expanding the lists could result in increased costs and schedule delays for construction permits for gas utility and pipeline crossings required under Section 404 of the CWA. This is because utilities typically use NWPs to obtain streamlined approvals for gas pipeline installation and maintenance projects. The COE proposed changes to the rules for NWPs (COE 1999), which state that under proposed General Condition 26, a project affecting a listed "impaired water" will not qualify for an NWP without an explanation of how the project (excluding mitigation) would not further impair the water body. This condition would apply to NWP 12, which provides streamlined permitting for utility line projects. The COE acknowledges that given the number of waters already listed as impaired, the new condition will "substantially reduce" the availability of NWP 12. Expanding the list to include waters impaired for unknown

causes will further reduce the availability of NWP 12, because it would be impossible to explain how a project may or may not contribute to impairment due to unknown causes.

One industry source reported that although his company had met all the requirements for an NWP (which is less costly and time-consuming than an individual permit), the COE denied the NWP, stating that an individual permit was needed to address "the new antidegradation water quality requirements" (SWS Forum 2001).

4 CONCLUSIONS

Numerous environmental policy and regulatory constraints currently affect natural gas E&P and transportation. Additional constraints may accrue as more environmental regulations are written. The constraints take several forms, including individual laws and regulations that directly affect natural gas access or production. They also include presidential policies and actions taken by implementing agencies. As environmental issues surface, additional regulations are written, and many may potentially constrain domestic natural gas production. The amounts of gas affected by denying or limiting access, delaying permits or production, and increasing costs can be significant. Where constraints overlap, small operators may cease operations, leading to possible further delays and reductions in marginal gas production.

4.1 LEGISLATIVE AND REGULATORY CONSTRAINTS

Specific laws, such as the CZMA, whose consistency provisions can allow states to effectively prohibit development already approved by federal entities, and the ESA, whose court-interpreted definitions extend protected areas, can limit development on both private and federal lands. The Antiquities Act allows the President to designate national monuments on which no exploration or production may occur, even if the lands they overlie contain known natural gas resources. EFH regulations, whose requirements can duplicate those of other federal regulations, can delay leasing or permitting decisions, and the Roadless Rule, which prohibits road construction in roughly one-third (58.5 million acres) of the NFS, denies access to an estimated 11 TCF in the Rocky Mountain region.

4.2 AGENCY ACTIONS

Once Congress passes a law and the responsible agencies have written the implementing regulations, local enforcement agencies can, through their own policies and procedures, delay or prohibit gas production. Federal land management agencies, such as the BLM and the FS, control development on their respective lands through land use planning documents. If these documents do not specifically provide for oil and gas drilling, the agencies can prohibit such drilling until the plans are updated, adding months or years to the time before extraction from a leased site can begin. Similarly, when granting drilling permits, the land management agencies can impose stipulations, which, when added together at a given site, can narrow or effectively close the window of opportunity to drill. Compounding these problems are requirements to gain approval from other federal, state, and local agencies before a permit can be issued. As the number of permit applications grows, the ability to coordinate among the various agencies in a timely fashion diminishes, further increasing delays. This concern is particularly important for interstate natural gas pipelines, which are critical for transporting gas to users. FERC grants certifications to build new pipelines, but only after it has received approval from other federal, state, and local agencies that have environmental jurisdiction.

4.3 LEGAL CONSTRAINTS

The legal system can compound environmental regulatory constraints. When issues cannot be resolved among participating agencies, or when special-interest groups challenge a gas-related activity, legal action can delay projects for months or years. For example, the tendency for organizations to sue over EISs has led agencies to prepare "appeal-proof documentation," which further delays the approval process.

4.4 CONGRESSIONAL AND PRESIDENTIAL ACTIONS

Typically, laws are developed after congressional debate, and regulations require a prescribed notice and comment period. However, at times, Congress and the President can impose constraints that may not follow the formal procedures designed to allow for the expressing of concerns by all interested parties. These initiatives can significantly decrease access to natural gas. For example, Congress has enacted and presidents have extended offshore drilling moratoria. These actions not only deny the extraction of natural gas, but also deny federal agencies and others the ability to determine the extent of the resources in waters off the coasts of most of the United States. Recently enacted congressional bans on drilling in the Great Lakes and lack of congressional action to determine the status of WSAs precludes the extraction and production of gas in these areas.

4.5 NEW ENVIRONMENTAL REGULATORY CONSTRAINTS

A number of environmental rules are currently under development, and the potential impacts of these rules require active monitoring. For example, the EPA's "nonroad diesel engine" rule could increase costs for new engines used in natural gas E&P to ensure that they meet the required emissions reductions. The EPA is also writing regional haze rules designed to protect visibility in national parks and Wilderness Areas, which could apply to drilling and production equipment and affect the ability to produce natural gas in a timely and cost-effective manner. The OPS within the DOT is writing rules to ensure "integrity management," or structural safety of gas transmission lines. The implementation of these rules could disrupt supplies as companies are forced to meet certain inspection deadlines using specific technologies that may not be available when needed. The EPA may require oil and gas E&P facilities covering 1 to 5 acres to obtain storm water permits under the CWA.

State and federal agencies are determining whether and how to address emerging environmental issues, many of which could affect or limit cost-effective production of natural gas. For example, the U.S. Commission on Ocean Policy, established under the Oceans Act of 2000, has developed recommendations that could include new policies and authorities to address the development of ocean resources, potentially including natural gas. Other issues are closer to regulation. For example, some states have written rules to address potential impacts of discharging produced water from CBM operations to the environment. Others may follow, and such actions could severely restrict development of this source of gas, which many believe to be a significant future contributor to the nation's energy supply. A related issue is the use of

hydraulic fracturing to increase the flow of gas, particularly CBM gas. This practice has been the subject of regulatory and legal action, and further regulatory activity can be expected. Other environmental regulations with potentially significant impacts on natural gas development include regulations for minimizing adverse environmental impacts from cooling-water intake structures at offshore oil and gas platforms; mercury regulations that could affect the use and discharge of mercury-containing drilling muds; and regulations to reduce noise generated by engines, drills, and compressors used in natural gas E&P and transportation.

Some of these constraints can have significant impacts on natural gas production on an individual basis. Others, taken alone, may not have as great an impact, but when combined with other regulations or policies, could be so costly or produce so many delays that many small, independent operators may leave the business. Whether the gas produced by these independents would then be extracted by other, larger firms, at an increased cost to them, or whether the gas would not be produced until prices increased sufficiently to warrant reentry into the market is not known. However, mitigation approaches should be developed to address not only the major impediments, such as access restrictions, but also to address the other regulations and implementing practices so that the ability to extract and distribute the gas to users in a cost-effective and environmentally protective fashion can be maintained, if not increased.

5 REFERENCES

AGA (American Gas Association), 2000, *Fueling the Future: A Policy Blueprint to Realize the Promise of Natural Gas*, Washington, D.C., p. 22.

API (American Petroleum Institute), 2000, "Why Access to Government Lands Is Crucial," fact sheet. Available at http://api-ep.api.org/issues/index.cfm?objectid=BEF3485C-8D0D-11D5-BC6B 00B0D0E15BFC&method=display_body&er=1&bitmask=002006003000000000.

Baltz, T., 2002a, "Selenium Content in Coalbed Methane Water Concerns Fish and Wildlife Service Officials," *Daily Environment Report*, May 3, p. A-9.

Baltz, T., 2002b, "Western States Should Determine Plan for Nitrogen Oxides, Governors' Group Told," *Daily Environment Report*, April 29, p. A-1.

Baltz, T., 2002c, "Wyoming Coal Bed Methane Leases Illegal, Interior Department Board Rules," *Daily Environment Report*, May 1, p. A-13.

Beattie, J., 2001, "Enviros Sue to Block Bush Push to Expand Oil, Gas Leasing," *Energy Daily*, Dec. 7, p.1.

Beattie, J., 2002, "Montana Mulls New Coalbed Methane Rules," *Energy Daily*, Aug. 20.

Billings Gazette, 2001, "Regulations Considered for Pipeline Compressors," April 29. Available at http://www.billingsgazette.com/index.php?display=/rednews/2001/04/30/build/wyoming/pipeline.inc.

Bleichfeld, H., et al., 2001, *Don't Get Bogged Down: Recent Developments in the Federal Wetlands Permitting Program Affecting the Construction of Natural Gas Facilities*. Available at http://www.vnf.com/content/Articles/Articles/arthsb7.htm.

BLM (Bureau of Land Management), 2000, *Report to the Congress, Land Use Planning for Sustainable Resource Decisions*, Feb.

BLM, 2002, *Hanna Draw Coalbed Methane Exploration Project, Decision Record and Finding of No Significant Impact*, Rawlins Field Office, Rawlins, Wyo., June 18. Available at http://www.wy.blm.gov/nepa/rfodocs/hannadraw-dr.pdf.

Bologna, M., 2001, "Illinois Levies Nearly $1 Million Penalty against Major Natural Gas Supply Company," *Daily Environment Report*, Nov. 30, p. A-9.

Boss, T., 2002, Interstate Natural Gas Association of America, "Pipeline Safety Research and Development," Statement before the Subcommittee on Energy, Committee on Science, U.S. House of Representatives, March 13.

Briggs, D., 2002, President, Louisiana Independent Oil & Gas Association, letter on Phase II NPDES storm water permitting to the U.S. Environmental Protection Agency, May 23.

Bruninga, S., 2003, "Small Oil, Gas Production Sites Get Two More Years to Meet Stormwater Rules," *Daily Environment Report*, March 10, p. A-14.

Buck, E.H., and M.L. Corn, 2001, *Endangered Species: Difficult Choices*, CRS Issue Brief for Congress, IB-10072, Congressional Research Service, Washington, D.C., Sept. 20.

Carl, M., 2002, Federal Environmental Projects Manager, Interstate Oil and Gas Compact Commission, "Mercury — An Old Toxic with a New Life," memo to Official State Representatives and State Oil and Gas Directors, Feb. 13.

CEQ (Council on Environmental Quality), 1997, *The National Environmental Policy Act, A Study of Its Effectiveness after Twenty-Five Years*, Jan.

COE (U.S. Department of the Army, Corps of Engineers), 1999, "Proposal to Issue and Modify Nationwide Permits; Notice," *Federal Register* 64(139):39251–39371, July 21.

COE, 2000, "Final Notice of Issuance and Modification of Nationwide Permits; Final Notice," *Federal Register* 65(47):12818–12899, March 9.

COE, 2001, "Proposal to Reissue and Modify Nationwide Permits; Notice," *Federal Register* 66(154):42069–42100, Aug. 9.

COE, 2002, "Issuance of Nationwide Permits; Notice," *Federal Register* 67(10):2019–2095, Jan. 15.

COE and EPA (U.S. Environmental Protection Agency), 2003, "Advance Notice of Proposed Rulemaking on the Clean Water Act Regulatory Definition of 'Waters of the United States,'" *Federal Register* 68(10):1991–1998, Jan. 15.

Colorado BLM (Bureau of Land Management), 2001, *Land Use Planning Handbook*. Available at http://www.co.blm.gov/nepa/landplan.htm.

Compton, A., 2001, "Environmental Quality Council, Coal Bed Methane Water Policy Subcommittee, Final Minutes," Montana Department of Environmental Quality, Helena, Mont., Dec. 10.

Condit, B., 2001, Staff Director, "Outer Continental Shelf (OCS) Oil and Gas Issues," background memorandum regarding Oversight Hearing to the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, May 14.

Copeland, C., 1999, *Nationwide Permits for Wetlands Projects: Permit 26 and Other Issues and Controversies*, 97-223-ENR, Congressional Research Service, Washington, D.C., Jan. 21. Available at http://www.cnie.org/nle/wet-7.html.

Culp, P., 2001, Assistant Director, Minerals, Realty, and Resource Protection, Bureau of Land Management, "BLM and Forest Service Oil and Gas Permitting," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, April 25.

DEN (*Daily Environment Report*), 2001, "Suit Filed over Drilling Leases near Yellowstone," Nov. 13, p. A-13.

DOC (U.S. Department of Commerce), 2000, "National Oceanic and Atmospheric Administration Coastal Zone Management Act Federal Consistency Regulations; Final Rule (15 CFR 930)," *Federal Register* 65(237) 77123–77175, Dec. 8.

DOE (U.S. Department of Energy), 1999, *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, Office of Fossil Energy, Washington, D.C., Oct.

DOI, USDA, and DOE (U.S. Department of the Interior, U.S. Department of Agriculture, and U.S. Department of Energy), 2003, *Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and Reserves and the Extent and Nature of Restrictions or Impediments to Their Development: The Paradox/San Juan, Vinta Piceanre, Greater Green River, and Powder River Basins and the Montana Thrust Belt*, Jan.

Doman, L., 2002, "Court Remands Technology Provisions in EPA Rule to Control Regional Haze," *Daily Environment Report*, May 28, p. AA-1.

DOT (U.S. Department of Transportation), 2003, Research and Special Programs Administration, "Pipeline Integrity Management in High Consequence Areas (Gas Transmission Pipelines); Final Rule (49 CFR Part 192)," *Federal Register* 68(240):69777–69837, Dec. 15.

DuVall, S.L., 1997, *Federal Land Access to Oil and Gas Minerals in Eight Western States*, Delta Environmental Consultants, Inc., Denver, Colo., in cooperation with the Rocky Mountain Oil and Gas Association, Bureau of Land Management, USDA Forest Service, and United States Geological Survey, Sept. 5.

Easton, J.P., and G.E. McVehil, 2001, "Air Quality Issues Related to Coal Bed Methane Development in the Powder River Basin," in *Proceedings of the 8th International Petroleum Environmental Conference, Houston, Texas, Nov. 6–9*. Available at http://ipec.utulsa.edu/Ipec/Conf2001/Conf/mcvehil_86.pdf.

EIA (Energy Information Administration), 2001a, *U.S. Natural Gas Markets: Recent Trends and Prospects for the Future*, SR/OIAF/2001-02, Office of Integrated Analysis and Forecasting, U.S. Department of Energy, Washington, D.C. Available at http://tonto.eia.doe.gov/FTPROOT/service/oiaf0102.pdf.

EIA, 2001b, *U.S. Natural Gas Markets: Mid-Term Prospects for Natural Gas Supply*, SR/OIAF/2001-06, Office of Integrated Analysis and Forecasting, U.S. Department of Energy, Washington, D.C., Dec.

EIA, 2003, *Annual Energy Outlook 2003 with Projections to 2025*, DOE/EIA-0383(2003), Jan. 9. Available at http://www.eia.doe.gov/ oiaf/aeo/index.html.

EPA (U.S. Environmental Protection Agency), 1998, "Control of Emissions of Air Pollution from Nonroad Diesel Engines; Final Rule (40 CFR Parts 9, 86, and 89)," *Federal Register* 63(205):56967–57023, Oct. 23.

EPA, 1999a, "Regional Haze Regulations; Final Rule (40 CFR Part 51)," *Federal Register* 64(126):35713–35774, July 1. Available at http://www.epa.gov/air/visibility/facts.pdf.

EPA, 1999b, "National Pollutant Discharge Elimination System — Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule," *Federal Register* 64:68721–68770, Dec. 8.

EPA, 1999c, "Proposed Revisions to the Water Quality Planning and Management Regulation; Proposed Rule (40 CFR Part 130)," *Federal Register* 64(162):46011–46055, Aug. 23.

EPA, 1999d, *Fact Sheet: Final Regional Haze Regulations for Protection of Visibility in National Parks and Wilderness Areas*, June. Available at http://www.epa.gov/air/visibility/ facts.pdf.

EPA, 2000, "Revision to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulations; Final Rule," *Federal Register* 65:43585–43670, July 13.

EPA, 2001a, *Fact Sheet: Cooling Water Intake Structures — Section 316(b)*, EPA-821-F-01-017, Nov. Available at http://www.epa.gov/ost/316b/316bph1fs.html.

EPA, 2001b, "Industry Profile Oil and Gas Extraction Industry," *Technical Development Document for the Final Regulations Addressing Cooling Water Intake Structures for New Facilities*, EPA-821-R-01-036, Nov. Available at http://www.epa.gov/waterscience/316b/ technical/ch6.pdf.

EPA, 2001c, *Visibility in Mandatory Federal Class I Areas, 1994–1998, A Report to Congress*, EPA-452/R-01-008, Office of Air Quality Planning and Standards, Nov. Available at http://www.epa.gov/oar/visibility/report.

EPA, 2001d, "Prepublication Proposed Rule on Ocean Discharge Criteria." Available at http://www.epa.gov/owow/oceans/ protecting_oceans/cwa403rule.pdf.

EPA, 2001e, "Effective Date of Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulations; and Revision of the Date for State Submission of the 2002 List of Impaired Waters; Final Rule (40 CFR Parts 9, 122, 123, 124, and 130)," *Federal Register* 66(202):53043–53048, Oct. 18.

EPA, 2001f, "Establishment of Electronic Reporting: Electronic Records; Proposed Rule (40 CFR Parts 3, 51, et al.)," *Federal Register* 66(179):46161–46195, Aug. 31.

EPA, 2002a, Technology Transfer Network Air Toxics Web site. Available at http://www.epa.gov/ttn/atw/combust/list.html.

EPA, 2002b, *Health Assessment Document for Diesel Engine Exhaust*, EPA/600/8-90/057F, prepared by the National Center for Environmental Assessment, Washington D.C., for the Office of Transportation and Air Quality. Available at http://www.epa.gov/ ncea.

EPA, 2002c, "Agency Information Collection Activities: Proposed Collection Extension; Comment Request; Industry Detailed Questionnaire: Phase III Cooling Water Intake Structures; Notice," *Federal Register* 67(239):76400–76403, Dec. 12.

EPA, 2002d, "Oil Pollution Prevention and Response; Non-Transportation-Related Onshore and Offshore Facilities; Final Rule (40 CFR Part 112)," *Federal Register* 67(137):47041–47090, July 17.

EPA, 2003a, "Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuels; Proposed Rule (40 CFR Parts 69, 80, 89, et al.)," *Federal Register* 68(100):28327–28603, May 23.

EPA, 2003b, "Spring 2003 Regulatory Agenda; Semiannual Regulatory Agenda (40 CFR Ch. I)," *Federal Register* 68(101):30941–31112, May 27.

EPA, 2003c, "Revisions to Regional Haze Rule to Incorporate Sulfur Dioxide Milestones and Backstop Emissions Trading Program for Nine Western States and Eligible Indian Tribes within That Geographic Area; Final Rule (40 CFR Part 51)," *Federal Register* 68(108):33763–33791, June 5.

EPA, 2003d, "Modification of National Pollutant Discharge Elimination System (NPDES) Permit Deadline for Storm Water Discharges for Oil and Gas Construction Activity That Disturbs One to Five Acres of Land; Final Rule (40 CFR Part 122)," *Federal Register* 68(46):11325-11330, March 10.

EPA, 2004a, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs,* EPA 816-R-04-003, Office of Water, Office of Groundwater and Drinking Water, Drinking Water Protection Division, Prevention Branch, June. Available at http://www.epa.gov/safewater/uic/cbmstudy/docs.html.

EPA, 2004b, "State of Alabama; Underground Injection Control Program Revision; Response to Court Remand; Final Determination on Court Remand on Final Rule (40 CFR Part 147)," *Federal Register* 69(135):42341–42345, July 15.

EPA, 2004c, "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines; Final Rule (40 CFR Part 63)," *Federal Register* 69(114):33473–33522, June 15.

EPA, 2004d, "National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines; Final Rule (40 CFR Part 63)," *Federal Register* 69(44):10511–10548, March 5.

EPA, 2004e, "Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel; Final Rule (40 CFR Parts 9, 69, et al.)," *Federal Register* 69(124):38957–39273, June 29.

EPA, 2004f, "Finding of Failure to Attain and Reclassification to Serious Nonattainment; Imperial Valley Planning Area; California; Particulate Matter of 10 Microns or Less; Final Rule (40 CFR Part 81)," *Federal Register* 69(154):48792–48794, Aug. 11.

EPA, 2004g, "National Pollutant Discharge Elimination System — Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Phase III Facilities; Proposed Rule (40 CFR Parts 9, 122 et al.)," *Federal Register* 69(226):68444–68565, Nov. 24.

Eppink, J., 2000, *Undiscovered Natural Gas and Petroleum Resources beneath Inventoried Roadless and Special Designated Areas on Forest Service Lands Analysis and Results*, Advanced Resources International, Inc., Arlington, Va., Nov. 20.

Ferguson, B., 2002, "Interior Department to Buy Oil, Gas Leases in Florida to $235 Million, White House Says," *Daily Environment Report*, May 30, p. A-1.

Ferullo, M., 2001a, "Norton Announces Scaled-Back Oil, Gas Drilling Plan in Eastern Gulf of Mexico," *Daily Environment Report*, July 3, p. A-1.

Ferullo, M., 2001b, "Environmental Groups Seek to Overturn Oil, Gas Leases in Utah's Redrock Region," *Daily Environment Report*, Dec. 7, p. A-7.

Ferullo, M., 2002, "Despite Ruling, Forest Service Pursues Changes to Clinton-Era 'Roadless Rule,'" *Daily Environment Report*, Dec. 17, p. A-3.

Ferullo, M., 2003, "Administration Announces Exemptions to Roadless Rule, Settles Alaska Lawsuit," *Daily Environment Report*, June 11, p. A-2.

Fisher, R.W., 2001, President, Montana Petroleum Association, "Domestic Natural Gas Supply and Demand: The Contribution of Public Lands and the OCS," Statement before the Subcommittee on Energy and Mineral Resources, House Committee on Resources, U.S. House of Representatives, March 15.

Fry, T., 2001, President, National Ocean Industries Association, "Short-term Solutions for Increasing Energy Supply from the Public Lands," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, May 21.

FS (U.S. Department of Agriculture Forest Service), 2001, "Special Areas; Roadless Area Conservation; Final Rule (36 CFR Part 294)," *Federal Register* 66(9):3243–3273, Jan. 12.

Fuller, L., 2003, Independent Petroleum Association of America, "Comments on Spill Prevention, Control, and Countermeasure (SPCC) Plan," letter to U.S. Environmental Protection Agency Docket Center, Jan. 29. Available at http://www.ipaa.org/govtrelations/comments/SPCC_Comments.asp.

George, G.R., 2001, Petroleum Association of America, "Orderly Development of Coal Bed Methane Resources from Public Lands," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, Sept. 6.

Geringer, J., 2001, Governor of Wyoming, "A National Energy Policy," Statement before the Committee on Resources, U.S. House of Representatives, Oversight Hearing on the Role of Public Lands in the Development of a Self-Reliant Energy Policy, March 7.

Greenwire, 2001, "Midwest Delegation Voices Opposition to Drilling Plan," June 14, p. 1.

Hackett, J.T., 2001, Chairman/President/Chief Executive Officer, Ocean Energy, Inc., "Domestic Natural Gas Supply and Demand, the Contribution of Public Lands and the OCS," Statement on behalf of the Domestic Petroleum Council before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, March 15.

Hatfield, N.R., 2002, U.S. Department of the Interior, "H.R. 4620, America's Wilderness Protection Act," Statement before the Subcommittee on Parks, Recreation, and Public Lands, Committee on Resources, U.S. House of Representatives, June 6.

Heartland Institute, 2001, "Michigan Governor Set to Approve Great Lakes Drilling," *Environment and Climate News*, July. Available at http://www.heartland.org/archives/environment/jul01/greatlakes.htm.

Holliday, G.H., 2003, personal communication from Holliday (HES, Inc., Washington, D.C.) to D. Elcock (Argonne National Laboratory, Washington, D.C.), Jan. 31.

Holly, C., 2002, "House OKs Interior Spending Bill Blocking New California Oil Development," *Energy Daily*, July 19.

Hopkins, T., 2002, Manager, U.S. Onshore EHS and Regulatory Anadurko Petroleum Corporation, letter in response to July 9, 2002, Notice and Request for Comments from the Council on Environmental Quality's NEPA Task Force, Sept. 17.

INGAA (Interstate Natural Gas Association of America), 1999, *Coordinating Federal Agency Reviews during the Environmental Approval Process*, F9909, prepared for the INGAA Foundation by ENTRIX, Inc., Houston, Texas.

INGAA, 2001, "Energy Task Force; Notice and Request for Comments (66: FR 43586)," letter to the Chair of the Council on Environmental Quality, Oct. 11.

IPAA (Independent Petroleum Association of America), 2003, "Spill Prevention, Control, and Countermeasures (SPCC) Plan Comments" submitted to EPA Docket Center on Oil Pollution Prevention and Response; Non-Transportation-Related Onshore and Offshore Facilities, *Federal Register* 68:1352, Jan. 9, 2003; Proposed Rule (Docket ID No. OPA-2002-001), Jan. 29. Available at http://www.ipaa.org/govtrelations/comments/SPCC_Comments.asp.

Inside EPA, 2001a, "Western Lawmakers Easing Environmental Controls on Power Plants," Vol. 22, No. 20, May 18, p. 8.

Inside EPA, 2001b, "EPA, NOAA Withholding Key Permits for Offshore Drilling," Vol. 22, No. 22, June 1, p. 1.

Inside EPA, 2001c, "Snowe Readies to Take on Hutchinson, Oil Industry to Pass CZMA Bill," Vol. 22, No. 35, Aug. 31, p. 20.

Inside EPA, 2002a, "Activists Eye Supreme Court Appeal of Hydraulic Fracturing Rules," Vol. 23, No. 13, March 29, p. 5.

Inside EPA, 2002b, "Appellate Ruling on Gas Extraction May End Push for Stricter Rules," Vol. 23, No. 2, p. 14.

Inside EPA, 2002c, "Activists Question Corps Commitment to No Net Loss Wetlands Policy," Vol. 23, No. 3, Jan. 18, p. 20.

Institute for Water Resources, 2000, *Cost Analysis for the 1999 Proposal to Issue and Modify Nationwide Permits*, Alexandria, Va., Jan. Available at http://www.iwr.usace.army.mil/iwr/pdf/CostAnalysisMay00.pdf.

IOGCC (Interstate Oil and Gas Compact Commission), 2001a, *LEAF v. EPA, The Threat to Oil & Gas Fracturing Operations in the U.S.* Available at http://www.iogcc.state.ok.us/NEWS/LEAFVEPA.htm.

IOGCC, 2001b, *Regional Haze Briefing Paper*. Available at http://www.iogcc.oklaosf.state.ok.us/COMMPGS/air4.htm.

IOGCC/NARUC (National Association of Regulatory Utility Commissioners), 2001, *Final Report of the IOGCC/NARUC Pipeline Siting Work Group*, July. Available at http://www.iogcc.oklaosf.state.ok.us/PUBLICATIONS/NARUCIOGCCWORKGROUP.htm.

Lorenzetti, M., 2001, "Push for Case on More Access to U.S. Lands Gathers Steam," *Oil and Gas Journal*, April 2, p. 36.

Louisiana Docket IMD-01-11, 2001, *Response to Comments Docket IMD-01-11 E&P Waste Rules Proposed Regulations,* Louisiana Administrative Code (LAC) 43:XIX.501 et seq., Department of Natural Resources, State of Louisiana.

Martin, J.W., 1997, "BLM and USDA Forest Service Oil and Gas Regulations," Statement Regarding Access and Permitting Issues before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, June 30.

McHarg, H., and L. Thomas, 1999, *America's Redrock Wilderness — A Dig Back in Time*, May. Available at http://www. canyoncountryzephyr.com/archives/suwa-april-may99.html.

Miller, Z., 2001, *New Rules Severely Limit Scope of Nationwide Permits for Aquatic Sites*, Davis, Graham, and Stubbs, LLP, Denver, Colo. Available at http://www.dgslaw.com/articles/ 308980.html.

Mills, A., 2002, President, Texas Alliance of Energy Procedures, letter on impact of Phase II storm water rules on oil and gas exploration and production industry to the U.S. Environmental Protection Agency, Sept. 5.

MMS (Minerals Management Service), 2000, *Outer Continental Shelf Petroleum Assessment, 2000.* Available at http://www. mms.gov/revaldiv/pdf_file/ brochure7.pdf.

MMS, 2002a, *Activities Offshore Alabama.* Available at http://www. gomr.mms.gov/homepg/ offshore/egom/offala.html.

MMS, 2002b, "Outer Continental Shelf (OCS), Eastern Gulf of Mexico (GOM), Oil and Gas Lease Sales for Years 2002–2007; Call for Information and Nominations/Notice of Intent (Call/NOI) to Prepare an Environmental Impact Statement (EIS)," *Federal Register* 67(26):5849–5851, Feb. 7.

Morrison J., 2002, "Noisy Compressors Shatter Solitude," *Powder River Basin Coalbed Methane Monitor.* Available at http://www. powderriverbasin.org/.

Moseley, C., 2002, "Comments from Public Lands Advocacy to the Council on Environmental Quality Regarding CEQ NEPA Task Force Notice and Request for Comments of July 9, 2002," *Federal Register* 67:45510.

Murphy, M., 2001, President, Strata Production Company, "BLM and Forest Service Oil and Gas Permitting," Statement on behalf of the Independent Petroleum Association of America and the National Stripper Well Association before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, April 25.

Najor, P., 2001, "California, Florida Lawmakers Promise Fight If Bush Proposes Drilling in Offshore Areas," *Daily Environment Report*, May 17, p. A-3.

Najor, P., 2002, "EPA, OMB to Jointly Work on Rule to Cut Nonroad Diesel Emissions, Lower Fuel Sulfur," *Daily Environment Report*, June 10, p. AA-1.

Nakles, D.V., et al., 1998, "Applications of EAE Concepts for Closure of E&P Sites in the Gas Industry," presented at the 5th Annual International Petroleum Environmental Conference, Albuquerque, N.M., Oct. 20–23.

Nance, R., 1997, "BLM and USDA Forest Service Oil and Gas Regulations," Statement Regarding Access and Permitting Issues before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, June 30.

National Driller, 2001, "Great Lakes Drilling Upheld," Nov. 16. Available at http://www.driller online.com/CDA/ArticleInformation/features/BNP__Features__Item/0,3643,67710,00.html.

NEPDG (National Energy Policy Development Group), 2001, *National Energy Policy*, May 17. Available at http://whitehouse.gov/ energy/.

NOAA (National Oceanic and Atmospheric Administration), 2003, "Coastal Zone Management Act Federal Consistency Regulations; Proposed Rule," *Federal Register* 68(112):34851–34874, June 11.

NPC (National Petroleum Council), 1999, *Natural Gas, Meeting the Challenges of the Nation's Growing Natural Gas Demand*, Washington, D.C., Dec.

NPC, 2003, *Balancing Natural Gas Policy, Fueling the Demands of a Growing Economy*, Washington, D.C., Sept. Available at http://www.npc.org/ reports/ng.html.

Ocean Commission, 2002, Draft Table of Contents, The U.S. Commission on Ocean Policy, Nov. 22. Available at http://www.oceancommission.gov/meetings/nov22_02/ toc_brief_mtg11_22.pdf.

Phillips, R.G., 2001, Deputy Chief for Programs and Legislation, U.S. Forest Service, U.S. Department of Agriculture, "Energy Impacts of the Roadless Rule," Statement before the Subcommittee on Forests and Forest Health and Subcommittee on Energy and Minerals Resources, Committee on Resources, U.S. House of Representatives, April 4.

Querques, L., 2002, Acting Director, Minerals Management Service, "Letter to the Editor," *Mobile Register*, Jan. 14.

Rains, B., 2002, "Studies Indicate Gulf Oil and Gas Rigs Are Islands of Legal Contamination," *Mobile Register*, Jan. 2.

Rubin, M., 2001, Upstream General Manager, American Petroleum Institute, "Short-term Solutions for Increasing Energy Supply from the Public Lands," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, May 22.

Russell, B., 2000, "National Energy Policy: Ensuring Adequate Supply of Natural Gas and Crude Oil," Statement on behalf of the Independent Petroleum Association of America and Others before the Subcommittee on Energy and Power Committee on Resources, U.S. House of Representatives, May 24.

Shirley, K., 2001, "Canada Producing; U.S. Isn't, What's (Not) Happening Is Erie," *Explorer*, American Association of Professional Geologists, Sept. Available at http://www.aapg.org/explorer/2001/09sep/lakes.html.

Simpson, T., 1999, letter to U.S. Department of Transportation Dockets Management System regarding Research and Special Programs Administration Request for Comments on 49 CFR Part 192, Gas Gathering Line Definition, *Federal Register* (64):1247, March 11, 1999, Docket No. RSPA-98-4868, to the U.S. Department of Transportation Dockets Management System, Oct. 4.

Smith, M.W., 2001, Executive Director, Independent Petroleum Association of Mountain States Public Lands Advocacy, "BLM and Forest Service Gas Permitting," Statement before the Subcommittee on Energy and Minerals, Committee on Resources, U.S. House of Representatives, April 25.

Stanley, N.A., 2001, "A National Energy Policy," Statement on behalf of the Independent Petroleum Association of Mountain States and Independent Petroleum Association of America before the Committee on Resources, U.S. House of Representatives, March 7.

Stewart, T.E., 2001, "The Interaction of Environmental Laws and Energy Supply," Statement on behalf of the Ohio Oil and Gas Association and the Independent Petroleum Association of America before the Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety, Environment, and Public Works Committee, U.S. Senate, April 5.

Stoneman, J., 1995, "Oil and Gas Reform Low on Legislative Agenda," *MCLUC Reporter*, Newsletter of the Michigan Communities Land Use Coalition, Autumn, Vol. 2, No. 4.

Superfund Report, 2002, "EPA Region VI Ponders Cleanup Authority for Offshore Oil Rigs," May 27, p. 27.

SWS (Society of Wetland Scientists) Forum, 2001. Available at http://www.sws.org/swsforum/articles/21June-01F945 9870Forum.html.

Taylor, J.M., 2002, "Feds Block Michigan's Shoreline Drilling Program," The Heartland Institute, Feb. 1. Available at http://www.heartland.org/Article.cfm?artId=525.

Texas Alliance of Energy Producers, 2003, Comments presented for Water Docket to U.S. Environmental Protection Agency, Docket ID OW-2002-0068, Jan.

TIPRO (Texas Independent Producers and Royalty Owners Association), 2002, "EPA Responds to TIPRO Request for Stormwater Permit Waiver," *TIPRO's Tuesday Target*, Vol. 4, No. 15, July 30.

Tipton, T., 1997, Marathon Oil Company, "BLM and USDA Forest Service Oil and Gas Regulations," Statement Regarding Access and Permitting Issues before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, June 30.

True, D., 2002, Partner and Chairman, True Oil Company, Independent Petroleum Association of America, "The Growing Natural Gas Supply and Demand Imbalance: The Role that Public Lands and Federal Submerged Lands Could Play in the Solution," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, July 16.

USFWS (U.S. Fish and Wildlife Service), 2001, "Endangered and Threatened Wildlife and Plants; Final Determinations of Critical Habitat for Wintering Piping Plovers; Final Rule (50 CFR Part 17)," *Federal Register* 66(132):36037–36086, July 10.

USFWS, 2002, "Endangered and Threatened Wildlife and Plants; Listing Roswell Springsnail, Koster's Tryonia, Pecos Assiminea, and Noel's Amphipod as Endangered with Critical Habitat; Proposed Rule (50 CFR Part 17)," *Federal Register* 67(29):6459–6479, Feb. 12.

Utah Wilderness Coalition, 2000, *About the Utah Wilderness Coalition*. Available at http://www.uwcoalition.org/about/history.html.

Walsh, M., 2002, *The Dangers of the Dirtiest Diesels, The Health and Welfare Impacts of Nonroad Heavy-Duty Diesel Engines and Fuels*, The State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials, Washington, D.C., June. Available at http://www.4cleanair.org/FINALNonroadHDDReport.pdf.

Watford, M., 2001, Chief Executive Officer, Ultra Petroleum Corporation, "BLM and USDA Forest Service Oil and Gas Permitting," Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, April 25.

Whetzel, C., 2002a "Bush Asked to Follow Florida Precedent by Buying Oil Leases along California Coast," *Daily Environment Report*, June 3, p. A-6.

Whetzel, C., 2002b, "Secretary Norton Rejects California Request of United States to Buy Offshore Leases, *Daily Environment Report*, June 11, p. A-5.

Whitney, G., 2001, U.S. Geological Survey, "The Orderly Development of Coalbed Methane Resources from Public Lands, "Statement before the Subcommittee on Energy and Mineral Resources, Committee on Resources, U.S. House of Representatives, Sept. 6. Available at http://www.house.gov/resources/107cong/energy/2001sep06/whitney.htm.

Wilderness Society, 2002, *Estimates of Economically Recoverable Gas and Oil in Selected National Monuments Based on the USGS Low and High Price Scenarios*. Available at www.Wilderness.org.

Woods, R., 2001, "Whitman Pledges to Improve Impaired Waters Rule," press release, U.S. Environmental Protection Agency headquarters, Washington, D.C., July 16.

Wyman, C., 2001, "H.R. 897, A Bill to Reauthorize the Coastal Zone Management Act of 1972," Statement on behalf of the American Petroleum Institute, National Ocean Industries Association, Independent Petroleum Association of America, United States Oil and Gas Association, and International Association of Drilling Contractors, before the Subcommittee on Fisheries Conservation, Wildlife, and Oceans, Committee on Resources, U.S. House of Representatives, May 24.

Young, T., 2001, "National Energy Issues," Statement on behalf of the Independent Petroleum Association of America, before the Committee on Energy and Natural Resources, U.S. Senate, July 12.

ENERGY LAW JOURNAL

Volume 26, No. 2 2005

ENERGY AND THE ENVIRONMENT: THE FUTURE OF NATURAL GAS IN AMERICA

U.S. Sen. James M. Inhofe
Frank Fannon

Reprinted from
ENERGY LAW JOURNAL
Volume 26, No. 2, 2005

ENERGY AND THE ENVIRONMENT: THE FUTURE OF NATURAL GAS IN AMERICA

United States Senator James M. Inhofe & Frank Fannon[*]

INTRODUCTION

Natural gas has been regarded as the ideal fossil fuel for multiple uses—from electricity generation to manufacturing, in part because of its efficiency, in part because of its relative cleanliness, and in part because of its relatively low delivered cost. For many years, natural gas was a wise and easy choice; America is blessed with an abundant supply and gas burns cleaner and is considered by some to be more environmentally preferable to other fuels. That abundant supply translated to low prices, and those low prices helped fuel a strong and vibrant economy. Now however, the days of low gas prices are over, and the nation is in the midst of a very real natural gas crisis.

Most people probably do not realize the importance that natural gas plays in their daily lives, but they certainly have noticed that they are paying more for energy than they did a year ago. As more of a family's income is diverted for energy costs, less money can be spent on providing for their children's education, less money can be invested in their small business, less money can be saved for retirement. Not surprisingly, these higher prices are most acutely felt by the poor and those on fixed incomes.

Many of our nation's workers have unfortunately felt the result of high natural gas prices in the most severe way—they have lost their jobs. Natural gas is a principal feedstock to several industries including chemical and petrochemical manufacturing, the pulp and paper, steel, and fertilizer industries. When the domestic costs of production increase relative to global competitors, U.S. domestic manufacturing companies lose out.

Policymakers and the public are struggling to determine why the U.S. is in the grip of this natural gas crisis. Why have natural gas prices increased so dramatically? Why has the market been unable to correct itself to find balance? Most importantly, how can Congress effect federal policies that will temper the natural gas crisis?

As the Mayor of Tulsa and later a Representative and Senator representing the oil and gas producing State of Oklahoma, I have been involved with natural gas policy spanning five decades. As Chairman of the U.S. Senate Committee on the Environment & Public Works, I have focused on the situation with renewed fervor. On March 25, 2004, I chaired an oversight hearing concerning the environmental considerations affecting natural gas prices. At that hearing, representatives of the natural gas production industry, manufacturing sector, environmental groups, farmers, and even a Northeastern Governor testified. The conclusions and lessons learned from that hearing were far-reaching and significant. Yet, the most dramatic finding was that U.S. federal laws and policies have contributed in large measure to the nation's natural gas crisis.

In large part, changes to the Clean Air Act and other air-related regulations have driven increased demand for natural gas. Yet, other federal environmental

---

[*] Senator Inhofe is the Chairman of the Committee on Environment and Public Works. Frank Fannon is Legislative Counsel for the Senate Committee on Environment and Public Works.

policies have effectively prevented a sufficient and corresponding increase in supply of natural gas. These conflicting federal policies have complicated and slowed the market's effort to adjust itself.

Further, national environmental groups, that only a few years ago, praised natural gas as the bridge fuel to a clean environment, today oppose increasing supplies. Interest groups have largely chosen sides between the political parties and, in the main, refuse to work within well-established and historically appropriate frameworks. Instead, they seem to prefer to engage in unfortunate and unnecessary political gamesmanship while U.S. competitiveness suffers.

The issue of providing energy to the nation while maintaining a clean environment has become overly politicized. In many cases spin and rhetoric are preferred over facts and science. This document rejects the rhetoric and focuses on the facts. Section I analyzes the reasons that have contributed to the increased demand of natural gas, the increase in prices and their effect on several sectors of the U.S. economy. Section II discusses the obstacles that have and continue to prevent the nation from balancing its need for natural gas with its ability to increase supplies. Section III details recommendations that Congress should consider to help lead the U.S. out of the natural gas crisis and back toward a competitive and vibrant economy.

As Alan Greenspan, Chairman of the Federal Reserve said, "[w]e have been struggling to reach an agreeable tradeoff between environmental and energy concerns for decades. I do not doubt we will continue to fine-tune our areas of consensus. But it is essential that our policies be consistent."[1]

I. NATURAL GAS DEMAND: CAUSES & IMPACTS

This section provides a brief summary of natural gas use in the U.S., describes the causes that have led to the dramatic increase, and details specific impacts on the natural gas residential users and businesses as a result.

A. Natural Gas Use

Natural gas has traditionally been an important fuel choice for certain uses, but its role has increased significantly in the last twenty years.[2] Today, natural gas comprises 24% of U.S. energy use (see chart), with most of that increase attributed to the electricity generation sector.[3] In fact, experts project that natural gas-fired electricity generation will nearly double in the next decade. Almost all new power-generating capacity coming on line in the U.S. is gas-fired, and one half of new homes are now heated by gas.[4]

---

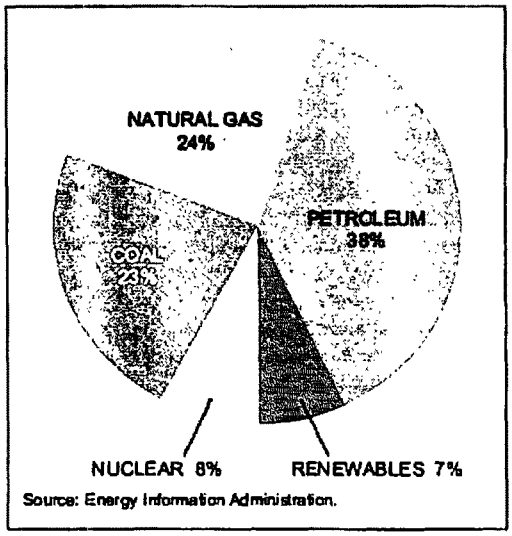
1. *Oversight on Natural Gas: Hearing Before the S. Comm. on Energy & Natural Resources*, 108th Cong. 17 (2003) (statement by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System).

2. COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: DEMAND 2-3 (2003) [hereinafter DEMAND REPORT].

3. *Id.* at 2-4 to -5.

4. *Enhancing Energy Security: Hearing Before the H. Comm. on Resources*, 108th Cong. (2003) [hereinafter Gupta] (statement by Raj Gupta, Chairman and CEO, Rohm & Haas Co. on behalf of the American Chemistry Council), *available at* http://resourcescommitee.house.gov/archives/108/testimony/rajgupta.htm.

Figure 1[5]



This increased demand for natural gas, when combined with other factors, leads to high and volatile prices. Historically, the single greatest factor affecting natural gas demand is the one which policymakers and gas users have the least ability to influence—the weather. Volatility in natural gas prices typically fluctuate with changes in weather conditions.[6] Residents increase their energy use to accommodate extremes in hot or cold.[7] Therefore, in colder or more northern regions of the country, increases in natural gas reflect the very basic human need for survival.

However, "[t]he seasonal pattern of natural gas demand is being altered by its growing use by electric power generators. Power generators expanded their demand for natural gas by 36% over the period 1997–2002."[8] The Energy Information Administration found that between 2000 and 2003, 93% (187 gigawatts) of new generation capacity was gas-fired.[9]

While these figures provide a national perspective, it is important to note

---

5. COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: INTEGRATED REPORT 19 (2003) [hereinafter INTEGRATED REPORT].

6. AM. GAS ASS'N, AVOIDING THE WILD RIDE: WAYS TO TAME NATURAL GAS PRICE VOLATILITY 6–7 (2003) [hereinafter AGA].

7. *Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce*, 108th Cong. (2003) [hereinafter Caruso] (statement of Guy Caruso, Administrator Energy Information Administration), *available at* http://energycommerce.house.gov/108/hearings/06102003hearing944/print.htm ("One development that could generate more difficult market conditions than are already in prospect is the weather. An abnormally hot summer followed by a cold winter could push natural gas deliverability to the limit and cause record average prices this winter.").

8. ROBERT PIROG, CONG. RESEARCH SERV., NATURAL GAS PRICES & MARKET FUNDAMENTALS 7 (2004) [hereinafter PIROG], *available at* http://www.ncseonline.org/NLE/crsreports/04dec/RL32091.pdf.

9. Mary O'Driscoll, *Higher fuel Prices Shifting Power's Attention to Coal*, GREENWIRE, Apr. 27, 2004, at 3 ("By comparison, 5 new gigawatts [of new capacity] came from wind farms while coal saw only 1 gigawatt in additional capacity . . . .").

that some states rely on natural gas more heavily than others and consequently, the situation is more acute. For example, the State of California consumes approximately six to ten billion feet of natural gas per day, much of it in the electric power generation sector. "If California were a country, it would rank as the tenth largest user of natural gas worldwide."[10]

This dramatic increase in natural gas use by the generation sector has created price pressure for all users of natural gas. That competition for gas by generators resulted in wholesale prices from about $2 per million Btu (MMBtu) during the 1980s up to $10 per MMBtu during the winter of 2000–2001.[11]

Power generation demand for natural gas is the fastest growing segment of demand for natural gas and is expected to continue to be the same for at least the next decade.[12] The California Energy Commission expects that natural gas demand for electricity generation will grow 1.5% per year through 2013.[13] Nationally, the Energy Information Administration forecasts that if current trends continue, 80% of new electricity generation will be fueled by natural gas.[14] "Today, gas is the source of about 15 percent of all electricity generated but this number is projected to increase to 26 percent by 2020."[15]

One may consider the rise in natural gas use as a relatively good development; natural gas is regarded as the cleanest burning fossil fuel and is therefore preferred over other sources, and is especially championed by environmental groups.[16]

B. Impacts of High Natural Gas Prices

1. Individuals

Although natural gas may be an environmentally friendly choice over other sources, dramatic increases in the price of natural gas have had significant and detrimental impacts on the U.S. economy as a whole, and on both consumers and workers as individuals.

Increases in natural gas demand have increased the price of gas for all users. Unfortunately for many, energy use is not typically an optional or luxury good. In an industrialized and globally competitive world, energy use represents a very real and fixed cost of doing business and more fundamentally, of life.

---

10. CAL. ENERGY COMM'N, REPORT OF THE STAFF, NATURAL GAS ASSESSMENT UPDATE (2005) [hereinafter CALIFORNIA REPORT].

11. AGA, *supra* note 6, at 6–7. The natural gas Henry Hub spot price is currently hovering above $7 per MMBtu. *See* ENERGY INFO. ADMIN., WEEKLY NATURAL GAS UPDATE, http://tonto.eia.doe.gov/oog/info/ngw/ngupdate.asp (last visited Sept. 6, 2005).

12. AGA, *supra* note 6, at 12.

13. *See* CALIFORNIA REPORT, *supra* note 10, at 10.

14. PIROG, *supra* note 8.

15. PAUL WILKINSON ET AL., AM. GAS FOUND., NATURAL GAS OUTLOOK TO 2020, 16 (2005) [hereinafter GAS FOUNDATION].

16. For example, the Union of Concerned Scientists state, "[a]lthough natural gas is a fossil fuel and so is made up mostly of carbon, global warming emissions from gas are much less than coal or oil. Compared to coal, gas produces 43 percent fewer carbon emissions for each unit of energy produced, and 30 percent less than oil. Gas also produces no solid waste, unlike the massive amounts of ash from a coal plant, and very little sulfur dioxide and particulate emissions." *See* UNION OF CONCERNED SCIENTISTS, CLEAN ENERGY: HOW NATURAL GAS WORKS, http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=84 (last visited Sept. 7, 2005).

Consumers and businesses have moderated and may continue to moderate their energy use marginally, but in the end, they require energy to maintain their quality of life, to power their economy, and, in some cases, simply to survive the sometimes difficult North American winters. In short, energy is not a luxury; it is a necessity.

High natural gas prices hurt all consumers because "energy prices act like a tax on consumers . . . ."[17] By paying a *de facto* "energy tax" consumers have less money to spend or to invest. According to the Industrial Energy Consumers of America, since June 2000, consumers have paid nearly $200 billion more for natural gas than they paid in the previous five years.[18] In macroeconomic terms, "[w]ith disposable income running around $8-1/2 trillion, the 'energy tax' is now roughly 1 percent of after-tax incomes and rising."[19]

The increased price of natural gas has very real impacts on families. For example, in Ohio, home heating costs were projected to increase at least $220 per household.[20] Although that may seem like a nominal amount, during the winter season of 2000–2001, one gas company in Ohio saw residential nonpayment jump from $10 million a year to $26 million, resulting in a 50% increase of residential customers who were disconnected from gas service.[21] Mr. Donald Mason, Commissioner of Ohio's Public Utilities Commission, put the numbers into human terms:

> It is hard to measure the suffering that takes place to a family that has high heating bills; only to have their hot water and heating disconnected, which could even occur during the summer months. Additionally, those families that do manage to make payments, substitute those payments for other important items, or delay paying other bills. Either outcome affects consumer credit and family stability.[22]

The human toll associated with high natural gas prices is felt all across the nation. In New England, homeowners spent $400 (from $900 to $1300) more to heat their homes from the winter of 2002 to the winter of 2003.[23] Experts project that in colder climates like the Northeast, households could pay upwards of $1700 to heat their homes.[24]

Like most taxes, the rise in natural gas prices hits people on fixed or near fixed incomes, like the elderly and low-income residents, most heavily. According to the Census Bureau, there are more than 3.6 million impoverished elderly in the U.S.[25] Mr. Jim Martin, President of 60 Plus Association stated that

---

17. MORTGAGE BANKERS ASS'N OF AM., MBA ECON. COMMENTARY ISSUE #116, RISING ENERGY PRICES: A QUANDARY FOR THE FED (June 2004) [hereinafter MORTGAGE BANKERS ASS'N OF AM.], http://www.mortgagebankers.org/marketdata/econ.comm/ec0604.html.

18. Letter from the Energy Consumers of Am. to Sec'y Gale Norton (Mar. 28, 2005), http:\\www.ieca-us.com/downloads/natgas/Secretary_Norton_032805.doc.

19. MORTGAGE BANKERS ASS'N OF AM., *supra* note 17.

20. *Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce*, 108th Cong. 23 (2003) [hereinafter Mason] (statement of Donald L. Mason, Commissioner Public Utility Commission of Ohio).

21. *Id.*

22. Mason, *supra* note 20, at 24.

23. GLOBAL INSIGHT, INC., THE IMPACT OF HIGH GAS PRICES ON JOBS, THE ECONOMY AND CONSUMERS 6 (2003) [hereinafter GLOBAL INSIGHT, INC.], *available at* http://www.accnewsmedia.com/docs/1300/1228.doc?DocTypeID=4&TrackID=.

24. *Id.*

25. *Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. (2004) (statement of Jim Martin, President, 60 Plus

high natural gas prices, "not only endanger[] our economy, [they are] especially threatening to American seniors [who are] struggling to make ends meet."[26] Elderly Americans are particularly vulnerable because, "[s]eniors on fixed incomes must somehow stretch finite dollars to cover their increasingly costly basic needs."[27] In effect, they are forced to choose between paying for food, energy, or pharmaceuticals. Yet, high natural gas prices are not solely evidenced in heating or electricity bills. Mr. Martin wisely noted that, "[n]atural gas is essential to produce foods, medicines and a host of necessities" and "is likely even embedded in many of the utensils and TV trays that rest upon our kitchen tables."[28]

2. Businesses

High natural gas prices act as a multiplier for the relative costs on domestically produced products. Ultimately, this is reflected in higher prices charged to consumers. Natural gas is used as a fuel or feedstock for industrial use. It powers our factories, furnaces, and is a necessary chemical component for hundreds of products. All consumers feel the financial pinch of high natural gas prices "as higher input costs are absorbed into production costs for all sorts of products . . . ."[29] Therefore, high natural gas prices increase the costs of production, providing gas-dependent industries a very difficult choice: close down domestic operations or temporarily incur the increased prices and hope prices come down.

The degree to which natural gas prices have affected businesses is challenging to describe in terms that most people can appreciate. Yet, one trade association found that it would be as if a household suddenly had to pay "$16 for a gallon of milk, $12.70 for a pound of ground beef, and $9.21 for a gallon of gasoline."[30]

High natural gas prices have hurt businesses small and large. "In Connecticut, for example, pizza shops complain that their natural gas bills have increased $500–700 per month."[31] Small businesses typically operate on thin profit margins and do not have significant financial cushions to incur new costs. They likely pass those higher prices on to their customers who may or may not be willing to pay more for the same pizza.

3. Manufacturers

The U.S. industrial or manufacturing sector represents a diverse and wide

---

Association).

26. Jim Martin, *Natural Gas Price Shock*, WASH. TIMES, Nov. 14, 2004 [hereinafter *Natural Gas Price Shock*], *available at* http://www.60plus.org/energy.asp?docID=444.

27. *Id.*

28. *Natural Gas Price Shock*, *supra* note 26.

29. *Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. (2004) [hereinafter Velazquez] (statement of David Velazquez, Vice President, Business Planning for Conectiv Energy for the Edison Electric Institute).

30. *See* THE AM. CHEMISTRY COUNCIL, ACC MEDIA KIT ON NATURAL GAS, http://accnewsmedia.com/site/page.asp?TRACKID=&VID=&CID=253&DID=974&PSID=&KID=90&KCID=253 (last visited Sept. 15, 2005).

31. *Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce*, 108th Cong. 32 (2003) [hereinafter English] (statement of Carl L. English, President and Chief Executive Officer, Consumers Energy on behalf of the American Gas Association).

number of companies. As such, understanding the precise effect that high natural gas prices have on those companies is complicated. Regardless of a particular company's characteristics, higher natural gas prices "alone changes the competitive environment for many industrial consumers."[32]

On April 5, 2005, Alan Greenspan, Chairman of the Federal Reserve noted, "U.S. natural gas prices since late 2002 have been notably higher, on average, than prices abroad, thereby putting significant segments of the North American gas-using industry in a weakened competitive position."[33]

In the case of large domestic businesses, such as capital-intensive manufacturers, the effect of natural gas prices is even more complicated and acute. These companies compete in a global marketplace where labor costs are a fraction of those in the U.S., and where environmental requirements may be non-existent. U.S. manufacturers have successfully worked within the most stringent regulatory environment in the world, pay high wages, and still produce the best and most reliable products in history. However, the costs to produce those goods have risen so dramatically that factories are going bankrupt, temporarily or permanently mothballing their facilities, or otherwise laying off large contingents of their labor force. The principal reason for this tragic turn in the high paying manufacturing sector (the historic backbone of the U.S. economy): high natural gas prices.

According to the National Association of Manufacturers, industries that rely on natural gas "include chemicals, fertilizer, food processing, aluminum recycling, glass making, steel casting, and metal heat treating."[34] The following six industries in particular account for "80 percent of industrial natural gas": chemicals, petroleum refining, primary metals, food and beverage, paper, and non-metallic product industries (stone, clay, and glass).[35] The chart below depicts how natural gas is used by industrial users both as a feedstock and fuel.

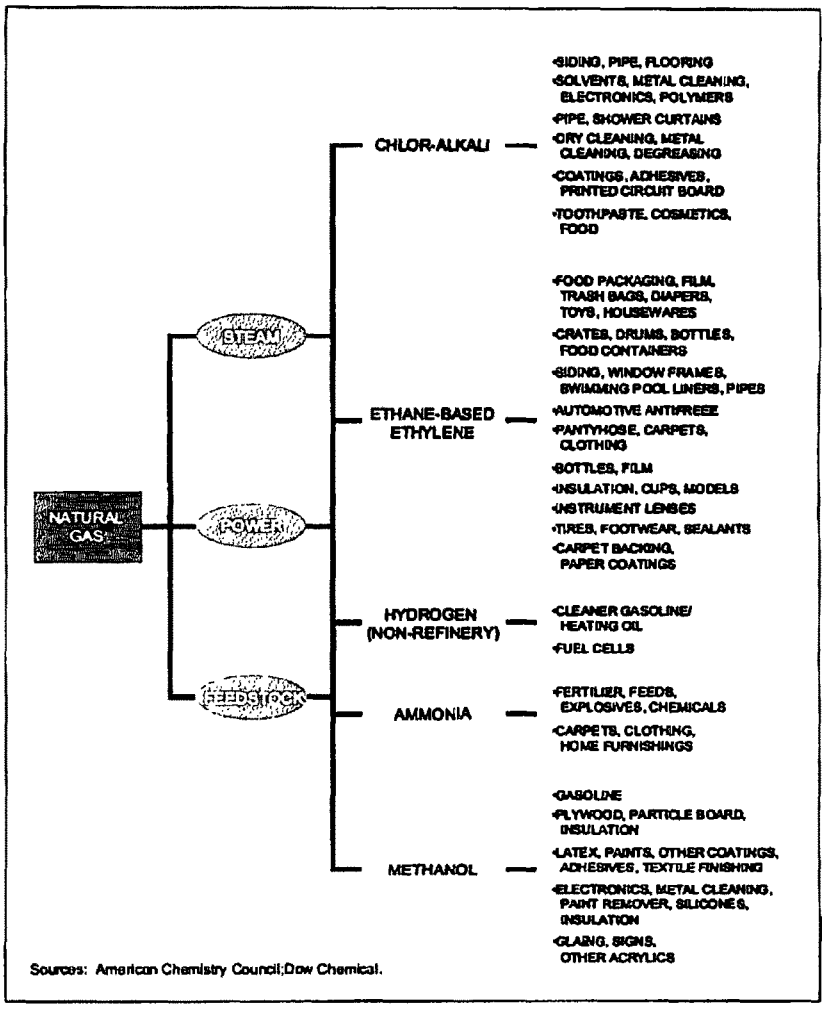
32. DEMAND REPORT, *supra* note 2, at 3-1.

33. ALAN GREENSPAN, REMARKS BEFORE THE NATIONAL PETROCHEMICAL & REFINERS ASSOCIATION (2005), *available at* http://www.federalreserve.gov/boarddocs/speeches/2005/20050405/default.htm ("Indeed, ammonia and fertilizer plants in the United States have been particularly hard hit as the costs of domestic feedstocks have risen relative to those abroad.").

34. *See* NAT'L ASS'N OF MFRS., INDUSTRY AND THE ECONOMY NEED MORE NATURAL GAS SUPPLY (2003), *available at* http://www.nam.org/s_nam/doc1.asp?CID=141&DID=225963.

35. DEMAND REPORT, *supra* note 2, at 3-4.

Figure 2[36]



One might consider that a proper market response of higher production costs would simply be higher prices. However, these six gas-intensive domestic industries face intense international competition that has serious implications on their viability.[37] "Because the current gas pressures are most intense in North America, U.S. exports are relatively more expensive on the world market."[38] Further, global market competition means that "U.S. companies are unable to pass these added costs for natural gas along to their customers if [their] products

36. *Id.* at 3-3.

37. *Id.* at 3-1.

38. GLOBAL INSIGHT, INC., *supra* note 23, at 5.

are to remain competitively priced with those produced by our foreign competitors."[39]

Natural gas prices have serious implications far beyond companies' ability to earn profits. In fact, high natural gas prices so seriously increase production costs that manufacturers' very survival is in jeopardy.

"Glass manufacturers, which also use large amounts of natural gas, have reported earnings falling by 50% as a result of natural gas prices. In our industrial and commercial sector, competitiveness in world markets and jobs at home are on the line."[40] With respect to the chemical manufacturing industry, "every one-dollar increase in the price of natural gas, over the course of a year, [translates to] approximately $4.2 billion in additional costs."[41] According to the American Chemistry Council's testimony submitted for the Environment Committee's March 2004 hearing on natural gas issues, "[i]n the past five years, the US chemical industry lost $50 billion . . . to foreign competition."[42] To put that into perspective, "[a]ffordably-priced natural gas helped make chemicals the nation's largest export industry" which helped sustain hundreds of thousands of high paying jobs.[43] Today, largely due to high natural gas prices, "[t]he US has become a net importer . . . of chemical products . . . ."[44]

In explaining the erosion of the U.S. chemical manufacturing industry to global competitors, R. William Jewell, vice president for energy at Dow Chemical stated, that "[w]e have the highest natural gas prices in the industrialized world . . . ."[45]

Note, Mr. Jewell focused on "the industrialized world" rather than poor or developing nations, which are typically raised when discussing the implicit disparity of international competition. "The Dow Chemical Company moved 1.4 billion pounds of production from the U.S. to Germany in large part because of high energy costs. For the first time in the history of our industry, energy costs in Europe [are] substantially below those in the U.S., leaving domestic industries at a disadvantage."[46]

The map below illustrates Mr. Jewell's point that too many unemployed workers learned the hardest of ways.

---

39. Gupta, *supra* note 4, at 51.

40. English, *supra* note 31, at 32.

41. Gupta, *supra* note 4, at 51.

42. *Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. 224 (2004) [hereinafter American Chem. Council] (statement of the American Chemistry Council).

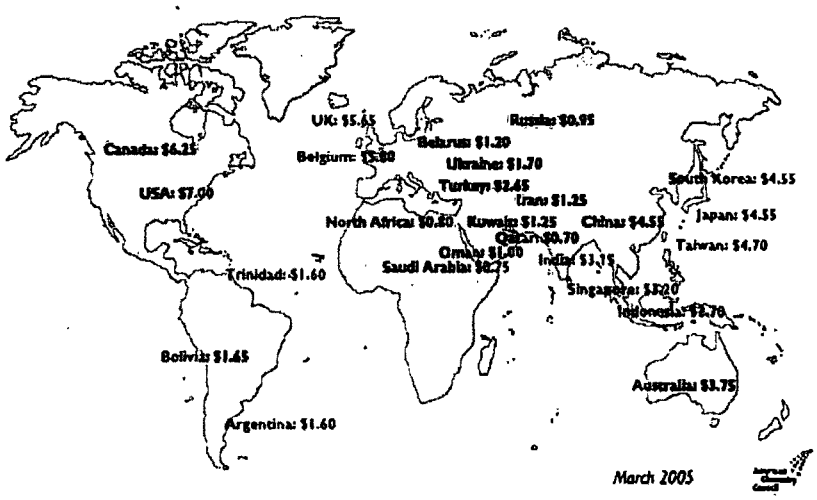
43. *Id.* at 224.

44. American Chem. Council, *supra* note 42, at 224.

45. Greg Schneider, *Chemistry Industry in Crisis: Natural Gas Prices are Up, Factories are Closing and Jobs are Vanishing*, WASH. POST, Mar. 17, 2004, at E01.

46. Gupta, *supra* note 4, at 52.

Figure 3[47]



The disparity between high U.S. natural gas prices versus the rest of the world has meant widespread worker lay-offs. "'Across the country, 1 in every 10 chemical-related jobs has vanished in the past five years—nearly 100,000 workers . . . .'"[48]

The chemical industry is far from alone in their struggle to stay afloat in a high natural gas priced environment. The U.S. forest and paper industry, which employs 1.3 million people, has been hard hit as well.[49] The American Forest & Paper Industry "[has] lost more than 120,000 high paying manufacturing jobs and closed more than 220 plants."[50]

That most American of all industries, farming, has been hurt badly as well. The cost of natural gas accounts for up to 90% of the total costs of manufacturing fertilizer. In a report to Congress, the U.S. General Accounting Office found that, "[u]nfortunately for domestic nitrogen fertilizer manufacturers, the price of natural gas in the United States can far exceed its price in other parts of the world" and that "domestic manufacturers are at a competitive disadvantage when domestic natural gas prices rise."[51]

---

47. AM. CHEMISTRY COUNCIL, NATURAL GAS COSTS AROUND THE WORLD, http://www.americanchemistry.com/s_acc/sec_mediakits.asp?CID=217&DID=1308 (last visited Oct. 7, 2005).

48. American Chem. Council, *supra* note 42, at 1.

46. *Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. 1 (2004) (statement of James Rubright, Chairman & CEO Rock-Tenn Co. on behalf of the American Forest & Paper Association).

50. *Id.* at 2.

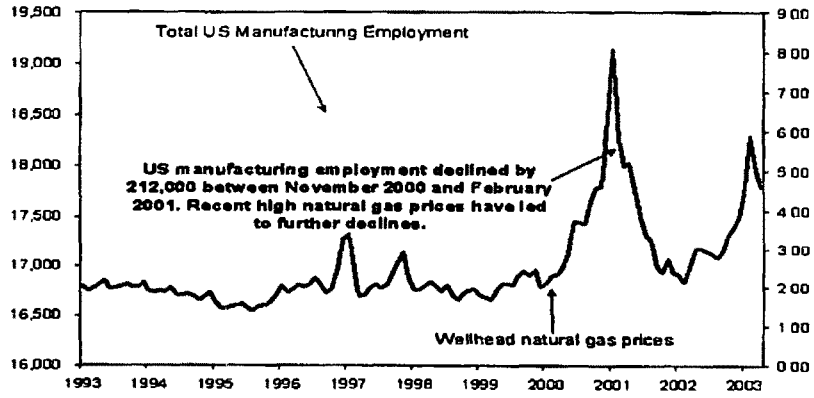
51. U.S. GEN. ACCOUNTING OFFICE, GAO-03-1148, NATURAL GAS: DOMESTIC NITROGEN FERTILIZER

Bob Drake of the Oklahoma Farm Bureau stated that high natural gas prices have "cost U.S. farmers and ranchers an extra $2.6 billion to produce the same amount of food and fiber in 2003 when compared to the 2002 growing season."[52] As is the case with domestic chemical plants, U.S. fertilizer plants have been forced to shut down. Since 2000, "11 ammonia nitrogen fertilizer plants . . . representing 21 percent of domestic capacity" and "[a]n addition[al] 15 to 20 percent of the fertilizer industry is temporarily" shuttered.[53]

For an economist, the effect of U.S. gas-dependent industries appears as an economic phenomenon known as, "demand destruction." According to natural gas usage data, demand may appear to have decreased from one year to the next due to a harsh truth: the source of that demand—the manufacturing plant—has shutdown.

In analyzing the effects on the manufacturing sector in the winter of 2001, Dr. Jeffrey R. Currie, Managing Director of Goldman, Sachs & Co. concluded that "[t]he loss [in] industrial demand was massive, a 20 percent permanent decline that resulted in the loss of at least 200,000 manufacturing jobs."[54] The chart below demonstrates the relationship between increases in natural gas prices and the corresponding reduction in U.S. jobs.

Figure 4[55]



C. *Why has Natural Gas Demand Increased So Dramatically?*

As stated earlier, natural gas prices have increased as demand, mostly in the

---

PRODUCTION DEPENDS ON NATURAL GAS AVAILABILITY AND PRICES 19 (2003).

52. *Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. 2 (2004) (statement of Bob Drake, Vice President, Oklahoma Farm Bureau).

53. *The Impact of High Natural Gas Prices on Small Farmers and Manufacturers: Hearing Before the Subcomm. on Rural Enterprises, Agriculture & Technology of the H. Comm. on Small Business*, 108th Cong. 2 (2004) (statement of Hal Swaney, Missouri Farm Bureau).

54. *Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce*, 108th Cong. 67–68 (2003) (statement of Jeffrey R. Currie, Managing Director, Goldman, Sachs & Co.).

55. *Id.*

electricity generation sector, has increased. The U.S. historically relied on coal as the principal fuel for electricity generation. The national economy grew significantly and with that growth U.S. businesses and homes demanded more energy. However, federal air quality regulations along with other environmental regulations promoted the use of natural gas as a cleaner generating fuel than coal and less controversial than nuclear.[56]

The environmentally driven preference for natural gas over coal has occurred irrespective of more traditional market-based rationales. For example, according to the Industrial Energy Consumers of America, "[a]s a power generation fuel, coal is far more reliable than natural gas because several months of coal supply can be stored on site, while natural gas is only reliable so long as gas the flows."[57]

Regardless of the relative merits of coal, environmental policies seemed to have dictated fuel choice in the generation of electricity. The Congressional Joint Economic Committee found that, "environmental [laws] passed in the 1980s and 1990s [and their subsequent regulations,] encouraged utilities to use clean burning natural gas rather than coal or oil."[58]

The Clean Air Act Amendments of 1990 (CAAA) substantially changed the way in which air emissions were regulated. The CAAA "were primarily focused on reducing sulfur dioxide (SO2) and nitrogen oxide (NOx) emissions from electric power plants and, to a lesser extent, from industrial and transportation sources."[59] "To comply with the [new] mandates, . . . generators and industry turned increasingly to natural gas, either by switching existing facilities from other fuels to gas or investments in new, gas-only equipment."[60]

In fact, 90% of new power plants are gas-fired in large part as a result of government environmental policies.[61] The charts below illustrate how natural gas-based generation increased dramatically relative to coal after the Clean Air Act Amendments of 1990.

---

56. "Air quality regulations and uncertainty are the biggest environmental issue facing the power industry that will ultimately affect natural gas demand, however, the power industry also faces substantial challenges in water quality, solid waste disposal, and the spent nuclear waste disposal issue." DEMAND REPORT, *supra* note 2, at 5-14.

57. PAUL N. CICIO, INDUS. ENERGY CONSUMERS OF AM., COMMENTS ON THE INDUSTRIAL ENERGY CONSUMERS OF AMERICA CONCERNING PROPOSED RULE TO REDUCE INTERSTATE TRANSPORT OF FINE PARTICULATE MATTER AND OZONE 10 (2004).

58. JOINT ECON. COMM., THE PRESSURES ON NATURAL GAS PRICES (2004).

59. DEMAND REPORT, *supra* note 2, at 6-5.

60. *Id.*

61. H.R. SPEAKER'S TASK FORCE FOR AFFORDABLE NATURAL GAS, 108th CONG., FINAL SUMMARY OF FINDINGS (2003), *available at* http://www.nei.org/documents/Congressional_Report_Natural_Gas.pdf.

Figure 5[62]

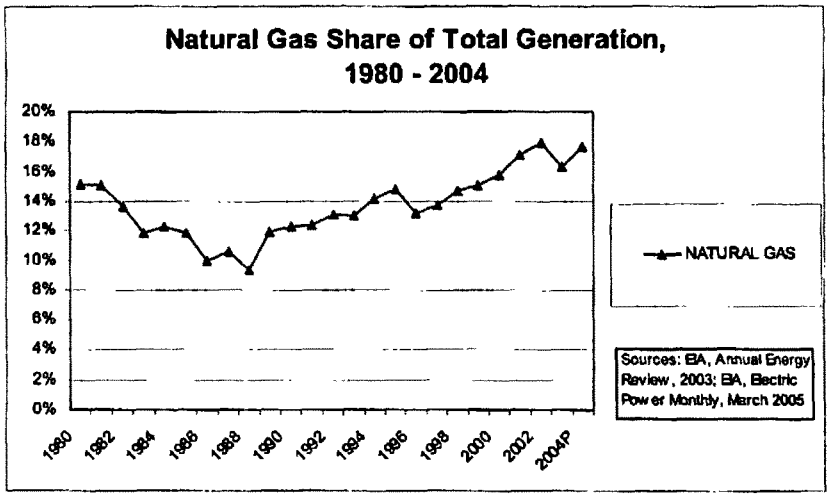
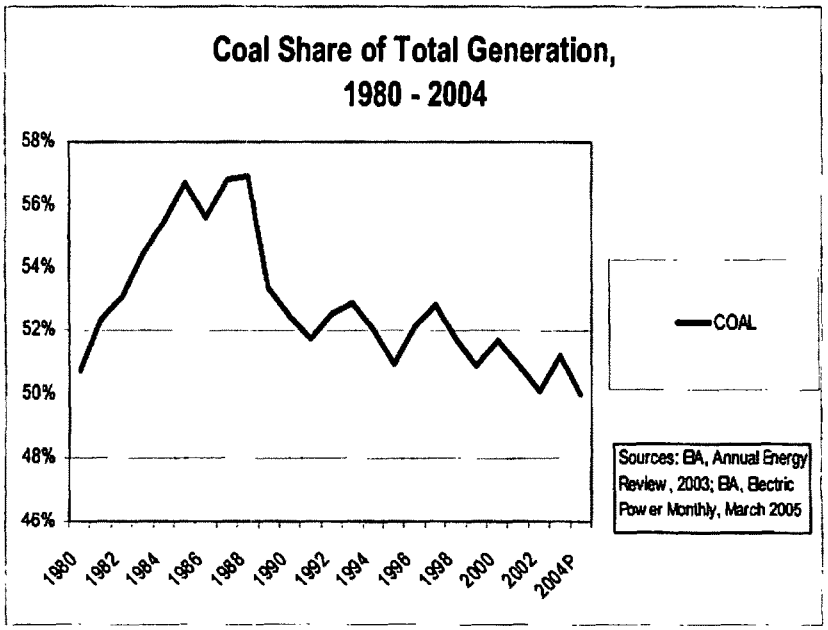


Figure 6[63]



62. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, NATURAL GAS SHARE OF TOTAL GENERATION (2005) (relying on data developed for the Committee by the Energy Information Administration).

63. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, COAL SHARE OF TOTAL GENERATION (2005) (relying on data developed for the Committee by the Energy Information Administration).

Some states' percentage of natural gas-dependent electricity is closer to 100%, and many of those states today are starving for more natural gas, no matter the price. For example all of California's power plants "since 1998 have been natural-gas-fired facilities."[64] California's Energy Commission concluded that natural gas has allowed power plant developers "to meet local air quality regulations that implement the federal Clean Air Act."[65]

Implementations of the EPA's current regulations, such as New Source Review among others, have also driven the electricity generation industry away from coal and toward natural gas to meet customers' needs. This effect is difficult to quantify because the Energy Information Administration does not include the potential impact of proposed regulations such as the EPA's Clean Air Interstate and Clean Air Mercury rules in considering its projections.

D. Supply

The U.S. natural gas market may appear to be unable to correct itself since supply has yet to meet increased demand. Indeed, "a supply constrained market will hunt down and kill the incremental demand necessary to balance. Price is an effect, not the cause."[66] According to the American Gas Foundation, today's gas market is "supply-constrained—that is, domestic gas production is at or near 100 percent of [potential] production . . . ."[67]

This begs the question: Does the U.S. have abundant natural gas resources? The answer is unequivocally and unconditionally yes. The United States has abundant natural gas resources. According to the National Petroleum Council, using today's technology, the U.S. alone has 1,451 trillion cubic feet (TCF) and North America's resource totals 1,969 TCF of natural gas.[68]

Considering that the U.S. has a significant natural gas resource base, why then is the market supply constrained?

II. OBSTACLES TO MODERATING NATURAL GAS PRICES

According to the American Gas Foundation's February 2005 study, if current policies continue, natural gas prices will rise to nearly double what they are today in the next fifteen years.[69] As detailed earlier, the Nation has experienced widespread economic dislocation resulting from current high gas prices. It is critical that Congress act today to keep natural gas demand destruction from snowballing into economy-wide destruction.

As discussed in the preceding section, U.S. environmental policies, principally through the regulation of air emissions, increased demand for natural gas. Section II will detail the environmental-based policies that have acted as very real constraints on increasing supplies of natural gas.

---

64. CALIFORNIA REPORT, *supra* note 10, at 11.

65. *Id.*

66. *American Iron and Steel: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. (2004) (statement of Guy H. Ausmus, Chairman, American Steel Institute) (speaking on the effect of demand destruction).

67. GAS FOUNDATION, *supra* note 15, at 32.

68. INTEGRATED REPORT, *supra* note 5, at 110.

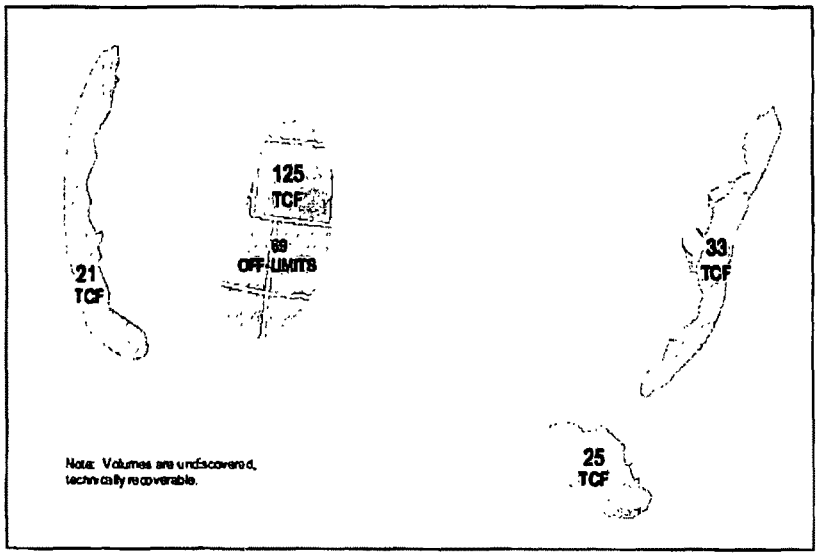
69. Prices rise to $13.76 by 2020. GAS FOUNDATION, *supra* note 15, at 33.

A. Onshore

The United States has significant natural gas resources within the lower forty-eight states.[70] In order to meet national demand for natural gas, producers must explore beyond traditional locations. Traditional sources of gas are in mature basins, and therefore have experienced declining production.[71] Offsetting this decline will be increasing production from non-conventional resources, especially in the Rocky Mountains.[72]

However, much of those non-conventional areas are the very same that have effectively been deemed off-limits. "[T]he trend towards increasing leasing and regulatory land restrictions in the Rocky Mountain region . . . is occurring in precisely the areas that hold significant potential for natural gas production."[73]

Figure 7[74]



The Rockies contain 238 TCF of gas or 24% of the resource base in the lower forty-eight.[75] Yet, as the map indicates, 69 TCF or 29% of that gas "is currently off-limits to exploration and development, either due to statutory leasing withdrawals or to the cumulative effects of conditions of approval

70. "There is ample supply to meet current demand for natural gas . . . ." *See* DOMESTIC PETROLEUM COUNCIL, NATURAL GAS: CLEAN ENERGY TO KEEP AMERICA GOING STRONG, *available at* http://www.dpcusa.org/natural/pdf/access.pdf (last visited Sept. 15, 2005).

71. INTEGRATED REPORT, *supra* note 5, at 121.

72. *Id.*

73. NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: SUMMARY 33 (2003), *available at* http://npc.org/reports/NG_volume_1.pdf [hereinafter SUMMARY REPORT].

74. INTEGRATED REPORT, *supra* note 5, at 127.

75. NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: SUPPLY 6-1 (2003), *available at* http://www.npc.org/reports/STG-final.pdf [hereinafter SUPPLY REPORT].

associated with exploration and development activities."[76] Further, there is either no access to or higher production costs to 125 TCF, or over half of the Rockies total gas resource base.[77]

According to Mr. Laurence Downes, Chairman of the American Gas Association, "America is not running out of natural gas, and it is not running out of places to look for natural gas. America is running out of places where we are *allowed* to look for gas."[78]

The reasons for such limited access to these critical gas resources are numerous and varied. Of course many public lands have bans on production activities, such as National Parks and designated Wilderness Areas. Other areas have been deemed "effectively off-limits" because the regulatory uncertainty prohibitively raises the costs of production. The following discussion shall be confined to areas that are "technically" available for multiple use activities, including natural gas production.

When a producer obtains a lease to explore and produce natural gas on public lands, oftentimes the lease includes stipulations. Lease stipulations often restrict activity to certain periods of the year or focus on particularly designated areas.

B. Lease Stipulations and Conditions of Approval

Lease stipulations and conditions of approval typically may be related to the presence of animal or bird species. The mere presence of a species during certain times of the year may limit or restrict a producer's proposed activity. However, those restrictions are routinely based on assumptions rather than facts. For example, a producer's activity could be restricted because the area may, within a six-month period, be used by mule deer. Therefore, the producer may only be permitted to explore or produce during the remaining six months of the year.

It is important to note that this restriction preventing any disturbance during a six-month window attaches regardless of what the actual impact on the deer may or may not be. In fact, such restrictions routinely apply without a prior finding of harm or even any scientific evidence demonstrating a probability of injury. For example, the Bureau of Land Management (BLM) began restricting certain types of drilling and construction operations of 380,000 acres of land in southeastern New Mexico from April through June to avoid disruptions to prairie chicken mating.[79] Only after the industry insisted on a scientific study of the issue did the BLM indicate that it would reduce the area to 196,000 acres.[80]

Further, during the permitting process for exploration and production activities on public lands, federal agencies will often require "conditions of approval." Conditions of approval are largely based in federal environmental law and may act as an additional impediment to exploration and development—

---

76. *Id.*

77. SUPPLY REPORT, *supra* note 75, at 6-1.

78. *Energy Policy Act of 2005: Ensuring Jobs for Our Future with Secure and Reliable Energy: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy & Commerce*, 109th Cong. (2005) (statement of Laurence Downes, Chairman, American Gas Association).

79. ENVTL. ASSESSMENT DIV., U.S. DEP'T OF ENERGY, ENVIRONMENTAL POLICY AND REGULATORY CONSTRAINTS TO NATURAL GAS PRODUCTION 36 (2004) [hereinafter ARGONNE REPORT].

80. *Id.*

through excessive delay in approval and increased costs—beyond the initial lease stipulations.[81] Again, conditions of approval occur when a producer initiates the permit process to perfect the lease he already obtained. The development of conditions of approval attached to the permit is driven in large part by the National Environmental Policy Act, one of the first major environmental laws in the world.

C. The National Environmental Policy Act

The National Environmental Policy Act (NEPA) was established in 1969 and is regarded as the U.S.'s basic charter for environmental protection. NEPA is a procedural statute designed to ensure that major federal actions consider the human environment. Today, the term "human environment" may sound strange to the listener since environmental discussions are often framed in human versus environment. However, NEPA's explicit goal is to "create and maintain conditions under which man and nature can exist in productive harmony . . . ."[82] Extending that concept further, the Council on Environmental Quality promulgated regulations stating that "[h]uman environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."[83]

Therefore, NEPA was expressly designed so the federal permitting process would reflect the practical and real relationship that exists between environmental and human goals. That process driving the decision-making was intended to respect and work within that relationship. However, in practice, a wedge has been driven between the human and the environment. The mutual relationship carefully balanced in regulation and in NEPA itself has been broken apart. Today, "the overall welfare and development of man"[84] is portrayed by many as a goal that acts to the detriment of "maintaining environmental quality . . . ."[85]

Adding to the discord and inefficiency of resource development is the fact that federal agencies have not implemented NEPA in a consistent and integrated way. Depending on the proposed project, an assortment of federal agencies may often have some form of jurisdiction, authority, or consultative role in permitting. Yet, those same agencies may have different timetables, requirements, and statutory missions that lead to inconsistent and uncertain decision-making.[86] For example, BLM was prepared to issue new leases for a project in Wyoming, but "[a]t the last moment, the [U.S. Fish and Wildlife Service] reported that it had not completed its required assessment[s] . . . and would delay the issuance . . . ."[87] "The lack of coordination and cooperation

---

81. INTEGRATED REPORT, *supra* note 5, at 178–79.

82. National Environmental Policy Act of 1969, 42 U.S.C. § 4331(a) (2000).

83. 40 C.F.R. § 1508.14 (2005). Further, "[w]hen an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." *Id.*

84. 42 U.S.C. § 4331(a).

85. *Id.*

86. *See* THE NEPA TASK FORCE REPORT TO THE COUNCIL ON ENVTL. QUALITY, MODERNIZING NEPA IMPLEMENTATION 24–34 (2003), available at http://ceq.eh.doe.gov/ntf/report/pdftoc.htm [hereinafter NEPA TASK FORCE].

87. ARGONNE REPORT, *supra* note 79, at 63.

between two divisions within the single Department . . . delays access to much-needed natural gas supplies."[88]

Opponents of natural gas exploration and production have effectively used the inconsistent determinations and lack of coordination between federal agencies to thwart the process. The NEPA process is unfortunately, but skillfully, used to create uncertainty and ultimately delay, if not outright halt proposed projects. "Opponents of development understand that NEPA . . . offer[s] opportunities for delay. Delay in making decisions can have a critical impact on development."[89]

With respect to oil and gas exploration and production, delay can be, and often is, tantamount to stopping the project. If the borrower cannot satisfactorily demonstrate certainty, then he/she will not obtain financing for the venture. "[T]his NEPA process . . . has become the principal tool used by obstructionists to delay or halt natural gas development."[90] By careful use of the NEPA-related permitting process, opponents create that uncertainty and thereby manufacture financial risk. In order to obtain financing for a venture—personal or business—a bank, lending institution or investor requires the likelihood of a return within a time certain. "Producers must reinvest their capital continuously and cannot allow it to stagnate because of permitting delays."[91] In testimony before the Committee on Environment & Public Works, Mike Caskey, Vice President and Chief Operating Officer for Fidelity Exploration and Production put it another way:

> Imagine the owner of any other business, who obtains all the permits necessary to conduct business, sets up an office, invests in hiring workers and makes a commitment to buy equipment, supplies and startup needs and isn't allowed to conduct business because of frivolous litigation that targets the well-established licensing process.[92]

Some are so focused on their agendas that they refuse even to acknowledge facts that do not fit in with their own circumscribed interests. The Committee on Environment & Public Works heard from a diverse group of natural gas interests, but especially from businesses, farmers, and a Governor fearful that their jobs and economies are in jeopardy due to the natural gas crisis. After hearing from several witnesses who have experienced job losses, a lawyer for the Southern Utah Wilderness Alliance (SUWA), Stephen Bloch, testified against exploration and production of natural gas in certain areas.

SUWA, like other groups made some controversial and, many believe, unfounded statements that ran counter to the facts as we heard them. After reading much testimony and listening repeatedly to various claims, I chose to ask Mr. Bloch directly about his organization's position. A portion of the Committee's transcript is below:

> Senator INHOFE. Mr. Bloch, your website refers to our state of affairs as "the

---

88. *Id.*

89. INDEP. PETROLEUM ASS'N OF AM., DEVELOPING DOMESTIC NATURAL GAS SUPPLY 3 (2005), *available at* http://www.ipaa.org/meetings/NaturalGasConference.pdf [hereinafter IPAA].

90. *Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. 109 (2004) [hereinafter Caskey] (statement of Mike Caskey, Executive Vice President and Chief Operating Officer, Fidelity Exploration & Production Co.).

91. IPAA, *supra* note 89.

92. Caskey, *supra* note 90, at 172–73.

> fabricated energy crisis." What do you mean by "fabricated energy crisis." Do you think it is not real.
>
> Mr. BLOCH. No, Senator; I think SUWA and the conservation community is as concerned as everyone you have heard from already at this hearing. I think our concern is the use of the so-called "crisis" to lift some of the important environmental protections afforded by statutes, such as NEPA, to lift the protections of those statutes and to allow for an expedited process, starting from the leasing stage all the way to production. That is going to cause significant environmental damage as a result. So I think that is our concern.[93]

Spurred by the lack of clarity on the part of the witness, I continued:

> Senator INHOFE. Do you believe there is an energy crisis?
>
> Mr. BLOCH. I think I would agree with the other statements made today that there seems to be shortages of natural gas in some of the places where it is needed most."[94]

Bob Drake from the Oklahoma Farm Bureau had testified just a few moments before how high natural gas prices are eroding America's ability to grow food and fiber. Given the seemingly conflicting testimony, I again attempted to clarify the record:

> Senator INHOFE. So there is an energy crisis? Yes or no?
>
> Mr. BLOCH. It certainly appears that way from what we have heard.[95]

Ohio's Senator Voinovich had listened to testimony from a manufacturer in his state that was experiencing tremendous strain, with the likelihood of closing operations directly due to high natural gas prices. Like me, Senator Voinovich was anxious to understand this group's position, and asked the witness to be as clear and direct as possible.

> Senator VOINOVICH. I had the same concern. On your website you mentioned "fabricated energy crisis." Were you here this morning for the testimony?
>
> Mr. BLOCH. Yes, I was, Senator.
>
> Senator VOINOVICH. After hearing that testimony, would you say that there really is an energy crisis?
>
> Mr. BLOCH. As I stated earlier, I would agree that all the speakers indicated that there is a crisis.[96]

This brief insight into the attitudes of some of the traditional opponents of energy projects indicates the difficulty we face in dispensing with agendas and moving on to common ground. Only after quite literally facing people on the brink of going out of business did this particular representative acknowledge the unfortunate fact—we are indeed experiencing an energy crisis.

The concern over litigation is so grave that environmental impact statements (EIS) are now routinely collected in multiple volumes rather than just pages.[97] Yet, the plain language of NEPA's regulations directs agencies to

---

93. *Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. 107 (2004) [hereinafter Inhofe and Bloch] (statements of Sen. Inhofe and Mr. Bloch).

94. *Id.*

95. Inhofe and Bloch, *supra* note 93.

96. *Id.*

97. IPAA, *supra* note 89.

reduce paperwork and background data and even provide summaries.[98]

Federal agencies are so concerned with challenges and related litigation that their permitting actually may be violating the very Act and regulations that establish the permitting process itself. The fact is that NEPA's intent, as established in the black letter of the law and regulations, is not being executed. Rather, litigation and court decisions increasingly "find" the "intent of NEPA and determine requirements for compliance."[99]

Rather than work toward proper and useful environmental analysis that improves agency decision-making, "NEPA has become an end unto itself . . . ."[100] Federal agency personnel know that the information they use go far beyond the requirements in the Act and implementing regulations, but they feel the need to "litigation-proof" their environmental analysis and review. Fearful of litigation, federal officials often require environmental impact statement at the outset even when no significant impacts have been found.[101]

The irony, of course, is that the public is harmed many times over by the misuse of the very process designed to provide public participation. The public has implicit and explicit rights to comment and participate in public land use decisions. However, that "participation" all-too-often means litigation. Litigation forces agency personnel to "litigation-proof" their documentation by drafting multivolume EISs. Yet, such documentation is effectively impenetrable and virtually inaccessible by the vast majority of the public.

D. Endangered Species Act

The Endangered Species Act (ESA) is under considerable scrutiny for several reasons. Proponents of reform, such as the Western Governors Association, have long called for a dialogue on the subject and proper implementation. The Environment & Public Works Committee is currently reviewing the Act and considering reform. With respect to ESA and natural gas exploration and production, the challenges relate to citizen nominations for additions to the list of endangered or threatened species.

The problem is that there are no qualification requirements to nominate a species for listing. Any group or individual can file a petition to list without scientific data.[102] The result is that opponents of natural gas exploration and production take advantage of the liberal public participation provisions to stop activity. Opponents simply petition that a particular species should be listed as a protected species. Once a species is listed, the species' habitat becomes effectively off-limits to exploration and production or any other activity that could result in a "take" of the species.[103]

For example, several groups petitioned the U.S. Fish & Wildlife Service (USFWS) that the Prebles meadow jumping mouse should be listed as an endangered species. Without proper and full scientific review, the USFWS

---

98. 40 C.F.R. § 1500.4 (2005).

99. ARGONNE REPORT, *supra* note 79, at 63.

100. SUPPLY REPORT, *supra* note 75, at 6-42.

101. *Id.*

102. SUPPLY REPORT, *supra* note 75, at 6-32.

103. Critical habitat designations and section 7 consultations were estimated to have caused delays to a natural gas project of six months to two years with an estimated cost over thirty years to the local economy from $261 million to $979 million. *See* ARGONNE REPORT, *supra* note 79, at 29–30.

designated the Prebles mouse and restricted 31,220 acres in Colorado and Wyoming and 359 miles of streams and rivers as designated habitat.[104] The Service initially proposed double the critical habitat but concluded that the additional land was already under protections.[105] The result of the "more reasonable proposal" drew ire from some. Eric Bonds, a spokesman for the Biodiversity Conservation Alliance stated, "I fear that the Fish and Wildlife Service has erred on the side of extinction."[106]

After spending millions of research dollars to fund mitochondrial DNA studies, independent scientists concluded that the Prebles is genetically indistinguishable from another common field mouse.[107] As a result of using well-grounded science, the USFWS is likely to de-list the Prebles mouse in short order.[108] One would think that the groups concerned with species' survival would be pleased. Yet, the reaction from the Biodiversity Conservation Alliance demonstrated their true intent all along—control over the land: "This proposal is a devastating blow to open space across the Front Range . . . ."[109]

Similarly, many groups have petitioned the Fish & Wildlife Service to list the sage grouse, a bird that inhabits eleven natural gas-rich states.[110] The USFWS considered listing the species but ultimately declined and opted for a cooperative approach instead. Secretary of Interior Gale Norton called the collaborative approach a success story.[111] Rather than asserting the blunt instrument of the federal government, the USFWS will work with grassroots and local conservation organizations to help the species thrive.[112] Like the Prebles mouse, one would think that those concerned about helping the species would feel empowered with the decision as they now have an official mandate to help. However, Mark Salvo, Director of the Sagebrush Sea Campaign said of the decision, "'[l]ocal conservation plans are mostly window dressing and are insufficient to save the [sage] grouse' . . . ."[113]

One only needs to consider the habitat that would effectively be made off-limits if the sage grouse were listed under ESA. As the bird's name implies, sage grouse live in and around sage.[114] Below is a map that superimposes sage (light gray) over the natural-gas rich basins (dark gray).

---

104. *FWS Halves Critical Habitat for Preble's Mouse*, GREENWIRE, June 23, 2003 [hereinafter *FWS Report*].

105. *Id.*

106. *FWS Report*, *supra* note 104.

107. Natalie M. Henry, *FWS Proposes Removing Protection for Preble's Mouse*, GREENWIRE, Jan. 31, 2005.

108. *Id.*

109. Henry, *supra* note 107.

110. April Reese, *Locals Shoulder Conservation in Wake of Listing Decision*, LAND LETTER, Feb. 17, 2005.

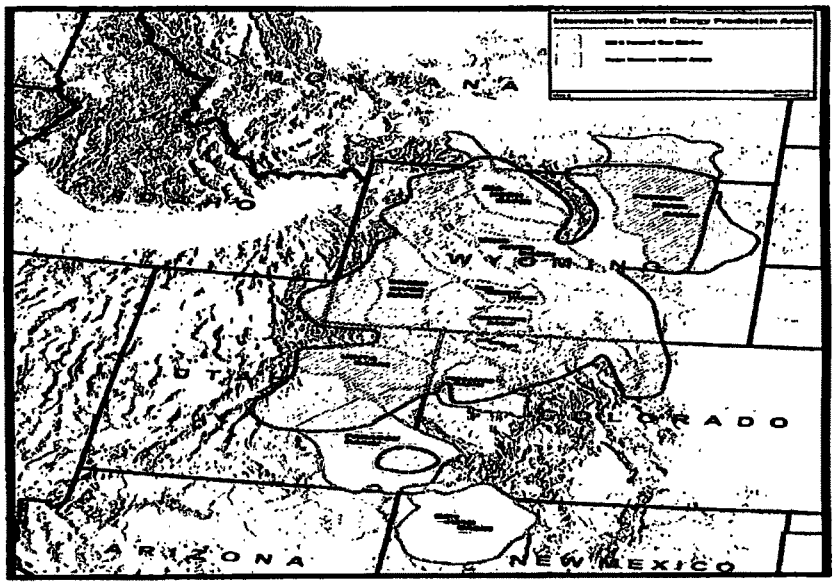
111. *Id.*

112. Reese, *supra* note 110.

113. *Interior to Deny Sage Grouse Federal ESA Protection*, GREENWIRE, Jan. 7, 2005.

114. *Id.*

Figure 8[115]



This map illustrates why some groups may be advocating for federal protection rather than innovative local conservation efforts. The effect of the Prebles mouse's designation would have stopped development; the likely effect of sage grouse designation would have stopped or at least restricted exploration and production of natural gas.

Therein lies the problem—the ESA is being used by those opposed to some or all to meet their own objectives rather than to help endangered or threatened species. One natural gas producer put the ESA issue in very simple terms: You want to find a threatened or endangered species, go find a well.

E. Hydraulic Fracturing

Hydraulic fracturing is a technique used to allow natural gas to move more freely from rock pores. The National Petroleum Council estimates that sixty to eighty percent of all wells drilled in the next decade to meet natural gas demand will require fracturing. The practice of hydraulic fracturing is regulated by the States. The EPA has consistently declined to regulate it under the Safe Drinking Water Act. Some have sued the EPA for its decision in hopes of forcing federal regulation. One group successfully sued in Alabama. That suit prompted the EPA to conduct a nationwide and comprehensive study of hydraulic fracturing, and intended to use the conclusions as a springboard for potential regulation.

In the belief that well-grounded and academically rigorous science, and not special interest groups and trial lawyers, should be the foundation for regulation, I introduced an amendment with the then-Chairman of the Energy Committee,

115. OFFICE OF FLUID MINERALS, BUREAU OF LAND MANAGEMENT, INTERMOUNTAIN WEST ENERGY PRODUCTION AREAS (2004).

Senator Jeff Bingaman, concerning hydraulic fracturing. My language required a full National Academy of Sciences (NAS) study of hydraulic fracturing while precluding the EPA from regulating the practice until the results were determined. My provision was attached to the 107th Congress' energy bill by a vote of seventy-eight to twenty-one.

The 107th and 108th Congresses failed to pass an energy bill. However, the EPA realized that well-grounded science was the appropriate foundation for regulation to be built upon. In June 2004, the EPA published the final version of its hydraulic fracturing study. During the study period, the EPA reviewed more than 200 peer-reviewed publications, interviewed roughly fifty state and local government agency employees, and communicated with scores of private concerned citizens.[116] The EPA concluded that, "the injection of hydraulic fracturing fluids into CBM [(coalbed methane)] wells poses little or no threat to USDW [underground sources of drinking water)] and does not justify additional study . . . ."[117]

Although the EPA's conclusions were certain, some members of the public were concerned over potential contamination from constituent liquids used in hydraulic fracturing. In response to those concerns, the EPA entered into memoranda of agreement with 95% of the oil and gas industry that hydraulically fractures wells will not use the liquids of concern.[118]

Notwithstanding the facts learned after careful scientific review of hydraulic fracturing, and the agreements reached between the producing industry and the EPA, some contend that hydraulic fracturing is harmful.[119] Like the Prebles mouse, well-grounded science and the facts concluded that excessive federal involvement was unwarranted, unnecessary, and unwise.

F. Natural Gas Infrastructure

Expanding U.S. natural gas pipeline infrastructure is a necessary prerequisite to moderating high gas prices for residents and businesses alike. Currently, the nation's existing gas pipeline system is fully utilized, and lacks reserve capacity with which to transport additional supplies.

---

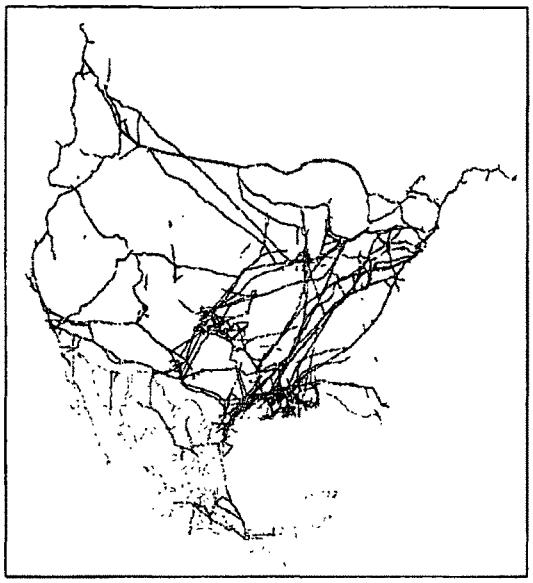
116. A full review of the practice of hydraulic fracturing and history of the litigation can be found online at http://www.epa.gov/safewater/uic/cbmstudy/docs.html.

117. ENVTL. PROT. AGENCY, EXECUTIVE SUMMARY: EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS ES-1 (2004), *available at* http://www.epa.gov/safewater/uic/cbmstudy/pdfs/completestudy/es_6-8-04.pdf.

118. *Id.* at ES-2.

119. *See, e.g.*, Tom Hamburger, *Exemption Likely to Drilling Rules*, L.A. TIMES, Apr. 14, 2005.

Figure 9[120]



U.S. Natural Gas Pipeline Infrastructure

Assuming more gas were available, in some regions gas pipelines would be challenged to bring sufficient gas used to heat residents' homes. For example, New England has no fossil fuels of its own so pipeline infrastructure is critical to deliver gas. During the Environment Committee's March 2004 hearing on natural gas issues, Rhode Island Governor Donald Carcieri detailed the very real near crisis that occurred in his State during the winter when the distribution system was "forced to shut off service to approximately 250 customers in order to preserve the remaining [ones]."[121]

Increasing the capacity of existing pipelines and constructing new infrastructure is expensive, but those are investments that must occur for demand for gas to be met.[122] Yet, the cost of inaction is even more expensive. Actions that delay or defer decisions force the investment costs higher, or result in capital flow to other projects not subject to the same delay. According to a detailed study by the Interstate Natural Gas Association of America (INGAA), "a two-year delay in natural gas infrastructure construction will cost U.S. gas consumers

120. COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: TRANSMISSION & DISTRIBUTION TASK FORCE REPORT T-7 (2003) [hereinafter TRANSMISSION & DISTRIBUTION REPORT].

121. *Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. (2004) (statement of Governor Donald Carcieri, Governor of Rhode Island).

122. "Pipeline and distribution investments will average $8 billion per year . . . to sustain . . . existing infrastructure." NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: TRANSMISSION & DISTRIBUTION T-3 (2003) [hereinafter TRANSMISSION REPORT].

in excess of $200 billion . . . ."[123]

With such high stakes from costs to consumers, to the possibility of compromised health or even increased mortality, one would assume that pipelines would be constructed in short order. However, pipeline construction or expansions are burdened with a host of permitting challenges even though interstate pipelines are provided special status intended to avoid them.

The Natural Gas Act of 1938 grants the Federal Energy Regulatory Commission (FERC) exclusive federal jurisdiction concerning the authorization, siting, and construction of interstate gas pipelines. However, the FERC's authority has been frustrated in several legal decisions as of late. Although the FERC has exclusive siting authority over interstate pipelines, the Commission is still required to comply with NEPA as the designated lead agency. To that end, the FERC has made great strides in meeting timely permit approvals through various Memoranda of Understanding with other federal agencies in 2002 and improved its processes.[124] Unfortunately, some state and federal agencies refuse to work within the FERC and NEPA process and will wait (and have waited) until the FERC concludes its review before even beginning their work in earnest.[125] These agencies have important permitting or review responsibilities, however, their failure to initiate them within the FERC's mandated lead role leads to an inefficient, if not completely ineffectual process.

By "sitting-out" of FERC's timeline, the agencies at issue conduct duplicative environmental reviews. This results in increased delay in permitting time and increases the likelihood that other agencies will impose conditions at odds with the FERC's own conditions.[126]

Although state regulatory action would be preempted where conflicts with the FERC could not be worked out, state action pursuant to federally delegated authority (as in the Clean Water Act (CWA) or Coastal Zone Management Act (CZMA)) presents a different legal question. Pipeline opponents, abetted by state government officials, have taken advantage of this situation by using the permitting authority under the CZMA and/or the CWA to frustrate pipeline projects already approved by the FERC.[127]

Pipeline permitting challenges manifest themselves in many ways, but the result is the same. Whether a federal agency is acting in a dilatory way or in response to locally led opposition, the result is that residents and businesses pay more than they should. For example, New York City has been unable to expand its natural gas pipeline capacity the last four years despite growing gas demand.[128] This inability has resulted in price spikes that have exceeded $40 per MMBtu compared with average prices around $6 per MMBtu. New York City residents and businesses pay significantly more than other residents in the

123. ENERGY & ENVTL. ANALYSIS, INC., INGAA FOUND., AN UPDATED ASSESSMENT OF PIPELINE & STORAGE INFRASTRUCTURE FOR THE NORTH AMERICAN GAS MARKET 10 (2004) (emphasis omitted) [hereinafter INGAA].

124. TRANSMISSION REPORT, *supra* note 122, at T-25.

125. INTERSTATE NATURAL GAS ASS'N OF AM., SUBMISSION TO THE SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES NATURAL GAS CONFERENCE (Jan. 24, 2005) [hereinafter NATURAL GAS CONFERENCE].

126. *Id.*

127. NATURAL GAS CONFERENCE, *supra* note 125.

128. *Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. (2004) [hereinafter Santa] (statement of Donald Santa).

region.[129]

As with the New England states, California must import natural gas via pipeline from surrounding states.[130] Due to California's continually increasing demand for natural gas, its dependence on imports is projected to increase.[131] To address its need for natural gas, California has sought to import gas from Canada in addition to other states. Yet, some have mobilized to oppose Canadian exports of gas to the U.S. in general and California in particular. For example, a joint Sierra Club and Natural Resources Defense Council (NRDC) report argues against increasing the pipeline infrastructure to deliver the cleanest-burning fossil fuel to California and other places.[132]

It is worth noting that some consistently change their position on key issues depending on their sentiments that day. As noted above the NRDC opposes increasing pipelines from Canada. However, NRDC attorney, Patricio Silva testified before the House Energy & Commerce Committee in opposition to increasing domestic supplies of natural gas. In support of his position he said, "[i]t is important to point out that with natural gas the issue is less about the need to find new supplies, than the need to develop infrastructure to deliver these supplies to market."[133]

G. Liquefied Natural Gas

Liquefied natural gas (LNG) is a critical component in meeting domestic demand. LNG is made by liquefying gas through a refrigeration process that reduces the volume of the gas to approximately 1/600 its original size.[134] LNG is then shipped by specially constructed double-hulled tankers to gasification terminals and then transported through pipelines to meet demand.[135]

With traditional domestic supply basins maturing, and a consistently difficult permitting environment, energy experts have looked increasingly to LNG as a key solution to our natural gas crisis. Again, environmental regulations are one of, if not the most, significant factor driving the demand for natural gas, yet "the environment" is consistently cited as the principal reason for opposing LNG. Federal Reserve Board Chairman Alan Greenspan highlighted this fact in a hearing before the House Committee on Energy and Commerce, "[i]n the United States, rising demand for natural gas, especially as a clean-burning source of electric power, is pressing against a supply essentially restricted to North American production."[136]

The U.S. currently has four LNG receiving terminals: Everett,

---

129. *Id.*

130. However, California could choose to produce more of its own natural gas rather than rely so heavily on its neighboring states.

131. Santa, *supra* note 128, at 16.

132. *See* NATURAL RES. DEF. COUNCIL & SIERRA CLUB OF CANADA, AMERICA'S GAS TANK: THE HIGH COST OF CANADA'S OIL & GAS EXPORT STRATEGY (2002).

133. *National Energy Policy: Natural Gas: Hearing Before the Subcomm. on Energy & Air Quality of the H. Comm. on Energy & Commerce*, 107th Cong. (2001) (statement of Patricio Silva, Natural Resource Defense Council).

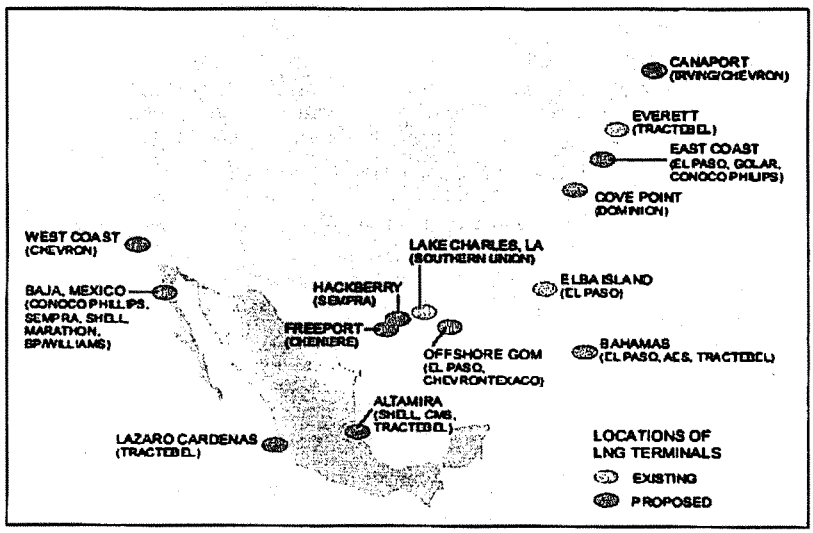
134. TRANSMISSION REPORT, *supra* note 122, at L-5.

135. *Id.* at L-5 to -6.

136. *Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce*, 108th Cong. (2003) (statement of Alan Greenspan, Chairman of the Federal Reserve Board).

Massachusetts, Lake Charles, Louisiana, Elba Island, Georgia, and Cove Point, Maryland. In response to high natural gas prices, policymakers and industry have shown significant interest in constructing new LNG receiving terminals. The map below depicts the existing and some of the proposed LNG projects pending.

Figure 10[137]



The Administrator for the Energy Information Administration (EIA), Guy Caruso went so far as to say that, "[n]early all of the increase in U.S. net imports is expected to come from LNG."[138] In making its projections for U.S. natural gas prices, EIA focuses its high price scenario around a lack of new LNG terminals.[139] The respected experts at Energy & Environmental Analysis, Inc. concluded that approximately ten additional LNG terminals must be constructed in order to meet natural gas demand.[140] Therefore, knowing the importance of such facilities to the Nation, one would believe that several facilities would be permitted and constructed relatively promptly.

However, attempts to permit and build new LNG facilities have frequently been frustrated. It is worth noting that the most challenged LNG terminals have been located in the regions most demanding new gas supplies. One of the most gas-needy states, California (again), is opposing LNG terminals asserting that the FERC actually lacks jurisdiction as the lead agency over LNG terminals.[141]

---

137. TRANSMISSION & DISTRIBUTION REPORT, *supra* note 120, at L-35.

138. *Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. (2004) (statement of Guy Caruso, Administrator, Energy Information Administration of the Department of Energy).

139. *See* ENERGY INFO. ADMIN., U.S. DEPT. OF ENERGY, ANNUAL ENERGY OUTLOOK 2005 66 (2005) [hereinafter ENERGY OUTLOOK].

140. INGAA, *supra* note 123, at 40.

141. *See* AARON M. FLYNN, CONG. RES. SERV., LIQUEFIED NATURAL GAS (LNG): JURISDICTION CONFLICTS IN SITING APPROVAL (2004).

Those state and local governments, with the assistance of "not-in-my-backyard" activist groups contest the needed facilities asserting environmental and safety concerns. For example, several attempts to construct facilities in the gas-dependent Northeast have been repeatedly challenged. In March 2005, the Delaware Coastal Zone Industrial Board voted unanimously against a proposed BP LNG terminal in Logan Township., New Jersey that would extend into Delaware's coastal waters.[142] In searching for authority to oppose the facility, the Board claimed that the terminal would have violated a ban on manufacturing, even though state Department of Natural Resources and Environmental Conservation officials said the addition of chemicals during the regasification process is insufficient to meet the definition of manufacturing under state law.[143] Whether the State had legal authority or not, one resident zeroed in on the real issue: "'[n]obody wants it in their back yard. But this is our back yard—Logan Township.'"[144]

In response to safety and environmental concerns from coastal residents, some industry representatives have looked to offshore LNG terminals. Again, in attempts to meet the Northeast's skyrocketing demand for gas, a proposal is under consideration to build a $700 million liquefied natural gas terminal in Long Island Sound that would provide about one billion cubic feet of natural gas daily to Connecticut and New York.[145] Some opponents are already expressing concern that the project could pose potential safety and environmental problems to people along the shoreline, notwithstanding the fact that the facility would be nine miles away.[146]

Although safety seems to be the concern of state and local government officials, advocacy groups have staked their positions on opposing LNG terminals. The Sierra Club's California and Nevada chapters voted to oppose both onshore and offshore LNG facilities even though the Club supported natural gas over nuclear and coal.[147] Opposition centered in the environmental community led to Calpine withdrawing its proposal to construct an LNG facility in Eureka, California.[148]

Opposition to new LNG facilities to meet demand is not confined to the U.S. A proposed $650 million LNG project in Baja, Mexico that would meet about one-fifth of California's current demand was approved by Mexico's environmental secretariat.[149] Yet, Greenpeace and the Mexican Environmental Law Center said that they will file legal claims against the facility claiming that the country's Environmental Department did not gather enough scientific information concerning affects on birds living on nearby Coronado Islands.[150]

---

142. *Del. Board Rules Against Building BP Facility in State Waters*, GREENWIRE, Mar. 31, 2005, *available at* http://www.eenews.net/greenwire/include/print.php?single=03310506.

143. *Id.*

144. *Del. Board Rules Against Building BP Facility in State Waters*, *supra* note 142 (citations omitted).

145. *Long Island Sound Project Raises Fears of Accidents*, GREENWIRE, Apr. 5, 2005, *available at* http://www.eenews.net/greenwire/include/print.php?single=04050507.

146. "'The fact that you're nine miles out is the key point . . .[,] [e]ven under the wildest disaster scenario that someone could imagine, it's not going to affect anyone on the shoreline.'" *Id.*

147. *See Calpine Latest LNG Player to Withdraw Plans for California*, OIL DAILY, Mar. 19, 2004, at 5.

148. *Id.*

149. *Enviros Plan to Block Mexico Facility*, GREENWIRE, Jan. 19, 2005, *available at* http://www.eenews.net/greenwire/include/print.php?single=01190505.

150. *Id.*

The conflicts between new LNG facilities and opponents are similar to cases involving interstate pipelines—in both instances opponents assert that the federal lead permitting agency lacks authority and/or the local government objects to the federal decision under some authority retained by the state or local government. In the case of LNG, the FERC and the U.S. Coast Guard have jurisdictional authority.[151] Permitting an LNG terminal can take several years.[152] Although the FERC has made great strides in improving the NEPA environmental review process, federal and/or state agencies may be so strident in their opposition that they will use the delaying tactic of "sitting-out" the process and then asserting opposition after-the-fact. It is important to note that improving and rationalizing the process is no simple task. Under NEPA, the FERC must prepare an environmental impact statement and a review of thirteen Environmental Resource Reports, five of which are applicable specifically to LNG facilities.[153]

H. Outer Continental Shelf

Offshore or Outer Continental Shelf (OCS) natural gas has proven to be some of the most significant and important supply sources in meeting U.S. demand.[154] In fact, "[a]pproximately 26% of domestic daily natural gas is produced from the Outer Continental Shelf (OCS)."[155]

The OCS natural gas resource base is enormous and technological advancements in exploration and production techniques allow for ever-increasing production yields. Those real world technological advancements led the Minerals Management Service, which oversees development in the OCS, to update its assessment of technically recoverable gas by 12%.[156]

However, the OCS could provide substantially more gas to power domestic manufacturers and heat homes. Yet, areas on both coasts and the Eastern Gulf of Mexico are off-limits to exploration and production.

Keeping the OCS off limits from exploration and production has been a bipartisan issue. Through Interior Appropriations Bills, Congress enacted moratoria from 1982 to 1992.[157] President George H.W. Bush issued a Presidential Directive extending the moratoria area until 2000 and President Clinton extended and expanded the off limits policy until 2012.[158]

Opening the OCS moratoria areas for exploration and production has become a crucial and visible issue for many environmental groups. The Natural Resources Defense Council states that it "opposes lifting the current OCS moratoria" and "[t]he prospect of opening these areas will likely be extremely

---

151. TRANSMISSION REPORT, *supra* note 122, at L-46.

152. *Id.*

153. *Long Island Sound Project Raises Fears of Accidents*, *supra* note 145.

154. The OCS "is composed of lands beyond the generally 3-mile area of state jurisdiction in most offshore waters and beyond the 10-mile area of state jurisdiction in the Gulf of Mexico waters off Texas and Florida." MARC HUMPHRIES, CONG. RES. SERV., OUTER CONTINENTAL SHELF OIL AND GAS: ENERGY SECURITY AND OTHER MAJOR ISSUES 1 (2003).

155. SUPPLY REPORT, *supra* note 75, at 6-45.

156. Ben Geman, *Interior Increases Offshore Gas Estimate; Oil Amount Unchanged*, GREENWIRE, Dec. 23, 2004, *available at* http://eenews.net/greenwire/include/print/php?single=12230407.

157. *Enviros Plan to Block Mexico Facility*, *supra* note 149, at 1.

158. *Id.*; *see also* ARGONNE REPORT, *supra* note 79, at 38-43.

controversial and met with strong resistance . . . ."[159]

Although the National Petroleum Council estimates about eighty TCF of technically recoverable gas underlie the moratoria areas, experts cannot be certain.[160] Policymakers have sought to get a better understanding of how much gas lies off the East and West Coasts and Eastern Gulf of Mexico, especially considering that the current estimates rely on old data. In fact, the Outer Continental Shelf Management Act plainly states that the "Secretary of the Interior shall conduct a continuing investigation to determine an estimate of the total discovered crude oil and natural gas reserves . . . and undiscovered crude oil and natural gas resources" of the OCS and report such findings biannually to Congress.[161] However, the subsequent moratoria have effectively blocked the Secretary from following through with the requirement.

Two years ago, Congress sought to conduct a study of those critical resources in the energy bill. Yet, the provision that would have merely inventoried OCS resources enabling policymakers to make informed decisions was stripped from the energy bill—many environmental groups labeled the inventory study "a stalking horse for lifting the bans . . . ."[162] The federal government effectively chose to remain ignorant rather than assessing and informing the public about their critical resources.

Some cite environmental concerns as the principal reason for opposing offshore exploration and production. They point out that exploring for gas could result in finding oil and the possibility of contamination. They are correct that there is the potential for oil to enter the oceans. "[T]he National Academy of Sciences found that offshore oil and gas [exploration and production] accounts for only 2 percent of the oil in the marine environment . . . ."[163] However, given that the NAS study is today twenty years old and exploration and production technology has advanced significantly in that time, the amount of oil released would be even lower.[164] Several federal environmental laws guard against potential harm. A sampling of just a few of the applicable laws includes the Federal Water Pollution Control Act, Clean Air Act, National Environmental Policy Act, Endangered Species Act, Marine Mammal Protection Act, and Fishery Conservation and Management Act.

Yet, putting the NAS' 2% finding in perspective, the scientific body also concluded that naturally occurring oil seeps contributed to 8% of the oil present in the oceans.[165]

Considering the Nation's most up to date energy and environmental information is the only reasonable way to balance both energy and environmental interests. Congress recognized as much when it first established

159. SHARON BUCCINO, NATURAL RES. DEF. COUNCIL, SUBMISSION TO THE SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES NATURAL GAS CONFERENCE 10 (2005).

160. SUMMARY REPORT, *supra* note 73, at 35–36.

161. 43 U.S.C. § 1865 (2000).

162. Ben Geman, *House Lawmakers Back OCS Bans*, GREENWIRE, May 3, 2005, *available at* http://www.eenews.net/greenwire/include/print.php?single=05030504.

163. U.S. DEP'T OF ENERGY, ENVIRONMENTAL BENEFITS OF ADVANCED OIL AND GAS EXPLORATION AND PRODUCTION TECHNOLOGY 22 (1999). Again, that study reviewed both oil and gas exploration and production; it is likely that a natural gas focused study would demonstrate far lower levels.

164. NAT'L ACAD. OF SCIS., OIL IN THE SEA: INPUTS, FATES, AND EFFECTS (1985), *available at* http://www.nap.edu/books/0309034795/htm/R1.html.

165. *Environ Plan to Block Mexico Facility*, *supra* note 149, at 1.

the nation's OCS policy in passing the Outer Continental Shelf Resource Management Act (OCSRMA) in 1978.[166] It is important to note that throughout the Act, Congress was careful to recognize the role that technology has and would play in offshore exploration and production. Specifically, the Act states, "environmental and safety regulations . . . should be reviewed in light of current technology and information."[167] Unfortunately, opponents of offshore development choose to ignore the great technological strides made by the offshore production industry.

Further, opposition groups claim that opening access to OCS moratoria areas "will not lower prices because the most abundant resources are already available for development."[168] First, current data suggests that they may be correct that the most abundant resources areas are currently available. However, as noted above, the public is prevented from even studying how much gas is available. Second, statements such as the one quoted above or similar assertions minimizing the impact that almost eighty TCF of gas would have, are poorly informed and not focused on those consumers who are currently suffering (and will continue to suffer) from high prices.

The currently unavailable gas offshore may not be as abundant as in other areas, but seventy-eight TCF is "enough natural gas to supply the country for 3 ½ years."[169] Which three and a half years should we forego?

III. SOLUTIONS

As demonstrated, the demand for natural gas has risen aggressively in reaction to environmental regulations promoting its use. Natural gas has the same market response as any other commodity when demand is high but supply is limited—price increases. High natural gas prices have translated to increased home heating and cooling costs, increased electricity costs, and since gas is a necessary feedstock for much of the nation's manufacturing sector, the loss of jobs.

However, as demonstrated, natural gas is not in particular short supply. Although a particular set of federal regulations have driven up the demand for natural gas, other regulations have worked against increasing supply. The description of these conflicting purportedly environmental goals is effectively an artificially constrained market—'artificial' because the market constraint is one of government's own making, and one that policymakers today can do something about. This section describes principles that, if properly incorporated, will positively influence natural gas prices in both the short and long-term while ensuring a clean environment.

A. Public Perception

Natural gas is important to modern society. Natural gas necessarily is

166. Outer Continental Shelf Resource Management Act, 43 U.S.C. §§ 1801–1866 (2000).

167. *Id.* § 1801(9). Further the Act seeks to, "encourage development of new and improved technology for energy resource production which will eliminate or minimize risk of damage to the human, marine, and coastal environments." 43 U.S.C. § 1802(3).

168. Ben Geman, *Gas Industry Continues Push for Access to Off-limits Areas*, ENV'T & ENERGY DAILY, Jan. 10, 2005; *see also* SUMMARY REPORT, *supra* note 73.

169. *See* Brad Foss, *U.S. Oil Drillers' Strategy: Today ANWR, Tomorrow the Coastlines?*, SEATTLE TIMES, Apr. 8, 2005.

derived from the natural environment. Because of these obvious facts, some would suggest this relationship results in conflict between man's needs versus the environment. This perception is not only detrimental to developing reasonable natural gas policy, but it ignores the self-evident relationship linking man and the environment, a relationship that has been recognized time and again throughout environmental law.

Humans exist with and within the environment, and reasonable policy will recognize as much. Unfortunately, rather than advocating based on what the law actually says, some advance ever-more-radical interpretations to expand the man versus environment divide.

It is imperative that the public learn the facts about natural gas exploration, production, transportation, and distribution so that it can assist in developing reasonable and effective policy. Further, the public should be reminded that the reason why natural gas demand has increased so steadily was in direct response to their demand for cleaner fossil fuel.

B. Public Education: The Role of Environmental Stewardship and Technology

The oil and gas industry has incorporated environmental stewardship as an integral part of normal business operations. Technological improvements have aided the industry in balancing the goals of resource extraction with sound environmental practices. Although the industry proudly retains its traditional wildcat roots, oil and gas companies are some of the most technologically advanced businesses today. "In the past, wildcat wells were drilled with little more than intuition. Today, modern analysis techniques have vastly improved the success rate for discovery of economical quantities of oil and gas."[170]

The industry is able to go farther, deeper, in shorter timeframes and with ever decreasing disturbances to the environment.

Ensuring minimal environmental impacts and maximizing returns on investment are the principles that transformed exploration and production from an art form to cutting edge science. Unfortunately, critics of the oil and gas industry seem to ignore the great environmental gains realized in the last ten years, much less the last thirty.

States now regulate the spacing of oil and gas rigs under the prevention of waste principle. "These regulations require separation of wells by appropriate distances so that wells do not either interfere with other production or become more numerous than necessary, thus wasting materials and energy."[171] However, well spacing regulations were first established in Texas and implemented by armed troops to prevent violent conflicts between wildcatters.[172] Exploration techniques have fully transitioned from a luck-based art form using divining rods to hard science employing satellites, microprocessors, remote sensing, and super-computers to generate three-dimensional time-lapse imaging of subsurface reservoirs.[173]

---

170. LEE GERHARD & WILLIAM LAWSON, INTERSTATE OIL & GAS COMM'N, THE ENVIRONMENTAL EVOLUTION OF THE PETROLEUM INDUSTRY 10 (2001) [hereinafter GERHARD & LAWSON].

171. *Id.*

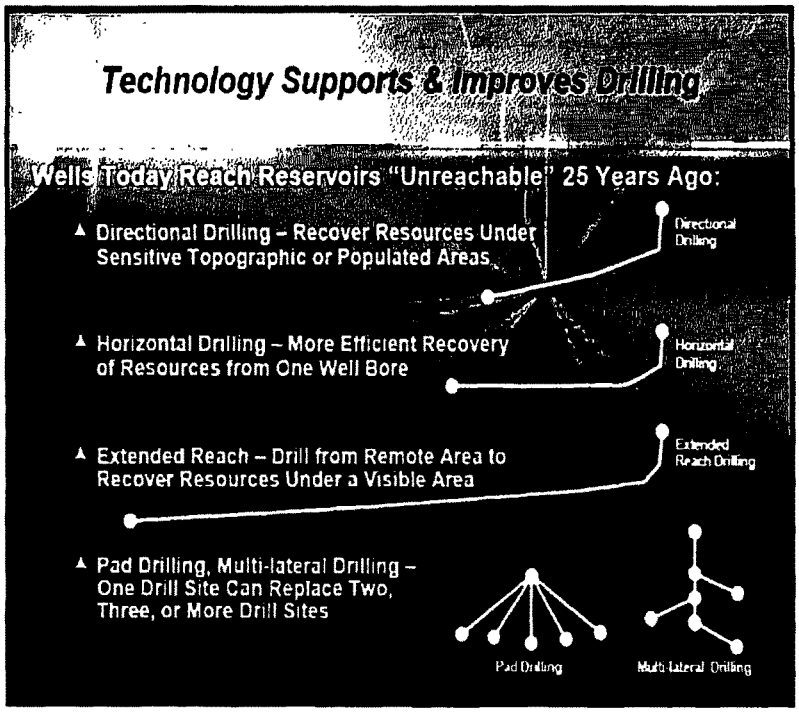
172. "Drillers tried to nestle drilling rigs as close to each other as possible to take their share of the resource before someone else could coax it across a property line to their well." GERHARD & LAWSON, *supra* note 170.

173. OFFICE OF FOSSIL ENERGY, U.S. DEP'T OF ENERGY, ENVIRONMENTAL BENEFITS OF ADVANCED OIL

At times, the public seems to perceive environmental responsibility as a cost to doing business that is unrelated to production. Yet, the chief objective of what many today regard as environmental mitigation techniques were primarily aimed at increasing production and fair business practices. The fact of the matter is that "higher productivity means less impact on the environment and better protection of our [natural resources]."[174]

For example, exploration and production technology has minimized surface disturbance from six acres in 1991 to just over one and a half acres today.[175] Improved drilling technology has allowed multiple wells to be drilled from a single location or access to several gas reservoirs from a single well to extended locations in excess of twenty-five miles.[176]

Figure 11[177]



AND GAS EXPLORATION AND PRODUCTION TECHNOLOGY 13 (1999), *available at* http://www.fe.doe.gov/programs/oilgas/publications/environ_benefits/env_benefits.pdf [hereinafter DOE REPORT].

174. *Id.* at 12.

175. *Advances in Technology: Innovations in the Domestic Energy and Mineral Sector: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources*, 108th Cong. 5 (2004) (statement of William Whitsitt, President, Domestic Petroleum Council), *available at* https://www.ipaa.org/govtrelations/testimony/whitsitt.pdf.

176. *Id.* at 6.

177. *Advances in Technology: Innovations in the Domestic Energy and Mineral Sector: Hearing Before the Subcomm. on Energy & Natural Resources of the H. Comm. on Resources*, 108th Cong. 4 (2004) (statement of William Whitsitt, President, Domestic Petroleum Council).

As already detailed in the preceding sections of this report, U.S. households, electric generators, and workers desperately need more natural gas. Moving beyond alarmist rhetoric and looking at the facts defining today's oil and gas industry should not be a partisan exercise. The Clinton Administration acknowledged as much when it stated, "[t]he U.S. oil and gas industry has integrated an environmental ethic into its business culture and operations" and "has come to recognize that high environmental standards and responsible development are good business."[178]

In recent years, the natural gas industry has done a good job in educating the public about their operations and relationship with the environment. For years, companies have invested in the communities in which they operate in many ways, from education projects to protecting open space to assisting farmers in water monitoring programs. Representing the gas producing states, the Interstate Oil and Gas Compact Commission, surveys and acknowledges the work of some of these companies when giving their annual Chairman's Stewardship Awards.[179]

Yet, the industry at large, along with the federal government should develop additional ways to partner with the public. The public participation process is an important component of environmental law. A fully informed public is better able to participate in the process and reach their own conclusions rather than rely on the skewed perceptions of special interest groups.

C. *Efficiency*

Energy efficiency is increased when an energy conversion device undergoes a technical change that allows it to provide the same service while using less energy.[180] Behavioral and financial investments in energy efficiency simply makes good common sense where appropriate.

The Bush Administration recognizes the important role that energy efficiency has in addressing the nation's energy needs. Out of 105 recommendations in the President's National Energy Plan, more than half specifically address efforts to improve energy efficiency and to improve the performance and lower the cost of alternative forms of energy.[181] Several federal programs have been established in response to national interest that considers energy efficiency as an important tool for mitigating environmental impacts.[182]

The EPA and Department of Energy's Energy Star program is one of the more recognized federal initiatives that have led to marked efficiency improvements. Since its inception in 1992, Energy Star has been a leader in informing consumers of more energy efficient products through a distinctive labeling campaign. Typically, Energy Star-rated products, appliances, or more

178. DOE REPORT, *supra* note 173, at 3 (emphasis omitted).

179. *See* http://www.iogcc.oklaosf.state.ok.us/ for more information on recipients of the awards.

180. FRED SISSINE, CONG. RESEARCH SERV., ENERGY EFFICIENCY: BUDGET, OIL CONSERVATION, AND ELECTRICITY CONSERVATION ISSUES 1 (2005), *available at* http://www.usembassy.it/pdf/other/IB10020pdf#search.

181. *Oversight on Natural Gas: Hearing Before the S. Comm. on Energy and Natural Resources*, 108th Cong. (2003) [hereinafter Garman] (statement of David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, United States Department of Energy), *available at* http://www.energy.senate.gov/hearings/testimony.cfm?id=847&wit_id=815.

182. *Id.* at 2.

recently, building designs may cost more at the time of purchase, but allows the consumer to decide whether the long-term savings is worth it compared to a marginally higher priced product at the time of purchase. Many businesses and homeowners have, in fact, made the upfront investments and have realized savings many times over. For example, "a home fully equipped with Energy Star qualifying products will operate on about 30 percent less energy than a house equipped with standard products, saving the typical homeowner about $400 each year."[183]

In any discussion of energy policy, it is critical that one consider the choices comprehensively and in the proper context. When it comes to energy efficiency, the American public and businesses have made great strides the last few decades in improving energy efficiency in their own right.

For example, since the mid-1970s, the industrial sector has reduced the amount of energy required to produce one unit of output by nearly 40%.[184] Bob Drake of the Oklahoma Farm Bureau testified before the Environment & Public Works Committee, that "today's agriculture is more energy efficient than ever before" and that "across this nation, farmers are producing 30 percent more crop using 30 percent less energy-related inputs, including fertilizer, than we did only a generation ago."[185] U.S. consumers have reduced the amount of natural gas used per customer by 16% from 1980 to 2001.[186]

In some instances, a particular industry may have picked the largest and low-hanging energy efficiency fruit in order to have survived as long as it has in an era of global competition. U.S. industry is very price sensitive and deploys energy efficiency technologies when they become available and conditions are favorable.[187] The unsustainably high price of natural gas may and in some cases already has outpaced the tremendous energy efficiency gains to be realized. This means that a business will not invest in costly efficiency technologies if it would be forced into bankruptcy before ever realizing the benefits of those investments.

D. Energy Efficiency versus Conservation

Energy efficiency is not a new concept, but it has increasingly become the politically correct component of responsible and balanced energy policy. As indicated earlier, the President included scores of energy efficiency proposals in his National Energy Plan and consistently speaks about energy efficiency in the context of comprehensive energy policy. Many of the expected groups praise the virtues of energy efficiency and lambast policymakers for not forcing through ever-more energy efficient mandates on the American people.

However, the truth of the matter is that the pro-energy efficiency groups

---

183. ENVTL. PROT. AGENCY, ENERGY STAR – THE POWER TO PROTECT THE ENVIRONMENT THROUGH ENERGY EFFICIENCY 3, *available at* http://www.energystar.gov/ia/partners/downloads/energy_star_report_aug_2003.pdf (last visited Sept. 7, 2005) (emphasis omitted) (citation omitted) [hereinafter ENERGY STAR].

184. JOINT ECON. COMM., 108TH CONG., THE PRESSURES ON NATURAL GAS PRICES 2 (2004), *available at* http://jec.senate.gov/_files/naturalgas.pdf.

185. *Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works*, 108th Cong. (2004) (statement of Bob Drake, Vice President, Oklahoma Farm Bureau).

186. ENERGY STAR, *supra* note 183.

187. Garman, *supra* note 181, at 6.

oftentimes do not consider efficiency goals in the context of comprehensive legislation, but rather are the same organizations that oppose increasing supplies of energy. Why? The answer comes in two parts.

First, improved energy efficiency increases, rather than decreases energy consumption.

It has become an article of faith amongst environmentalists that improving the efficiency of energy use will lead to a reduction in energy consumption. However, economists of all persuasions are united in their belief that the opposite will occur. They argue that the effect of improving the efficiency of a factor of production, like energy, is to lower its implicit price and hence make its use more affordable, thus leading to greater use.[188]

Mithra Moezzi of the Ernest Orlando Lawrence Berkeley National Laboratory states that, "energy consumption per capita is increasing despite or perhaps because of the emphasis on energy efficiency in energy policies."[189]

The effect of increased energy consumption as a result of improved energy efficiency has given rise to a split among ecologically-minded economists. What they argue is not for greater efficiency, which leads to more consumption, but less consumption.[190] Less consumption may be appropriately called conservation, or "doing without." Some argue that consumer-based energy efficiency programs such as Energy Star should be changed in favor of "a system that incorporates a measure of absolute consumption, such as energy consumption per household, may better reflect the energy implications . . . ."[191]

However, many environmental organizations have largely abandoned a conservation-based approach. "Improved efficiency has also become the manifesto of our environment movement because the concept is politically correct, fundable and the basis of economic growth."[192]

The "environment movement" replaced conservation, the real goal sought, with energy efficiency after President Carter's defeat in 1980. In a nationally televised speech in 1979 during the second "energy crisis", President Carter said, "the nation was facing a crisis that was the 'moral equivalent of war', and he thus called on the American public to practice restraint in order to save energy."[193]

To avoid seeming similarly defeatist, some chose "energy efficiency" as the new mantra to "disassociat[e] energy conservation with [the] pain, sacrifice, . . . and the dire supply shortage predictions of . . . [the Carter years that] did not come true."[194] Instead, a new strategy, either intended or not has evolved; speak in terms of the politically expedient and popular "energy efficiency" while at the same time work diligently against increasing supplies of energy so that energy prices increase. The effect that the Carter-minded conservationists sought occurs

188. Horace Herring, *Energy Efficiency—A Critical View*, 31 ENERGY 10–20 (forthcoming 2006), *available at* http://www.elsevier.com/wps/find/journaldescription.cws_home/483/description#description.

189. Mithra Moezzi, *The Predicament of Efficiency*, *in* AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON., 1998 SUMMER STUDY ON ENERGY EFFICIENCY IN BUILDINGS 2 (1998), *available at* http://enduse.lbl.gov/info/ACEEE-Pred.pdf.

190. Herring, *supra* note 188, at 15.

191. Moezzi, *supra* note 189, at 4.

192. Herring, *supra* note 188, at 17.

193. *Id.* at 7.

194. Moezzi, *supra* note 189, at 9.

through price, and not through moral or comfort-based choice.

According to the Energy Information Administration (EIA), energy consumption falls in response to high prices, not higher rates of efficiency.[195] During the 1970s and early 1980s, energy consumption fell in response to high energy prices, and from the mid-1980s through the mid-1990s energy consumption "increased with declining energy prices and [more robust] economic growth."[196] The EIA currently predicts "generally lower energy consumption and a more rapid shift . . . away from industrial uses . . . ."[197] This shift in the EIA's numbers was earlier explained, unfortunately, through the very human-side of workers losing their jobs because natural gas prices increased beyond any potential savings than greater efficiencies could yield.

The EIA repeatedly concluded that energy use is a direct reflection of economic growth and output, also known as, providing workers with jobs. Policymakers should consider energy efficiency goals in light of comprehensive energy policy that will also increase natural gas supplies. Proposals that would increase the costs of production or living, such as, a carbon or consumption tax must be viewed with great caution. The strength and economic prosperity of the nation must not be risked for the moral-based and fundamentally flawed policies of the Carter era.

E. Environmental Regulations

As this paper detailed repeatedly, environmental laws and regulations have driven natural gas demand. Amendments to the Clean Air Act in 1990 were the most significant catalyst that led to gas demand growth. The EIA stated that "the CAAA have created increased demand for cleaner fuel sources, particularly natural gas" and that "more gas-fired generation units have been constructed, which has resulted in a significant increase in the amount of electricity produced from natural gas."[198]

It is imperative that environmental regulations not choose one fuel source over another, but rather, provide for a diverse fuel mix for power generation.

> Fuel diversity creates balance in the energy production portfolio, and by creating balance, limits the exposure to financial risks or unfavorable pricing practices either by fuel or technology suppliers. In a market where all of the fuel input costs are increasing, fuel diversity limits the ability of disruptions in any one fuel source to potentially cause a "shortage" with potential resulting price volatility and/or supply interruptions.[199]

Great care should be given to legislative proposals that would effectively favor one fuel source over another. As Guy Ausmus, Chairman of the American Iron and Steel Institute concluded that the Nation was experiencing a natural gas crisis because, "[n]atural gas was given a preferred place in our economy . . . ."[200]

---

195. ENERGY OUTLOOK, *supra* note 139, at 6.

196. *Id.*

197. ENERGY OUTLOOK , *supra* note 139, at 5.

198. ENERGY INFO. ADMIN., U.S. DEPT. ENERGY, CLEAN AIR ACT AMENDMENTS OF 1990, *available at* http://www.eia. doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/clnairact.html (last visited Sept. 6, 2005).

199. Velazquez, *supra* note 29.

200. *Energy: Hearing Before the H.R. Subcomm. on Energy and Mineral Resources*, 108th Cong. 3

Policymakers should recognize that laws, either international treaties like the Kyoto Protocol or domestic efforts to restrict greenhouse gas emissions, will unbalance the generation fuel mix. "Since coal is the most carbon intensive fossil fuel, any legislative or regulatory limits on carbon emissions will impact coal more heavily than natural gas."[201]

The EIA concluded that the Kyoto Protocol would reduce coal-based electric generation between 2% and 74% of today's level by 2020, and electricity costs could increase 20% to 86%.[202] Therefore, mandatory carbon-reducing policy would result in one of two outcomes. Either natural gas and electricity prices would increase as generators shift away from coal or the nation reduces its overall economic output.

Certainty is a prerequisite for effective regulations. The regulated community, the regulators, and the public need to clearly understand the expectations and responsibilities of each other in order to promote the most efficient implementation and enforcement of those regulations. The effect of more efficiently implemented and certain environmental laws and regulations would improve the environment and human health. Yet, such reform efforts are oftentimes resisted if not outright opposed. Stakeholder interests on either side of an issue have invested considerable time and resources (financial, political, ideological, etc.) to operate within laws and regulations as currently implemented. Therefore, proposed changes to the status quo are viewed as a loss or worst, a waste of resources that may have been invested over decades.

These stakeholders argue for the status quo, or more often, against reform with claims that any change to existing law would be tantamount to a "rollback" or reduction of environmental protections. Again, such assertions are made regardless of the actual environmental and health benefits that would result after implementation of the proposed reform. The heart of the matter is not whether a market-based cap and trade regulation results in greater pollution reductions than command and control regulation, for example, but that the perceived effectiveness or relevance of those stakeholders would be reduced with changes to the status quo.

The ESA has consistently been criticized across a broad spectrum of private and public sector stakeholders for reasons ranging from ineffectiveness to a violation of property rights. Proponents of the status quo oppose reform efforts at all costs as they are fearful of losing influence or maintaining relevance. They have already realized or mastered the power of regulatory uncertainty and will oppose any changes regardless whether the changes could benefit species. For example, the Center for Biological Diversity asks the public to pre-sign an ESA declaration just in case, "various threats arise to the [ESA], in the form of legislation in the U.S. House of Representatives or the Senate or negative administrative actions" are proposed.[203]

(2004) (statement of Guy H. Ausmus, Chairman, American Steel Institute), *available at* http://www.steel.org/AM/TemplateRedirect.cfm?Template=/CM/ContentDisplay.cfm&ContentFileID=1556.

201. DEMAND REPORT, *supra* note 2, at 5-17.

202. *See* Press Release, Energy Info. Admin., U.S. Dept. Energy, Higher Energy Prices, Cuts in Fuel Use May Be Needed to Comply with the Kyoto Protocol (Oct. 9, 1998), *available at* http://www.eia.doe.gov/neic/press/press109.html.

203. *See* Action Network, Take Action: Sign the Endangered Species Act Legacy Pledge, http://actionnetwork .org/campaign/esa_pledge (last visited Sept. 6, 2005).

Yet, the fact is that since ESA's inception, only ten species have been delisted due to recovery, whereas nine domestic species have been delisted due to extinction.[204] Landowners, policymakers and members of the public at large may have different emotional views of the ESA, but the actual recovery versus extinction scorecard indicates that reform is critically needed to give the current 1,264 listed domestic species a better chance at survival.[205]

This paper identifies how the ESA is used to control the land rather than the recovery of species. The uncertainty of the ESA provides the blunt tool of litigation to thwart exploration, production, and transmission of energy. In a recent Environment & Public Works Subcommittee hearing, Craig Manson, Assistant Secretary for Fish and Wildlife and Parks stated, "[u]nfortunately, the Service's work related to endangered species is in large part driven by lawsuits."[206] Rather than focusing efforts on species recovery,

> litigation over critical habitat has hijacked the program. Simply put, the listing and critical habitat program is now operated in a "first to the courthouse" mode, with each new court order or settlement taking its place at the end of an ever-lengthening line. The Service is no longer operating under a rational system that allows them to prioritize resources to address the most significant biological needs.[207]

As in the case of ESA, a diverse group of stakeholders have called for the modernization of NEPA. Recently, the Council of Environmental Quality issued a document advocating for various reforms in 2003 and is in the process of advancing some of those proposals,[208] and the House Committee on Resources has recently initiated a Task Force on Improving NEPA.[209]

As detailed, NEPA is a procedural statute and therefore demonstrating its relative effectiveness is necessarily different than in the case of the ESA where one can judge success quantitatively. Further, NEPA may apply where federally managed public resources are implicated or when triggered pursuant to "major Federal actions significantly affecting the quality of the human environment . . ."[210] Therefore, NEPA may relate to a rancher seeking to graze cattle on public lands, as well as, to an interstate natural gas pipeline. The breadth and application of NEPA creates different sets of challenges. The policymaker must balance the critical needs to improve uncertain and inefficient processes, as often may be the case with energy projects, against overreaching into areas where the process has worked well.[211]

In May 2005, the Committee on Environment & Public Works held an

---

204. STAFF OF H. COMM. ON RESOURCES, 109TH CONG., IMPLEMENTATION OF ENDANGERED SPECIES ACT OF 1973 (2005), *available at* http://resourcescommittee.house.gov/issues/more/esa/implementationreport.htm. For a list of foreign and domestic species, *see* U.S. Fish & Wildlife Serv., Dept. of the Interior, *Delisted Species Report*, http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.Delisted?listings=0 (last visited Sept. 3, 2005).

205. *Id.*

206. *Endangered Species Act: Hearing Before the S. Subcomm. on Fisheries Wildlife and Water of the S. Comm. on Environmental and Public Works*, 109th Cong. 1 (2005) (statement of Craig Manson, Assistant Secretary for Fish, Wildlife and Parks, Department of the Interior).

207. *Id.* at 4.

208. *See* NEPA TASK FORCE, *supra* note 86.

209. *See* H. COMM. ON RESOURCES, TASK FORCE ON IMPROVING THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA), http://resourcescommittee.house.gov/nepataskforce.htm (last visited Sept. 18, 2005).

210. *Id.*

211. *See* H. Comm. on Resources, Task Force on Improving the National Environmental Policy Act (NEPA), http:// resourcescommittee.house.gov/nepataskforce.htm (last visited Sept. 18, 2005).

oversight hearing concerning the permitting of energy projects. The witnesses included a federal regulator, a wind-based energy company, an oil and gas industry representative, and an attorney from a leading environmental non-governmental organization.[212] All of the witnesses agreed that the NEPA process should be certain, predictable, and not lead to delay. As noted, the Executive and Legislative branches are assessing reform options. Although passing meaningful reform will be challenging, this simple and honest recognition from a diverse group of stakeholders indicates that NEPA modernization is a realistic goal.

Policymakers should ensure that their efforts guard against potentially uncertain regulations, and would do well to clarify existing statutes where Congressional or regulatory intent has been called into question.

CONCLUSION

Environmental regulations have promoted natural gas over other fuel sources while other environmental policies have worked against increasing supplies. These inconsistent policies have resulted in sharp increases in the price of natural gas, electricity, and the loss of high paying domestic manufacturing jobs. Moderating those price effects must include additional exploration and production of natural gas. According to the Energy Information Administration, "every 1 percent that production falls . . . we can expect 5–10 percent higher peak prices this winter."[213]

U.S. economic security requires policymakers, regulators, the natural gas-related industries, and the public to address natural gas in the context of comprehensive energy policy and within a certain and predictable regulatory framework. As Chairman of the Committee on Environment and Public Works, I will work toward a comprehensive, balanced, and rational natural gas policy.

212. Witnesses were: J. Mark Robinson, Director of the Office of Energy Projects, Federal Energy Regulatory Commission, Mr. Dennis Duffy, Vice President of Regulatory Affairs, CapeWind, Sharon Buccino, Senior Attorney for the Natural Resources Defense Council, Ronald E. Hogan, General Manager for Questar Exploration and Production Company. *See Oversight to Review the Permitting of Energy Projects: Hearing Before the S. Comm. on Environment & Public Works*, 109th Cong. (2005), *available at* http://epw.senate.gov/hearing_statements.cfm?id=238225.

213. Caruso, *supra* note 7, at 7.