S. HRG. 107–90 (Pt. 1)

# U.S. ENERGY TRENDS

# HEARINGS

BEFORE THE

## COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

TO REVIEW CURRENT U.S. ENERGY TRENDS AND RECENT CHANGES IN ENERGY MARKETS

MARCH 21, 2001
APRIL 3, 2001
APRIL 26, 2001

PART 1

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

74–059 DTP WASHINGTON : 2001

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

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# CONTENTS



STATEMENTS

MARCH 21, 2001



APRIL 3, 2001

Page

APRIL 26, 2001

# U.S. ENERGY TRENDS

**WEDNESDAY, MARCH 21, 2001**

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, DC.*

The committee met, pursuant to notice, at 9:36 a.m., in room SD–106, Dirksen Senate Office Building, Hon. Frank Murkowski, chairman, presiding.

## OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, ladies and gentlemen. We will call the hearing to order.

The Committee on Energy and Natural Resources is here to review the current U.S. energy trends and recent changes in energy markets. And we have a very distinguished group of witnesses today, who I understand are willing to basically put their reputation behind their recommendations. So we ought to have something substantive to reflect on the reality that we do have an energy crisis in this country.

We have one panel of witnesses. We would ask you to try and keep your presentation to approximately 7 minutes. And we will refrain from asking questions—it will be difficult, but we will try anyway—until all the panel has concluded its statement.

We have Ms. Mary Hutzler, Director of the Office of Integrated Analysis and Forecasting, Energy Information Administration, Washington. Mr. Guy Caruso is the executive director for the Strategic Energy Initiative, the Center for Strategic International Studies, a group that just completed, I believe, a three-volume study that I would recommend reading not only for members of the committee, but those in the audience, with regard to the future forecasts and our future areas of dependence, particularly in the unstable areas of the world. Mr. James Placke is the director of the Middle East Research, Washington, D.C., on behalf of the Cambridge Energy Research Associates.

And we have Mr. William Nugent. Mr. Nugent is the commissioner of the Maine Public Utilities Commission, Augusta, Maine, on behalf of the National Association of Regulatory Utility Commissioners. Mr. Frederick Hoover, a director of the Maryland Energy Administration, Annapolis, Maryland, on behalf of the National Association of State Energy Officials.

I hope, Mr. Placke, you could tell us a little bit about sanctions, too, in your presentation today, because we have that as an issue before the committee relative to U.S. interests overseas and the ex-

isting sanctions and those companies that are looking for relief and those that are also concerned about the human rights and proliferation issues.

As a consequence of the staffs of the professional minority and majority working together, I think we have something from the standpoint of meaningful testimony today on the current state of our energy markets, international and national and regional, and what current trends mean for the economic growth and ultimately the American consumer, which, I might add, includes the American taxpayer.

At least that is the way most of us view it, although there are some exceptions, perhaps, in California, where they seem to distinguish between the taxpayer and the consumer. But I do not want to get too far down that rabbit trail.

This is the first in a series of hearings that are intended to explore the need for a comprehensive national energy policy. And we have bills that the minority is proceeding with. We have a bill, and we intend to pursue the particulars of those bills later on before this committee. So we will have plenty to do.

The panel of witnesses will explore energy trends and what we can expect for the future, in particular what the future holds if we do nothing. So do not eliminate that as a possibility. By the end of this hearing I think it will be quite clear that we need to act.

But before we hear from witnesses, one of the opportunities you have as chairman is to make your views known. And I think it is fair to say that sometime ago we kind of lost direction in regard to our obligation to look to the future requirements for energy in this nation. And I think it is time we regain control of that.

We risk threatening our economic prosperity, our national security, and our very way of life. Now that was pretty much a quote from the Secretary of Energy, but I think it is rather thought-provoking to again consider the merits of our economic prosperity at stake, our national security, and our way of life.

We have kind of lost control, as a consequence, of a number of things. Supply and demand, the demand is increasing, the supply is decreasing. Infrastructure, we have suddenly found ourselves victimized by our own shortsightedness. We do not have adequate transmission facilities, pipelines.

We suddenly find ourselves with reduced refining capacity, insufficient to meet the growing needs. So we seem to have compounded, if you will, from just a shortage to finding we do not have adequate transmission, we do not have adequate refineries. As a result, at no time in our history have we relied upon others for more of our energy supplies, namely foreign countries.

Twenty years ago, the United States imported just over one-third of our oil. Today, that has increased to about 57 percent. I think the predictions in the CSIS report indicate that trend is going to continue. By the year 2020, nearly half of the estimated global oil demand will be supplied by countries with high risks of instability, countries that are known to foster terrorism. We recognize the increased reliance of foreign oil and its effect on our foreign policy.

We fought a war over oil in 1991. We need only to look to California for an example what can happen when we become too reliant on outside sources of energy. We have seen electricity being im-

ported into that State from outside, and the price spirals that result. The problems in California, of course, are spilling over to the other States. Yet, we still do not seem to get the awareness of the American people to the extent that we ought to.

It is understandable in California, because a consumer still has not felt the effect of the increased price. It is not related in the structure of what is loosely called deregulation, when you have a cap on retail. And the utilities have basically come to the threshold of bankruptcy, and the State is guaranteeing indebtedness. I do not know what is going to happen to the teachers' or the employees' retirement program that have invested in those utilities. It goes on and on and gets worse and worse.

What we need to have is a clear-cut recommendation of how to systematically get out of this mess over a period of time. And I do not think government is capable of coming up with those answers. That is why it is so important that we have recommendations from you folks, who are experts in this area.

New York is facing similar problems. I guess they are going to have to increase their generating capacity by about 25 percent in the next 5 years, or they are going to face blackouts.

We seem to have forgotten our conventional resources, our oil, in the sense of just drifting along and increasing our dependence. Our natural gas, nine out of ten new power plants, I am told, will use gas. We need more gas, more pipelines for transportation. We seem to have lost sight of coal. We know we have a lot of it. We have no new coal fire plants since 1995.

Electricity demand has grown 43 percent. We are going to have to have 1,300 to 1,900 new powerplants, I am told. It goes on and on. We have not built a single refinery in 25 years. Refining capacity is a regional issue. We are looking at increased prices of gasoline this summer, $1.50, $2, whatever. And the question is: What does the future hold?

We seem to be somewhat at the whims of the weather with regard to our energy capability, of meeting—if we have a warm winter, we might slip by. If we have a hot summer, we are going to have problems. It is the first time, I think, that we have ever had the weather as a main factor in determining just where we will be in terms of an inadequate supply of energy. It is rather curious that we passed that threshold.

As a consequence, we are seeing all kinds of things happen that are irregular. We are seeing aluminum plants shut down. Instead of producing aluminum, they are selling their electricity. We have seen urea facilities that ordinarily would make fertilizer simply selling their gas instead. They have a long-term contract. Things are out of kilter.

We must use all our energy options for future needs. We simply cannot produce or conserve our way out of this. We have to work on a balance. And I think the bottom line is that we must act. What will happen if we do not act? What are the international and regional consequences?

Senator Bingaman.

**STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO**

Senator BINGAMAN. Well, Mr. Chairman, thank you very much for having the hearing.

This is the first of several hearings, and this one is to look at the big picture issues, sort of where we are headed, how we got to the place we are at today. Everyone seems to agree that we have entered a period of relatively high and volatile energy prices. We need to better understand how the changes in policy, the movement toward market-oriented policies, have contributed to that volatility.

We also need to better understand how we got to the circumstance we are now in of shortage, at least with regard to some of our energy needs in certain parts of the country. I do not think the remedies are simple. You just indicated, and I totally agree with you, that we cannot just produce our way out of this problem. And at the same time, we cannot just conserve our way out of this.

We have to have a combination. We have to do what we can with renewable energy but recognize that we will remain dependent upon energy from fossil fuels, from nuclear power, from hydro, for the indefinite future, and find ways to increase our supply from those areas.

We also, I think, need to acknowledge and recognize that we cannot produce our way to independence from the world oil market. We spend a lot of time around here talking about energy independence. That might have made some sense to talk about 20, 30, 40 years ago. Even then, it was questionable.

But whether we import 36 percent of our oil, as we did in 1973, 50 percent of our oil, as we did a few years ago, or it gets even to a higher number. The price of that oil is going to be set by forces outside our control.

We need to recognize that we are part of this global economy. And particularly with regard to petroleum products and oil, we are in many ways buffeted by what goes on around the world. So I believe we need to focus on short-term responses to the immediate problems we have. But we also need to understand the long-term framework that will help us avoid problems in the future.

We also need to understand how we can address these issues in an environmentally responsible way. I am persuaded that whatever we decide to do related to energy policy does impact on climate change policy, does impact on what we will do in the environmental arena in the future. We need to recognize that interaction.

So again, I thank the witnesses for being here and thank you for having the hearing.

The CHAIRMAN. Thank you very much, Senator.

Senator Burns.

**STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA**

Senator BURNS. Thank you, Mr. Chairman. I am just going to have my statement put in the record.

The CHAIRMAN. Without objection.

Senator BURNS. And if you wanted to have a hearing to attract a crowd, we should have been in California. You could probably attract a pretty good crowd out there. But, you know, as we look at

this situation, I am interested in hearing from the folks we have here and their insight and some of their forecasts. So I am just happy to be here and looking forward to their testimony.

[The prepared statement of Senator Burns follows:]

PREPARED STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA

Mr. Chairman, I want to thank you for this hearing. It is very important that we understand the reasons for the price spikes in all energy commodities in the past year. The energy crisis continues to dampen the economy of our nation, and we all must work tirelessly until we find a way to help American energy consumers through this time of crisis.

First, we need to understand that the prevailing mind-set must change in order to solve this crisis. Don't let anyone tell you different, we are in the midst of the worst energy crisis since the 1970s. I remember the long gas lines and forced reductions in heating energy that we faced. Also, I remember the financial hurt it placed on all Americans, but especially Montanans. Farmers, ranchers, over-the-road truck drivers, manufacturing companies, loggers, and their families, were all hurt considerably. I do not want to see this happen again, but I am afraid it is too late. In Montana we have already seen the impacts, Columbia Falls Aluminum Company closed its doors for the year, Montana Resources in Butte closed its doors, and many others may have to do the same if price signals do not change.

The first three things we need to start doing are the following:

CONSERVATION, CONSERVATION, CONSERVATION. The energy trade press has made a lot of Republican and Democrat differences on energy related issues. I want to make it clear that the press has a duty, along with each Senator here today, to start pushing conservation. Instead of concentrating on our differences, let us all here today make a pact that we are going to do everything we can to push conservation. This is something we all can do that won't have a detrimental impact on our economy and it will help us through this very tough time.

Next, we must take an intense look at the reasons we are in an energy crisis today. It is not only electricity prices that are skyrocketing. We are seeing hurtful gasoline prices, oil prices, natural gas prices, and heating oil prices as well. In fact, the price per barrel of oil has gone from $15.99 in 1992 to well over $30.00 this year. Natural gas prices have gone from $1.74 per thousand cubic feet at the wellhead to nearly $5.00 per thousand cubic feet today. Electricity prices in the Northwest have gone from roughly $20.00 per megawatt hour in 1992 to nearly $250.00 per megawatt hour right now. Gasoline prices were around 93 cents per gallon in 1992 and now sit at nearly $1.40 per gallon and these prices are before taxes are added. Prices are up across the board, and we must figure out why. I don't believe you have to look very far.

I believe the policies, or lack of a clear national energy policy, by the previous Administration are an enormous part of the reason we are in this predicament today. The Northwest region of the United States has seen a nearly 24% increase in electricity consumption since 1992, while only seeing an increase in generation of 4%. If you add California into the mix, the discrepancy grows much larger. Further, the Electric Power Research Institute recently found that there is going to be a 20-25% growth in electricity demand in the next decade, but only a 4% increase in power lines and electric-grid equipment. The statistics speak for themselves, if we do not see more generation and transmission come on-line, high energy prices are here to stay. We must lose the mentality that electricity comes from a switch.

Common-sense must return to our regulation policies so that supply can meet demand. The environmental agenda of the Clinton/Gore Administration strengthened regulatory burdens to such a degree that siting new power generation and transmission is not even worth the effort. Simple economics tell potential investors that you just can't make it work. We must remove some of the regulatory burdens.

Next, we need to be able to access some of the vast resources that our public lands contain. The federal government currently manages 650 million acres of land; more than 90% of this land is west of the Mississippi River. In fact, 52% of the U.S. land in the west is managed by federal and state governments. In Montana, nearly 50% of our land is owned by the federal government. Folks, 95% of undiscovered oil and 40% of undiscovered gas is estimated to be located under these lands. Part of our solution to energy dependence on foreign sources must come from a plan that finds ways to develop our natural resources on public lands in an environmentally friendly manner.

We must be able to site generation facilities in a timely manner. We must be able to site transmission lines in a timely manner. Finally, we must remove the barriers

that stifle incentives for investment in our power markets, while at the same time providing incentives to do the same. We have worked ourselves out of crisis situations in the past, and we will do it again now, through a bipartisan effort that uses common sense and our shared American values.

Mr. Chairman, I ask that my comments be place in the record.

The CHAIRMAN. Senator Landrieu.

**STATEMENT OF HON. MARY L. LANDRIEU, U.S. SENATOR FROM LOUISIANA**

Senator LANDRIEU. I am impressed with the chart that the staff gave out that says the U.S. total production of oil is down in the last 10 years by 17 percent. However, it is up 65 percent on offshore oil and gas.

I want to point out to the panelists, and of course the chairman and ranking member know, probably 85 percent of that production takes place off the shores of the State that I represent, Louisiana. There are some tremendous, positive, as well as negative, impacts associated with this activity.

So, I hope that this committee will continue, as they have, to remain sensitive that these communities that are serving as a platform for this oil and gas exploration, which is necessary to solve the short-, medium- and long-term energy challenges that our Nation faces, are in need of proper compensation for this work that is taking place.

The CHAIRMAN. Thank you very much, Senator Landrieu.

Senator Craig.

**STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR FROM IDAHO**

Senator CRAIG. Well, once again, Mr. Chairman, thank you for keeping our attention front and center on this energy crisis that America has stumbled into.

I really do look at it as an opportunity for us to get smart again, both in the sense of affordable and environmentally sound energy sources. We have all of the talent and technology to do it. We simply have disallowed it to be applied or put to use over the last decade or so with the attitude that somehow we conserve our way out of this and that new technologies would take us all the way out of it. That is now clearly evident not to be the case.

At the same time, to build the new and safe and smaller nuclear reactor makes awfully good sense to me. Finding a way to manage that waste stream in a productive way makes awfully good sense. Re-licensing hydro in a way that does not reduce its capacity by 20 percent and increase its cost by 30 percent seems to make pretty good sense to me. How about clean coal technology that we have denied ourselves or have not forced ourselves to look at? That seems to make a lot of good sense.

What we are learning is that we do still need large sources of energy to apply to the economy of this country. The feds dropped rates again yesterday. The stock market is stumbling around. Economic reports are probably going to show that these big companies have had to downgrade their profits dramatically because of input costs, dramatic increases in energy costs. Somehow we have kind of quietly assumed the economy could just take care of that. Well, it is taking care of it, taking care of it in the form of less profits

and layoffs and readjustments. That happens when you create spikes in inputs in the cost of doing business.

So, Mr. Chairman, let us hear from this panel of experts and folks who watch this energy economy very, very closely, building a record for our Congress to look at and to react to as we shape new policy as critical.

Thank you.

The CHAIRMAN. Thank you very much, Senator Craig.

We have been joined by Senator Thomas, the Senator from Wyoming, at least one of them. Oh, and there is one from Arizona down at the end that snuck in. Well, for heaven's sakes. We have them outnumbered, so go ahead, fellows.

[Laughter.]

Senator LANDRIEU. It only takes one of me sometimes, though.

The CHAIRMAN. I know. I know.

[Laughter.]

**STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM WYOMING**

Senator THOMAS. Well, I, too, want to hear the testimony. And I know that you have covered where we are and the fact that we need more domestic production and so on. But we need to move on access. We need to move on the opportunity to be able to move energy through rights of ways and easements, both for power lines and for pipelines. We need diversity. We need to have conservation. And we need to move.

I am anxious to hear from our panel. And as you know, for Wyoming this is a great issue we are very much interested in. With our gas production going up substantially, we can produce more mine mountain electricity. We need a way to get it where it needs to go to the market.

We need access to public land so that we can do that. And we can take care of the land at the same time. We do not need to have this environment or use as being two opposite things. They do not need to be.

And so I will stop there and look forward to your comments.

The CHAIRMAN. Yes. Thank you very much.

Senator Kyl.

**STATEMENT OF HON. JON KYL, U.S. SENATOR FROM ARIZONA**

Senator KYL. Thank you, Mr. Chairman. I know these witnesses will help us in our job of helping to provide information to our public, which needs to be informed about the costs that the over-regulated energy sector has imposed upon us.

In my State of Arizona this summer, whereas we are an exporting State of energy and ordinarily would have no difficulty at all, there could be some issues of brownouts or blackouts, simply because the power that ordinarily would be acquired on the margins in the middle of the summer from the Northwest will probably have to go to California. And as a result, Arizona, which, as I said, has invested and has tried its best to meet its own needs, is going to suffer right along with the people in California.

Until this country comes fully to appreciate the fact that there is no free lunch, when it comes to energy, you cannot just consume,

you have to produce as well, we are going to continue to face this problem. And I think our witnesses today can help provide that base of information that will enable the public to judge what will need to be done in order to solve this problem.

And I thank you, Mr. Chairman, for holding this hearing.

The CHAIRMAN. Thank you very much, Senator Kyl.

I would respectfully request that the panel consider three questions, in addition to your presentation. One is a concern brought up by the ranking member, and that is the global warming issue. And obviously, one answer to that clearly from the standpoint of generating more power is the role of nuclear energy. We do not seem to be able to get over the threshold of what to do with the waste.

You know, there seems to be more of an awareness in the public, at least to some extent, that, yes, maybe we should look at nuclear again. But the question is, how do you unwind it? Nobody in their right mind would finance a nuclear plant today. The permitting time, the exposures associated with overruns, nobody would give you a firm contract to build one. But nevertheless, we need to have some input on that issue.

The other is the merits of trying to reduce our dependence on imported oil. There is no question that we cannot drill our way out, but the merits of reducing our dependence from a positive point of view of identifying areas in the domestic front, the United States, where we can develop more oil and reduce that dependence, the merits of that, how important it is, or is it okay to just drift on and increase our dependence on imports from 56, 59, 60, 65. The Department of Energy says we are going to be at 65 percent by 2010.

The last one is, for those of us who feel that we are kind of identified as the answer, whether it be the State of Louisiana, the State of Mississippi, Alabama. But, you know, we talk about energy, and we suddenly find that the entire east coast from Maine to Florida is off limits. It has moratoriums on it, different types, different days that they come about.

The same is true on the west coast of the United States, from the Canadian border north of Washington State through California, moratoriums. Where is this energy going to come from, if we have these moratoriums? I wonder if my friend for Louisiana and a couple of others would consider the merits of a bill that would open up everything. Everything is closed. Open it up. And then reprioritize. Because, you know, can we address relief if we on one hand say we are committed to producing more, and then suddenly find that we have all these areas closed?

So if you can wander into those areas, that would be enlightening. Who wants to go first? Anybody catching an airplane today?

I guess we will let Mary—are you——

Mr. NUGENT. At 2:20.

The CHAIRMAN. Oh, well. You will make it.

Mr. NUGENT. I hope we'll be through.

The CHAIRMAN. You only have 7 minutes. So——

[Laughter.]

The CHAIRMAN. Mary, go ahead.

**STATEMENT OF MARY HUTZLER, DIRECTOR, OFFICE OF INTEGRATED ANALYSIS AND FORECASTING, ENERGY INFORMATION ADMINISTRATION**

Ms. HUTZLER. Thank you, Mr. Chairman and members of the committee. I appreciate the opportunity to appear before you today to discuss current energy trends in the United States.

The Energy Information Administration is an autonomous, statistical, and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data analysis and projections for the use of the Department of Energy, other government agencies, the U.S. Congress and the public.

The projections in this testimony are from the *Short-term Energy Outlook* released this month and from the *Annual Energy Outlook* 2001 published in December. The *Short-term Energy Outlook* provides quarterly projections through 2002 on a national basis. And the *Annual Energy Outlook* provides annual projections through 2020 on a national and regional basis. Our long-term projections are based on technological and demographic trends, current laws and regulations, and consumer behavior.

[Chart.]

Ms. HUTZLER. Energy markets in the United States today are characterized by high prices for both petroleum and natural gas, due in large part to tight supplies of both fuels. Reductions in oil production by OPEC and several non-OPEC petroleum exporting nations have contributed to the low stocks for the industrialized nations.

The CHAIRMAN. Well, why do you not walk us through that chart?

Ms. HUTZLER. The blue part of the chart shows the normal range of where stocks are for the industrialized nations. These are the OECD countries. The black shows where they were actually, and then the red shows where we are projecting. And you can see that the projection is below where the normal ranges are.

The CHAIRMAN. Yes. That means what?

Ms. HUTZLER. That means that markets are very tight. Therefore, they are going to be very volatile in that you can have high prices as a result of that volatility.

Senator THOMAS. That is not production then.

Ms. HUTZLER. No. Those are stocks.

Senator THOMAS. Stocks.

The CHAIRMAN. Those are refined stocks.

Ms. HUTZLER. These are oil stocks.

The CHAIRMAN. Crude oil.

Ms. HUTZLER. Yes, crude.

The CHAIRMAN. And where are those stocks?

Ms. HUTZLER. They are in the OECD countries that we are talking about. And these are both crude and petroleum stocks, total stocks.

The Chairman; Yes, but do they have to be pumped or are they in transit or are they storage or——

Ms. HUTZLER. Storage.

The CHAIRMAN. They are in storage. So they have been pumped out of the oil fields.

Ms. HUTZLER. Yes. You also have copies of these charts at hand too, if you want to get a closer look at them.

[Chart.]

Ms. HUTZLER. Tight natural gas supplies are also contributing to high electricity prices in California, along with high electricity demand relative to capacity, high generation outage rates, transmission bottlenecks, and low hydroelectric resources.

At its March 17 meeting, OPEC members agreed to reduce production quotas an additional 1 million barrels per day effective April 1. This follows an earlier production quota cut of 1.5 million barrels per day announced in January that was effective February 1.

Prior to the March 17 meeting, the average imported price of oil was projected to fall slightly from its 2000 value of $27.70 per barrel. Based on these imported crude prices, we projected an average price for motor gasoline for this summer of $1.47 per gallon.

The CHAIRMAN. Where do you—does that include tax?

Ms. HUTZLER. Yes. It is an average including taxes.

These new production cuts by OPEC may result in higher price projections, which will be incorporated in our next *Short-term Energy Outlook* to be released early next month. Warm spells in January and February and declining crude oil prices in December and January helped to ease heating oil prices, which have been declining from their winter peak of $1.41 per gallon in December. Nevertheless, heating oil prices remain high compared to history.

Natural gas prices began increasing last summer primarily due to high demand and low levels of natural gas storage, as you can see in this chart.

The CHAIRMAN. Tell us what working gas in storage is.

Ms. HUTZLER. That is gas that is in storage that has already been drilled and has been put in storage areas so that it can be gotten to very quickly. And the blue on this graph also shows where normal region levels were. The black is where we have seen it over the past period on that chart, starting in April of 1998. And you can see we are projecting also for it to be a problem in the future.

The CHAIRMAN. So it is the same as for OECD oil stocks, essentially.

Ms. HUTZLER. Yes. It is a similar concept for natural gas.

Okay. So since late June, spot prices increased more than $4 per thousand cubic feet. The wellhead price of natural gas is currently estimated to have more than doubled this heating season from the previous season's price. Due to projected high levels of demand growth for natural gas, particularly for electricity generation, the average wellhead price is projected to be about $4.70 per thousand cubic feet in 2001, compared to an annual average of about $3.60 per thousand cubic feet in 2000.

Electricity demand is expected to grow at a rate of about 2.2 percent in 2001 and in 2002, compared to an estimated growth rate of 3.6 percent between 1999 and 2000. Slower growth is expected in part due to slower projected economic growth. Electricity demand for this past winter is expected to be higher than the previous winter, due to higher residential and commercial demand and the cold temperatures in November and December.

Today, petroleum, natural gas and coal make up about 85 percent of total energy consumed in the United States. And we project that these fuels will increase their share slightly over the next 20 years. Petroleum represents 40 percent of today's consumption and is mainly used for transportation fuels and in the industrial sector, for petrochemical feed stocks, plastics and asphalt, areas where little substitution potential exists.

Coal represents about one-quarter of our consumption, and 90 percent is used for electricity generation. We are expecting about a 45-percent increase in electricity generation over the next 20 years, as all sectors increase their demand for electricity. While the largest portion of the additional generation is expected to come from natural gas, coal is expected to provide 44 percent of total generation in 2020, a decrease from its current share of 52 percent.

Natural gas consumption for electricity generation is projected to triple between now and 2020, resulting in a 62-percent increase in its total consumption that you see on this chart.

[Chart.]

Ms. HUTZLER. The next chart shows our domestic supply of fuels. Coal is our Nation's most abundant fossil fuel resource, providing 31 percent of our current domestic production. We expect domestic natural gas production to surpass coal by 2015, increasing its share of production from 23 percent today to 35 percent in 2020. Our domestic petroleum supply is projected to remain roughly flat for the next 20 years, resulting from decreasing domestic crude production and increasing production from natural gas plant liquids and refinery gains. However, because of our increasing demand for petroleum, net imports will increase from its 52-percent share today to 64 percent in 2020.

The United States is and will remain one of the top oil producers in the world. We are third in the world behind Saudi Arabia and Russia. However, while we will be a significant oil producer, our consumption will be outstripping our production.

[Chart.]

Ms. HUTZLER. My final chart highlights the regional projections for electricity capacity additions. Our forecast calls for 413 gigawatts of additional capacity needed by 2020. That is almost 1,400 300-megawatt units. It will be needed to meet our projected 1.8-percent growth rate in electricity demand and projected capacity retirements of about 9 percent of our current capacity. You can see that we are forecasting the need for large increases in capacity additions for the Southeast, Texas, California, and parts of the Midwest.

Thank you, Mr. Chairman and members of the committee, and I will be happy to address the questions you have.

[The prepared statement of Ms. Hutzler follows:]

PREPARED STATEMENT OF MARY HUTZLER, DIRECTOR, OFFICE OF INTEGRATED ANALYSIS AND FORECASTING, ENERGY INFORMATION ADMINISTRATION

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the near- and long-term outlook for energy markets in the United States.

The Energy Information Administration (EIA) is an autonomous statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analysis, and projections for the use of the Department of Energy, other government agencies, the U.S. Congress and the public.

We do not take positions on policy issues, but we do produce data and analysis reports that are meant to help policy makers determine energy policy. Because we have an element of statutory independence with respect to the analyses that we publish, our views are strictly those of EIA. We do not speak for the Department, nor for any particular point of view with respect to energy policy, and our views should not be construed as representing those of the Department or the Administration. However, EIA's baseline projections on energy trends are widely used by government agencies, the private sector, and academia for their own energy analyses.

Each month, EIA updates its *Short-Term Energy Outlook*, which contains quarterly projections through the next two calendar years, taking into account the latest developments in energy markets. The *Annual Energy Outlook* provides projections and analysis of domestic energy consumption, supply, prices, and energy-related carbon dioxide emissions through 2020. The projections in this testimony are from the *Short-Term Energy Outlook March 2001 (STEO)* and from the *Annual Energy Outlook 2001 (AEO2001)*, published by EIA in December 2000. These projections are not meant to be exact predictions of the future, but represent a likely energy future, given technological and demographic trends, current laws and regulations, and consumer behavior as derived from known data. EIA recognizes that projections of energy markets are highly uncertain, subject to many random events that cannot be foreseen, such as weather, political disruptions, strikes, and technological breakthroughs. In addition to these short-term phenomena, long-term trends in technology development, demographics, economic growth, and energy resources may evolve along a different path than assumed in the *AEO2001* reference case. Many of these uncertainties are explored through alternative cases in both the *STEO* and *AEO*.

## THE OUTLOOK TO 2002

Energy markets in the United States today are characterized by high prices for both petroleum and natural gas, due in large part to tight supplies of both fuels. Reductions in oil production by OPEC and several non-OPEC petroleum-exporting nations have contributed to low oil stocks. Tight natural gas supplies are also contributing to high electricity prices in California, along with high electricity demand relative to capacity, high generation outage rates, and low hydroelectric resources.

Crude Oil. At its March 17 meeting, OPEC members agreed to reduce production quotas an additional 1 million barrels per day effective April 1, 2001. This follows an earlier production quota cut of 1.5 million barrels per day announced in January that was effective February 1, 2001. OPEC has scheduled an extraordinary meeting for June 5-6, 2001 to review their production quotas. The monthly average U.S. imported crude oil price for February 2001 is estimated to be about $26.40 per barrel, slightly higher than the estimate of $25.75 per barrel in January. EIA's current forecast reflects our belief that the January production cut by OPEC 10 (OPEC, excluding Iraq) would maintain the world oil price within and toward the high end of OPEC's target range of $22 to $28 per barrel in 2001 and 2002 (Figure 1).* Prior to the March 17 meeting, average imported prices were projected to fall slightly from the estimated value of $27.70 per barrel in 2000 to about $26.60 per barrel in 2001 and about $25.40 in 2002, all prices being expressed in nominal dollars. EIA expects that oil stocks in the OECD countries will continue to be tight compared to normal levels, preventing prices from falling significantly (Figure 2). With the new production cuts, further uncertainty has now been introduced.

Motor Gasoline. The retail price for regular unleaded motor gasoline has fallen about 10 cents per gallon since September. However, with crude oil prices increasing by about $1.20 per barrel from their December low of $25.19 per barrel combined with lower than normal stock levels, EIA projects that prices will rise to about $1.49 per gallon during the peak months of the 2001 driving season. For the summer of 2001, we are projecting an average price of $1.47 per gallon, compared to $1.53 per gallon in the previous driving season, in nominal dollars. Motor gasoline stocks are expected to be slightly lower during this year's driving season compared to last year; however, crude oil prices are also expected to be lower. The annual average retail price of regular unleaded motor gasoline is projected to decline from $1.49 per gallon in 2000 to $1.46 per gallon in 2001 to $1.41 per gallon in 2002, with all prices being in nominal dollars.

Heating Oil. The heating season of October through March is nearly over, so retail heating oil prices have seen their seasonal peak. Warm spells in January and February and declining crude oil prices in December and January helped to ease heating oil prices, which have been declining from their winter peak of $1.41 per gallon

*The attachments have been retained in committee files.

in December. Nevertheless, heating oil prices remain high compared to history. The average price for October through December 2000 was almost 40 cents per gallon higher than the same period in 1999. Due to the relatively warm weather in the Northeast during the last half of January and parts of February and heating oil production that is several hundred thousand barrels per day more than last year's level, heating oil stock levels have remained fairly steady over the past two months. For the first time since November 1999, U.S. distillate stocks are within the normal range. With crude oil prices expected to be lower in 2001 than in 2000, lower heating oil prices are projected as well. Retail heating oil prices are expected to be $1.28 per gallon in October through December 2001 compared to $1.40 per gallon in the same period for 2000, in nominal dollars. The annual average retail price of heating oil is expected to decline slightly from $1.31 per gallon in 2000 to $1.28 per gallon in 2001 to $1.22 per gallon in 2002, with all prices in nominal dollars.

Natural Gas. Natural gas prices began increasing last summer, primarily due to low levels of natural gas storage (Figure 3), with spot prices increasing more than $4 per thousand cubic feet since late June. During the heating season from October 2000 through March 2001, the wellhead price of natural gas is currently estimated to have more than doubled from the price during the previous season, averaging about $5.60 per thousand cubic feet, in nominal dollars (Figure 4). When the heating season ends, average wellhead prices are projected to decline, averaging about $4.05 per thousand cubic feet for the spring and summer. Due to projected high levels of demand growth for natural gas, particularly for electricity generation but also in the industrial sector, it is highly unlikely that wellhead prices will decline to the level of $2 per thousand cubic feet of one year ago. In 2001, the average wellhead price is projected to be about $4.70 per thousand cubic feet, compared to an annual average of about $3.60 per thousand cubic feet in 2000, in nominal dollars. However, hot summer weather in regions with high levels of natural gas-fired electricity generation could reduce storage injections for next year's heating season and lead to higher seasonal price increases. In 2002, we expect the storage situation to improve somewhat with increases in production and imports, leading to a modest decrease in the average annual wellhead price to about $4.30 per thousand cubic feet, in nominal dollars. Domestic natural gas production for 2001 and 2002 is expected to rise as production responds to the high rates of drilling experienced over the past year. In 2000, drilling for natural gas in the United States increased by 45 percent over the 1999 level of 10,500 wells, in response to a 66-percent increase in the average natural gas wellhead price from 1999 to 2000 (Figure 5). Production is estimated to have risen by 3.1 percent in 2000 and is projected to increase by rates of 3.3 percent in 2001 and 2.5 percent in 2002 as higher natural gas prices are expected to encourage a moderate growth in supply. In contrast, natural gas production declined slightly from 1997 to 1998 and from 1998 to 1999.

Electricity. Electricity demand is expected to grow at a rate of about 2.2 percent in 2001 and 2.3 percent in 2002, compared to a estimated growth rate of 3.6 percent between 1999 and 2000. Slower growth is expected in part due to slower projected economic growth. Electricity demand for this winter is expected to be 4.6 percent higher than the previous winter, due to higher residential and commercial demand and the cold temperatures in November and December. Natural gas deliverability problems in California have helped to increase natural gas prices and have frequently caused interruptible customers, including electricity generators, to be cut off in that State. The current situation in California is characterized by low natural gas storage, natural gas pipeline bottlenecks, high electricity demand, and low availability of hydropower resources, combined with no significant capacity additions in the last ten years. In addition, the San Onofre 3 nuclear unit is currently offline due to a fire in early February and may not return to service for several months. The average residential price of electricity in the United States is projected to increase from 8.2 cents per kilowatthour in 2000 to 8.3 and 8.4 cents per kilowatthour in 2001 and 2002, respectively, in nominal dollars, largely due to fuel costs.

## THE OUTLOOK TO 2020

*AEO2001* provides an integrated projection of U.S. energy market trends for the next two decades on an annual basis. The following discussion highlights the major categories of domestic energy demand and supply.

Consumption. Total energy consumption is projected to increase from 96.1 to 127.0 quadrillion British thermal units (Btu) between 1999 and 2020, an average annual increase of 1.3 percent. Transportation energy demand is expected to increase at an average annual rate of 1.8 percent to 38.5 quadrillion Btu in 2020 and is the fastest growing end-use sector. The growth in transportation use is driven by 3.6-percent growth in air travel, the most rapidly increasing transportation mode,

and 1.9-percent annual growth in light-duty vehicle travel, the largest component of transportation energy demand, coupled with slow growth in vehicle efficiency.

Residential and commercial energy consumption is projected to increase at average annual rates of 1.2 and 1.4 percent, respectively, reaching 24.4 quadrillion Btu in 2020 for residential demand and 20.8 quadrillion Btu for commercial demand. In both sectors, the growth in demand is led by electricity consumption for a variety of equipment—telecommunications, computers, office equipment, and other appliances. Electricity use is projected to increase at annual rates of 1.9 and 2.0 percent, in the residential and commercial sectors, respectively. Industrial energy demand is projected to increase at an average rate of 1.0 percent per year, reaching 43.4 quadrillion Btu in 2020, as efficiency improvements in the use of energy help to offset growth in manufacturing output. The projections incorporate promulgated efficiency standards for new energy-using equipment in buildings and for motors, as authorized by the National Appliance Energy Conservation Act of 1987 and the Energy Policy Act of 1992. Since *AEO2001* included only those laws, regulations, and standards in effect as of July 1, 2000, the new standards for residential clothes washers, water heaters, and central air conditioners and heat pumps and commercial heating, cooling, and water heating equipment issued in January 2001 are not included. In addition to the impact of efficiency standards, improvements in efficiency are projected as a result of expected technological improvement and market forces.

Petroleum demand is projected to grow at an average rate of 1.4 percent per year through 2020, led by the growth for transportation, which uses about 70 percent of the total (Figure 6). Growth in travel more than offsets efficiency gains, and economic growth increases petroleum use for freight and shipping through 2020. Natural gas consumption is expected to increase at an average rate of 2.3 percent per year. Increases are expected in all sectors, but the most rapid growth is for electricity generation, where natural gas use (excluding cogenerators) is projected to grow from 3.8 to 11.3 trillion cubic feet between 1999 and 2020. Total coal consumption is expected to increase from 1,035 to 1,297 million tons per year between 1999 and 2020, an average annual increase of 1.1 percent. About 90 percent of the coal is used for electricity generation. Coal remains the primary fuel for generation, although its share of generation is expected to decline from 51 to 44 percent between 1999 and 2020. Electricity consumption overall is projected to grow by 1.8 percent per year through 2020. Efficiency gains in the use of electricity partially offset the growth of new electricity-using equipment. Renewable fuel consumption, including ethanol used in gasoline, is projected to increase at an average rate of 1.1 percent per year through 2020. In 2020, about 55 percent of renewable energy is used for electricity generation and the rest for dispersed heating and cooling, industrial uses, and fuel blending.

Energy Intensity. Energy intensity, measured as energy use per dollar of gross domestic product (GDP), has declined since 1970, most notably when energy prices have increased rapidly (Figure 7). Between 1970 and 1986, energy intensity declined at an average rate of 2.3 percent per year as the economy shifted to less energy-intensive industries and more efficient technologies. Without significant price increases and with the growth of more energy-intensive industries, intensity declines moderated to an average of 1.3 percent per year between 1986 and 1999. Through 2020, energy intensity is projected to decline at an average rate of 1.6 percent per year as efficiency gains and structural shifts in the economy offset growth in demand for energy services. Energy use per person generally declined from 1970 through the mid-1980s, and then tended to increase as energy prices declined. Per capita energy use is expected to increase slightly through 2020, as efficiency gains only partly offset higher demand for energy services.

Electricity Generation. Generation from both natural gas and coal is projected to increase through 2020 to meet growing demand for electricity and offset the decline in nuclear power expected from retirements of some existing facilities (Figure 8). As noted above, the share of coal generation is expected to decline through 2020 because assumptions about electricity industry restructuring, such as higher cost of capital and shorter financial life of plants, favor the less capital-intensive and more efficient natural gas generation technologies. The natural gas share of total generation is expected to increase from 16 to 36 percent between 1999 and 2020. The use of renewable technologies for electricity generation, including cogeneration, is projected to increase slowly at an average rate of 0.7 percent per year, primarily due to moderate fossil fuel prices. State renewable portfolio standards are the cause of a significant amount of the expected penetration. Hydropower is expected to decline slightly by 2020 as regulatory actions limit capacity at existing sites, and no large new sites are expected to be available for development.

Supply. Total domestic petroleum supply, including refinery gain and natural gas plant liquids, is projected to remain nearly flat through 2020 (Figure 9). Domestic

crude oil production is projected to decline at an average rate of 0.7 percent per year, from 5.9 million barrels per day in 1999 to 5.1 million barrels per day in 2020. As a result, net petroleum imports are expected to rise through 2020, to meet growing demand (Figure 10). Between 1999 and 2020, net imports of petroleum are projected to increase from 51 percent to 64 percent of domestic petroleum demand. In 2020, the United States is expected to require net imports of crude oil and petroleum products totaling 16.5 million barrels per day.

Unlike oil, domestic natural gas production, with its larger and more accessible resource base, is expected to increase from 18.7 trillion cubic feet in 1999 to 29.0 trillion cubic feet in 2020. Increased production comes primarily from lower 48 onshore conventional nonassociated sources, although onshore unconventional production is expected to increase at a faster rate than other sources. In order to fill the gap between domestic production and consumption, net natural gas imports are expected to increase from 3.4 trillion cubic feet in 1999 to 5.8 trillion cubic feet in 2020, mostly pipeline natural gas imports from Canada. Net liquefied natural gas imports are projected to increase from 0.1 to 0.7 trillion cubic feet by 2020.

Coal production is expected to increase from 1,105 million tons in 1999 to 1,331 million tons in 2020, an average of 0.9 percent per year, to meet rising domestic demand. From 1999 to 2020, low-sulfur coal production is expected to increase while the production of high- and medium-sulfur coal declines, due to the need to reduce sulfur dioxide emissions from coal-fired electricity plants. As a result, western coal production the primary source of new low-sulfur coal is expected to continue its historic growth, reaching 787 million tons in 2020, an annual growth rate of 2.2 percent. Western coal is surface mined and less costly to produce than eastern coal.

Carbon Dioxide Emissions. Energy-related carbon dioxide emissions are projected to increase at an average of 1.4 percent per year from 1999 to 2020, reaching 2,041 million metric tons of carbon equivalent, 35 percent higher than in 1999 and 51 percent higher than in 1990 (Figure 11). Projected increases in carbon dioxide emissions primarily result from continued reliance on coal for electricity generation and on petroleum fuels in the transportation sector.

Alternative Cases. In order to show the impact of alternative assumptions concerning the key factors driving energy markets, we include a number of alternative cases in *AEO2001.* Two sets of these cases illustrate the impacts of improved technology in energy-consuming equipment and in the production of oil and gas.

One alternative case assumes more rapid improvement in new technologies for end-use demand, through lower costs, higher efficiencies, and earlier availability for new technologies, relative to the reference case, as well as more rapid improvement in the costs and efficiencies of advanced fossil-fired and new renewable generating technologies. As a result, projected energy demand in 2020 is 8 quadrillion Btu lower than in the reference case, reducing carbon dioxide emissions to 1,875 million metric tons carbon equivalent in 2020, compared to 2,041 million metric tons carbon equivalent in the reference case (Figure 12). Such technology improvements could result from increased research and development, but should not be considered the most optimistic improvements that could occur with a very aggressive program of research and development. The *AEO2001* reference case assumes continued improvements in technology for both energy consumption and production; however, it is possible that technology could develop at a slower rate. In the 2001 technology case, it is assumed that all future equipment choices will be made from the equipment and vehicles available in 2001, with new building shell and industrial plant efficiencies frozen at 2001 levels. Also, new generating technologies are assumed not to improve over time. In this case, efficiencies improve over the forecast period as new equipment is chosen to replace older stock and the capital stock expands; however, projected energy demand in 2020 is 6 quadrillion Btu higher than in the reference case, increasing carbon dioxide emissions to 2,157 million metric tons carbon equivalent.

Another alternative case assumes more rapid technological improvement in the exploration and production of petroleum and natural gas. By 2020, these assumed improvements are expected to raise natural gas production by 1.1 trillion cubic feet and raise lower 48 crude oil production by nearly 300 thousand barrels per day compared to the reference case. The more rapid technology progress would also be expected to reduce the average wellhead price of natural gas in the United States from $3.13 per thousand cubic feet (1999 dollars) in the reference case to $2.50 per thousand cubic feet in 2020 (Figure 13). Conversely, slower technological improvements are assumed in another case, which reduce natural gas production by 1.9 trillion cubic feet and reduce lower 48 crude oil production by nearly 400 thousand barrels per day in 2020 relative to the reference case. In this slow technology case, the average wellhead price of natural gas in 2020 reaches $4.23 per thousand cubic feet.

Conclusion. In the near term, we expect crude oil and petroleum prices to decline slightly from their current levels by the end of the year and to decline further next year. Stock levels of both petroleum and natural gas remain tight. In the long term, continuing growth in the U.S. economy is expected to stimulate more energy demand, with fossil fuels remaining the dominant source of energy. As a result, our dependence on foreign sources of petroleum is expected to increase and domestic natural gas production and natural gas imports are expected to grow significantly. These forecasts incorporate an expectation of efficiency improvements in both demand and supply although different paths for technological development could lead to slower or more rapid efficiency gains.

Thank you, Mr. Chairman and members of the Committee. I will be happy to answer any questions you may have.

The CHAIRMAN. Thank you very much, Ms. Hutzler. I appreciate that excellent presentation.

Our next witness will be Mr. Guy Caruso, executive director of Strategic Energy Initiative. I am going to have to step out for a moment, but please proceed.

And, Senator Bingaman, I will be back in just a moment. I have a constituent that I have to shake hands with.

**STATEMENT OF GUY F. CARUSO, EXECUTIVE DIRECTOR, STRATEGIC ENERGY INITIATIVE, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES**

Mr. CARUSO. Good morning, Mr. Chairman. Thank you very much for this opportunity to present the results of the Center for Strategic and International Studies report, the Geopolitics of Energy into the 21st Century.

The chairman was one of the congressional co-chairs on this report, along with his colleague across the aisle, Senator Lieberman. And I will briefly summarize the key findings of the report in the oral remarks. And the full statement will be submitted for submission into the record.

Our report examined the global energy trends projected to 2020 and analyzed the implications of those trends for geopolitical developments during that same time frame. Let me highlight just several of the most important energy trends, which were drawn very heavily from the work of the EIA and Mrs. Hutzler's office. So I will not belabor them.

The robust economic growth and the population growth projections and expanded global trade are expected to lead to more than a 50-percent increase in world energy demand by 2020. And the most rapid growth in that demand will be in developing countries, which we believe has important geopolitical implications.

In terms of supply, the Persian Gulf suppliers will become even more dominant in world trade. According to some projections, Persian Gulf oil would represent as much as 60 percent of world oil trade in 2020 with Saudi Arabia by far being the leading oil exporter, as it is today. And the reason for that concentration is the rapid and steadily growing oil imports, not only in this country but in Europe and, more importantly I think for this forecast, in the developing countries of Asia.

The third trend which has important geopolitical implications is the rapid growth in electricity demand and natural gas demand, as Mary pointed out in her forecast, not only in the United States, but globally. The global infrastructure of electricity and natural gas is

stretched thin. As well as we have witnessed in this country, it is also true globally.

The study reaches three very broad conclusions. The first is that the United States has and will continue to have a special responsibility for preserving worldwide energy supply, which will become increasingly difficult if world oil developments play out as these forecasts indicate.

Secondly, in order to develop an adequate and reliable energy supply to meet the projected demands mentioned, we are going to need massive investments in the global energy infrastructure, and they must begin now. It is not just the United States. It is around the world that some of these same constraints are beginning to be felt.

And the third point is following up the points several of the Senators made in opening remarks, that we need to balance economic growth with environmental concerns. And that presents a special challenge in this geopolitical outlook. The integration of energy and environment policy is essential in order to achieve a balanced and diverse national and international energy policy.

And in the report we do list a number of policy issues for consideration. I will just mention a few of them in the oral remarks, but they are listed in their complete recommendations and considerations in the written submission.

On energy availability, the United States will need to retain as far as possible its ability to defend open access to energy supplies and international ceilings. And this will become increasingly difficult. And we may have to seek some burden sharing from our allies to accomplish this, given this outlook.

Secondly on the availability issue, the report recommends that we avoid indiscriminate use of sanctions. In particular, unilateral sanctions have not been an effective policy tool and should be dropped. They have not been effective, and they only harm U.S. commercial interests abroad.

With respect to energy reliability, governments should maintain and, where appropriate, expand government financed and controlled strategic petroleum reserves, reserving their use for supply disruptions. And with respect to supply disruption mitigation, international cooperation with organizations, such as the International Energy Agency, will continue to be essential in order to mitigate those risks.

On the energy and environment issue, the report recognized this is a long-term issue, particularly the global environmental concerns with respect to greenhouse gas emissions, but also air and water concerns as well. And that one way to begin dealing with this and recognizing the long-term nature of it is the need to make economically and environmentally sound technologies available to developing countries in order to meet their increasing energy demands, which, as I mentioned, are growing dramatically, and will also affect the environmental side of the issue.

In the report we specifically single out the possibility of nuclear power being utilized in developing countries to deal with both the environment issue and their increasing electricity needs.

On the question of what do we do about reducing our oil imports and our dependence and the issue that several of you mentioned

earlier about dependence versus vulnerability, it is clear that we will continue to be dependent. The real issue is, what can we do about reducing our vulnerability. One way is with strong emergency preparedness procedures and having a strong strategic petroleum reserve.

But another way is taking care of our own business, because OPEC is going to continue to take care of their business. And the idea that we have a balanced access to our own energy resources is certainly a step in the right direction. So I, again, agree with the statements made that we need to diversify our fuel sources within this country, as well as from abroad and have a balanced approach.

Let me conclude there my oral remarks, and I would offer to make available the full three-volume study to any members who would so desire. Thank you very much, Mr. Chairman.

[The prepared statement of Mr. Caruso follows:]

PREPARED STATEMENT OF GUY CARUSO, EXECUTIVE DIRECTOR, STRATEGIC ENERGY INITIATIVE, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Good morning, Mr. Chairman, members of the committee, thank you for this opportunity to testify today and to present the results of the Center for Strategic and International Studies (CSIS) study "The Geopolitics of Energy into the 21st Century" which was released on 15 February 2001.

Today I want to share with you some of the more important findings of this study, because these findings have policy implications not just for the United States but for all energy producing and consuming countries.

Our *Geopolitics* study was cochaired by former Senator Sam Nunn, who also chairs our Board of Trustees, and by Dr. James Schlesinger, former Secretary of Energy. For this project we had four Congressional cochairs: Senator Frank Murkowski and Senator Joe Lieberman; and Representatives Benjamin Gilman and Ellen Tauscher. We also formed a Senior Advisory Panel, supported by a number of special task forces, comprised of individuals drawn from both the public and private sectors, approximately 100 experts contributed to the project.

We began work in July 1998 in response to concerns that a lengthy period of secure energy supplies had led U.S. policy makers to pay relatively little attention to the changing relationship between geopolitics and energy at the turn of the century. This changing relationship required a rethinking of U.S. foreign policies, environmental policies, and the broader national security strategy. Our completed report responds to these concerns.

The geopolitics of energy is rarely static. Events of the day carry implications for energy supply consumption, and prices—sometimes immediate, sometimes delayed, sometimes hidden. By attempting to define, in advance, the form these events may take—and the resulting impact on energy—the report may remove some surprise from the future and ease the way for decision makers in both the public and private sectors.

THE MESSAGE

"One of the ironies at the turn of the century is that, in an age when the pace of technological change is almost overwhelming, the world will remain dependent, out to the year 2020 at least, essentially on the same sources of energy—oil, natural gas, coal—that prevailed in the twentieth century."

This message carries our assessment that for renewable and alternative forms of energy, although increasing in absolute terms during the coming years, their relative contribution to total energy supply is not likely to increase substantially.

We came to three broad conclusions based on our analysis of the geopolitics of energy into the twenty-first century.

First, the United States, as the world's only superpower, must accept its special responsibilities for preserving worldwide energy supply.

Second, developing an adequate and reliable energy supply to realize the promise of robust global economic growth early in the twenty-first century will require significant investments, and they must begin to be made immediately.

Third, decision makers, in both the public and private sectors, face the special challenge of balancing the objectives of economic growth with concerns about the environment. This challenge is probably the most contentious of any of the challenges

which lie ahead and it is going to be difficult to secure agreement by the protagonists on how to proceed.

### WHAT'S NEW?

Let me begin my review of our findings by describing for you What's New? For those who closely follow the energy industry, these findings may not necessarily be new. Rather, the real question is, how will energy producers and consumers alike respond to each?

### NGOS

First, we found that the influence of nongovernmental organizations or NGOs on public and private energy-related policy decisions will considerably expand in the coming years. Nongovernmental organizations are broad in definition, ranging from terrorist groups to radical activists to well-intentioned environmentalists and human rights monitors. By adroitly using new information technologies, opposition to a particular project or idea can be mobilized quickly and effectively, backing shareholder resolutions and disinvestment campaigns against offending oil companies, for example.

One recent example can be cited, and that is how widely separated NGOs came together against the proposed Chad-Cameroon pipeline. This pipeline is the largest infrastructure project underway in Africa today. What is interesting is this. For three years, until construction began last October, NGOs set the agenda. First, NGOs opposed the pipeline, then recognizing that the people wanted the pipeline, began to set demands on the oil companies if the project were to move ahead. Probably the greatest victory for the NGOs was agreement that 80% of the oil revenue be spent on education, health, infrastructure, and rural development. Whether that turns out to be the case is questionable.

### DEVELOPING COUNTRIES TAKE THE LEAD

At some point in time before the year 2020, the consumption of energy by the developing countries of the world is expected to exceed energy consumption by the developed world. Last year the developed world accounted for 53% of all energy consumed; the developing world for just 34%, economies in transition account for the remainder. Twenty years later, the picture will change rather dramatically, as the developed world share drops to 43%, while the developing world share rises to 46%.

This shift in consumption patterns carries tremendous political, economic, and environmental implications. Among other issues, what kinds of energy will the developing world be consuming? Will it be natural gas, or local coals? Where will the oil and gas come from? The Persian Gulf, Russia? Closer energy ties will likely translate into closer political ties. As China, for example, relies increasingly on Persian Gulf oil, would that country be willing to intervene to protect oil flows from disruption?

### CYBERTERRORIST ATTACKS

The spread of information technology and use of the Internet drastically change the way business is conducted, and this change carries with it a new set of vulnerabilities. One such vulnerability is the prospect of cyberterrorist attacks on energy infrastructure. These prospects are very real, and such attacks, in our estimation, may be one of the greatest threats to energy supply during the years under review.

The U.S. Central Intelligence Agency, along with our Department of Defense, has been working for years to perfect ways to electronically meddle with other countries' banking systems and electricity grids. I think we can safely assume that others are targeting our own electricity grids and banking systems.

No enemy would be foolish enough to engage the United States in a way that would allow us to use our vastly superior military force. But a handful of computer hackers, given the opportunity, could play havoc with our economy, at minimal cost to the host country.

### POLICY CONTRADICTIONS

While we may voice our strong opposition to the use of oil as a political weapon by oil exporting countries, the United States, in its own way, uses oil as a political weapon on a quite broad scale. How so? As an importing country, the United States could refuse to buy crude oil originating from a particular country, but that clearly would have no discernable impact. That embargoed oil would simply be directed to

another market, and would be replaced in the U.S. market by crude oil of a different origin.

No, it is through our broad application of sanctions that we employ oil as a political tool. We have unilateral sanctions against Libya and Iran, and we join in the multilateral sanctions against Iraq, with these three sanctions then encompassing a total of 7 million barrels per day. Do these sanctions really work? Have they caused the sanctioned countries to alter their behavior as originally intended? The answer is no, and no.

The greater need for oil in the future is at odds with current sanctions on oil exporters Iran, Iraq, and Libya. If our estimates of world oil demand in the year 2020 are reasonably correct, then Iran, Iraq, and Libya will have to substantially expand their current productive capacity and to produce at or very near full capacity if that demand is to be satisfied.

## GLOBALIZATION

There is another policy contradiction that I want to bring to your attention. The United States deals with energy policy in domestic terms, not international terms. The U.S. policy is therefore at odds with globalization. U.S. consumers have primarily one concern, and that is price. Our consumers do not care where our oil comes from. That we are presently importing about 57% of the oil we consume is of no concern at all. Although most certainly view Saddam Hussein as an enemy, would they then reject Iraqi oil? They almost certainly would not. We import in excess of 700,000 b/d of Iraqi oil, to no one's objection. Moreover, one of the great ironies of the day is that we refine this Iraqi crude, producing some volumes of jet fuel, and presumably use some of that jet fuel in our military aircraft sent out to bomb Iraq. The circle is closed; we are returning their oil to them, but in a slightly different form.

Some time ago, at a CSIS-sponsored conference, Mack McLarty, former White House chief of staff under President Clinton, presented a very perceptive—and commonly-held view of how globalization will work.

"When a Brazilian brews her morning coffee today, she is likely to use electricity from a power plant in Uruguay that runs on natural gas provided by a Chilean company. She drives to work in a Ford fueled with Venezuelan gasoline, and her Canadian-owned factory may soon be powered by a 2,000 mile natural gas pipeline from Bolivia."

But I would like to offer another view of globalization. There is a downside to globalization that, at least in energy terms, affects all of us. For globalization makes us vulnerable to events around the world, anywhere, anytime, over which we have no control.

Indeed, one astute observer has written that globalization actually helps terrorists. The lowering of borders, the rise of a global economy, the revolution in information technology, all these great and wonderful things have enormous benefits for terrorists.

A major oil exporting country sneezes, so to speak, and the rest of the world catches a cold. The so-called "Asian flu," if you will recall, was one of the triggers leading to the oil price collapse of several years ago. We can no longer hide behind national boundaries.

## SECURITY OF SUPPLY

Any energy importing country must concern itself with security of supply and, because we do, we seek security through diversity of supply. The energy policy of the United States encourages the search for oil outside the country, but away from the Persian Gulf. All in an effort to reduce our dependence on those exporting countries. But as we work to reduce our reliance on Persian Gulf oil, others are raising theirs.

We have intervened militarily in the Persian Gulf in the past to protect oil supply and likely would do so again. But if U.S. military power were committed to a limited but extended protection effort in Northeast Asia, for example, the capacity to respond to a crisis like that of 1990 in the Persian Gulf would be severely limited. As a result, the United States will need to rebalance its security relations and other consuming countries will have to weigh in. The United States cannot go it alone.

## ENERGY SUPPLY AND DEMAND INTO THE 21ST CENTURY

As we looked ahead in our study to the year 2020, in terms of proportional shifts in energy supply, what did we find?

- We found that the relative shares of crude oil, of coal, and of nuclear electric power all will decline, compared with relative contributions made in the year 2000.
- Indeed, nuclear electric power was seen as the only form of primary energy to decline both in absolute and relative terms.
- We found that renewables will hold their own, in relative terms.
- Natural gas, to no one's surprise today, was the only form of energy to demonstrate both absolute and relative gains.

Looking more closely at crude oil, would the geographic distribution of production change much during the intervening 20 years?

- The Persian Gulf would substantially increase its dominance of global oil trade by the year 2020.
- The contributions from the former Soviet Union, particularly from Kazakhstan and Russia, plus from Africa, would show considerable gain.
- But for the United States and the North Sea, the future was one of continued decline.

On an individual country basis, Saudi Arabia would maintain its leadership, at about 17% of the world total, followed by the former Soviet Union, then Venezuela, Iraq and Iran, all three at around 5 percent each. No real surprises here, although for the former Soviet Union we need to separate out Russia, Kazakhstan, Azerbaijan, and Turkmenistan. These countries warrant individual attention.

The potential of the Caspian Sea is a subject of considerable attention and continues to attract heavy media coverage. Just what can we expect in the years ahead? Looking just to the year 2010, and presuming that oil exploration and development programs are successful and that pipeline carrying capacities are adequate, then the new oil from the Caspian might represent as much as 3% of world oil supply that year. Not pivotal, by any means, and certainly not a substitute for Persian Gulf oil, but nevertheless important at the margin, and for adding to diversity of supply, which is a main theme of U.S. foreign policy towards that region.

### ELECTRICITY, NUCLEAR POWER, AND THE ENVIRONMENT

We found that electricity would be the most rapidly growing form of energy use during the years 2000-2020. This growth will be concentrated in the developing countries, where electricity use will more than double.

Clearly, access to adequate and reliable electricity supply is essential for modern civilized life. But two concerns emerge. Substantial capital investments will be required to build power plants and grids, and will NIMBYism (Not in My Back Yard) intrude in a way to interfere with the timely construction of power generators and supporting grid?

Moreover, can adequate electricity supply be developed while protecting the environment? This question particularly pertains to developing countries.

Nuclear power currently accounts for 16% of worldwide electricity generation. But by the year 2020 that contribution is expected to decline to just 10%. This decline will lead to a commensurate increase in worldwide carbon emissions, at a time when the world is increasingly aware of the need for emissions-free energy, and at a time when the developing world is confronted with dramatically large future energy requirements. To protect the environment, do we provide the poorer coal-burning countries with the latest in clean coal technology? Do we encourage them to take up the nuclear electric power option? Perhaps both approaches are needed.

### THE EXPORTING COUNTRIES

Volume 3 of our *Geopolitics* study deals in large part with the geopolitical situation in the key oil exporting countries. Unfortunately, pessimism prevails when longtime observers consider the outlook for stable political systems in many of these oil exporters.

Any geopolitical analysis of world oil inevitably begins with a survey of Saudi Arabia, and includes a scenario under which its oil exports are reduced or even eliminated. We began with Saudi Arabia because of its dominant role as an oil supplier and in recognition that no other supplier can replace Saudi Arabia should the need arise. Several sources of Saudi instability quickly come to mind: structural economic problems; ethnic and social tensions; and problems of royal succession.

Russia is the number two oil exporter, at roughly 4 million b/d. Today, Russia is weak, and a weak Russia is just as much concern to the world as was a strong Russia during the Cold War, in large part because of its large arsenal of weapons of mass destruction. In 1998 Russia was producing more oil than anyone else—11.5 million b/d. Then a collapse in production set in, eventually to 6 million b/d, not be-

cause of war or developments in the market place, but because of field mismanagement and the lack of investment capital. Foreign oil companies are prepared to invest in Russia, but only if the investment climate is attractive and if the investment is properly protected under the law. These two conditions have not yet been met.

The oil future of Venezuela is a bit uncertain because of uncertainty regarding President Chavez. The uncertainty regarding the sanctioned states of Iran, Iraq, and Libya has already been mentioned.

We want to be optimistic about Mexico as an oil supplier and potentially of natural gas, and there are signs of change and progress. But these come slowly. In western Africa, all the unwelcome attributes of a petro-state are to be found in oil-rich Angola, where its natural resources are used to fund a civil war.

But there is good news out there. The U.S. neighbor to the north, Canada, is our leading supplier of energy, surpassing all others. Last year our imports of Canadian oil averaged 1.7 million b/d, accounting for 15.2% of all oil imports. Canada supplies most of the natural gas imported by the United States a bit more than 97%, representing in turn some 15% of marketed U.S. natural gas production. The coincidence of U.S. and Canadian national interests protects these supplies.

## POLICY CONSIDERATIONS

In order to assist decision makers in the public and private sectors the CSIS study offers the following policy considerations:

*Energy Availability*

- Avoid the indiscriminate use of sanctions. The value of multilateral sanctions should be weighed against the value of engagement and dialogue. When their use is deemed admissible in the support of international interests, ensure that the coverage of sanctions is as targeted as possible. Unilateral sanctions are not an effective policy tool.
- Do not obstruct the development of economic routes that would ultimately offer Caspian and Central Asian exporters a diverse set of options for transporting oil and gas to foreign markets.
- Encourage energy-producing countries to ensure their energy sectors attract and support greater foreign investment.

*Energy Reliability*

- The United States should retain as far as possible its ability to defend open access to energy supplies and to international sea-lanes.
- U.S. allies in Europe and Asia should be prepared to shoulder a greater burden of the financial cost of protecting energy supply, including sea-lane protection.
- Governments must find ways to work with the private sector to minimize the vulnerability of energy infrastructure to sabotage or terrorist attack, including cyberterrorism.
- Governments should maintain and, where appropriate, expand government-financed and controlled strategic petroleum reserves, reserving their use for supply interruptions.

*Energy and the Environment*

- Economically and environmentally sound technologies must be made available to help developing countries meet increasing energy demands.
- Western nations should assess the conditions under which nuclear power could make a significant contribution to electricity generation in the developing world.
- OECD governments should expand basic research on energy technologies while concurrently policymakers should eliminate those environmental regulations that inhibit bringing technological innovation to market. All governments should review the extent to which domestic energy subsidies are inconsistent with global energy policies.

## A FINAL THOUGHT

Let me leave you with this final thought. There are troubles ahead. Where is the growth in energy demand coming from? Unstable countries. Where is the growth in energy supply coming from? Unstable countries. All this makes for a somewhat uncomfortable and unpredictable future. Moreover, the end of the Cold War discipline has enhanced the prospects for increased volatility, which in turn may constrain investment levels, resulting in tight supplies.

In retrospect, our assessments stress prospects for instability and interference in energy supplies during the coming years. But we did so only to alert policymakers as to how fragile timely supplies really are. The larger task, however, will be to convince the consuming public that there is a cost to reliable supplies of energy and

to a protected environment, and that this cost must be reflected in the prices they pay. But how to convince the consuming public that higher prices may be in their longer-term interests? This is a critically important challenge before policy makers and legislators at all levels.

The CHAIRMAN. Thank you very much.

Is the pronunciation "Placke"?

Mr. PLACKE. Placke, sir.

The CHAIRMAN. Placke. Why do you not go right ahead, Mr. Placke? Welcome.

**STATEMENT OF JAMES A. PLACKE, DIRECTOR, MIDDLE EAST RESEARCH, ON BEHALF OF CAMBRIDGE ENERGY RESEARCH ASSOCIATES**

Mr. PLACKE. Thank you very much, Mr. Chairman. And like the other members of the panel, I appreciate the opportunity to be here today.

I have submitted a statement to the members of the committee, which I will simply draw on in a way that will highlight some of the points made in that statement that I hope will be helpful to the members of the committee.

Let me begin by painting a very general picture. We see sources of primary energy supply around the world, that is, the natural resources themselves, the coal, the gas, the oil, as not only adequate currently but adequate to support rising consumption into the indefinite future. The issue is not resource availability. The issue is getting the energy to the consumer in the form at the time and the place where it is needed. And that is part of the problem. It is really the heart of the problem that we confront today in the United States. That is the issue in California. It is the issue in gas supply this past winter.

I think we are not trying to be proscriptive, but in general the things that need to be done are to maintain an investment climate that will encourage development of the facilities necessary to delivery the energy in a timely manner. And that requires a regulatory environment, and regulation continues to be necessary to protect the public interest, clearly, but an environment that keeps in mind as well the objective, which is to deliver the energy in an efficient manner.

These are very general characteristics. Let me turn to a couple of specifics in each of the areas that we have under review, oil, electricity, and natural gas. The good news on oil is that, despite rising oil consumption, world oil reserves have more than doubled over the last 30 years. In the United States, as members of the committee have already noted, as well as members of this panel, U.S. production has continued to decline over a very long period of time. We passed the point of self-sufficiency in 1973. And in general, with very few exceptions, the trend has been consistently downward ever since.

The good news is we are about to turn around. For the first time in nearly 30 years, we anticipate an actual increase in U.S. domestic crude oil production this year. We see that continuing through the rest of this decade. And by the end of the decade, we anticipate that U.S. crude oil production will be more than a million barrels a day higher than it is now.

At the same time, of course, consumption continues to grow. And indeed, consumption will grow faster than the increase in supply. At the end of the decade, we think there will be a modest growth in U.S. dependence on foreign oil sources, which for the past year, the year 2000, we put at about 56 percent of consumption. And by the year 2020 we see that rising to 57 percent. A modest increase, but the trend, I think, is clear.

The question of security supply hinges on not only the amount of oil produced in the United States, but where the imported oil is coming from. And here again, the news is not all bad. Increasingly, imports into the United States are coming from western hemisphere sources, Canada, Mexico, and Venezuela principally. They are three of the top five suppliers to the U.S. market.

The largest supplier to the U.S. market is Saudi Arabia, with which the United States has had a long and, I think, satisfactory relationship in the energy area. And finally, the fifth supplier is Nigeria, which, in terms of transportation, is relatively well located on the west coast of Africa.

In the end, however, it is really price that is the issue. It is not the resource itself. And if the price of oil is $50 in Tokyo Bay, it will be $50 in New York Harbor. So the world oil market is unitized in a way that we cannot simply escape from.

Turning to electric power, a great deal of attention, of course, has been focused in this area because of the events in California over the last 6 months. Really, the origins, I think, of the issue nationally go back to the beginnings of the 1990's when questions of deregulation and restructuring of the industry began to come onto the public agenda.

This induced a good deal of caution into investors because the investment climate was uncertain. It was not certain what the rules of the game were going to be. And as a consequence, very little new capacity was built in the United States during the 1990's.

That, however, began to turn around toward the end of the decade of the nineties, as the regulatory and restructuring environment and the directions in which the country was going became clearer. We added 27 gigawatts of electric power generating capacity nationally last year. We anticipate that over the next 5 years, we will add another 300 gigawatts, which is equal to 40 percent of our total generating capacity currently.

On a national basis, the capacity is certainly adequate. That, of course, does not deal with the issue of getting it, again, to the consumer when it is wanted. And that is really the problem. The transmission system is not capable of shifting the power around from where there is surplus supplies to where there are deficits.

Prices are also going to increase because increasingly, in part for environmental reasons and in part simply because of economic efficiency, most of the new generating capacity is gas fired. Gas prices are already high. And as power demand grows and new plants come on, more gas will be required. So those higher gas prices will be supported by generation demand. And, as far as electric power is concerned, they will be passed through to the electric power consumer.

As has already been noted, the principal problems in the United States are California in the first instance, and that is on

everybody's front page these days. So very little more needs to be said about it, I think. It is a supply and demand issue. There simply was not adequate new capacity being built at a time when California was growing at an extraordinarily high rate. The consequence is the power now is not available.

We anticipate, as has already been noted as well, perhaps as early as this summer, power shortages in downstate New York. That is, New York City and immediate counties around the New York area. Here again, the transmission system is inadequate to transport power from New England, where we see a power supply, into downstate New York, where we see a deficit.

The California problem will be with us. It is going to be a difficult year in California this year and probably next year. On the basis of what we can see today, we would expect that the situation may return to something like normal in about three years; that is, about the year 2003.

On the natural gas side, the picture is perhaps even more mixed. We have had an actual decline in gas produceability in the United States. And that has been masked by three consecutively warm winters beginning in 1997. The winter of 2000/2001, as we all know, was one of the coldest on record. And it really pressed the system very hard. So hard, in fact, that gas prices tripled at their high point. They have now fallen into a range that has about double what had been the norm. And they are likely to stay there for the foreseeable future.

The positive side of that is that this has created a climate in which gas well drilling is at record levels, having fallen dramatically in 1997 and 1998 and 1999. The questions, however, many of which this committee will need to deal with, of the permitting environment for construction of additional gas transmission capacity and expansion of existing gas lines will be important to bring supply to where it is needed. Where the supply will come from is also changing. It is not going to come, as it has, so much from the traditional producing areas, but rather areas that are only now beginning to appear on the horizon, such as arctic gas, for which there is a growing supply. Then reinjection into the fields in Alaska is approaching capacity. Something really needs to be done to facilitate transmitting that gas from where it is to where it is needed.

And this does not get into questions of ANWR. These are fields that are already developed and are producing. A coordinated policy involving our neighbor to the north, Canada, is likely to have to be part of that solution, because a pipeline would have to cross Canadian territory.

As well, deep well drilling in the Gulf of Mexico is the primary promising frontier for U.S. domestic gas production. And that increasingly will take, I think, our attention and absorb larger and larger amounts of investment.

Finally, liquified natural gas imports, which were fashionable in the 1970's, are back on the agenda. There are four terminals in the United States that are capable of loading liquified natural gas. And at today's price levels, which we expect to be with us for some time, it has become economically feasible to import natural gas in liquified form from supply points around the Atlantic basin.

Mr. Chairman, you asked in particular for a comment on sanctions, which I will be happy to do. It is something that I devote actually a good bit of attention to. Several points have already been made, which I would endorse. And that is, that, in general, and this is a generalization, multilateral sanctions are much more effective than unilateral sanctions. The General Accounting Office has produced at least two studies on this issue, as have a number of other institutes. And I think that is a generally accepted principle.

But unfortunately, it is not a guarantee. Multilateral sanctions have been applied to Iraq for more than 10 years following Iraq's invasion of Kuwait in 1990. Saddam Hussein is still in office in Baghdad and likely to remain there.

I think what the administration is doing to address that issue to re-figure, reconfigure sanctions in a way to make them more effective, focusing on the arms issue and the control of the oil revenue, which is a means of directing expenditure by the Iraqi government and preventing them from doing as much as they might otherwise do in the area of developing weapons of mass destruction. So it is limited, but it does have its uses.

Perhaps the most dramatic case where sanctions have had an effect is Libya. We have had a serious tension in our relationships with Libya going back to the early 1980's. And we have virtually totally sanctions on Libya by presidential executive order since 1986. But it was not until 1994, when the Security Council acted to impose multilateral sanctions, that the pressure really began to be felt by the Libyan authorities and ultimately resulted in the release of the two Libyans accused in the bombing of Pan Am 103 in 1988 last year. The trial, as we all know, concluded in January with the conviction of one of the two accused and the release of the other.

Those sanctions have been suspended, but not removed. And they remain, I think, an issue in U.S.-Libyan relations that needs to be dealt with in a way that takes into account Libya's past record of involvement with international terrorism, the legitimate and urgent claims of the families of the Pan Am 103 victims, and, finally, some degree of acceptance of responsibility for the incident by the Libyan authorities, which has yet to be forthcoming.

That is a subject, Mr. Chairman, that could absorb a lot of time. I think I probably have said enough on it. If members of the committee wish to go into it further, I would be happy to answer questions. Thank you.

[The prepared statement of Mr. Placke follows:]

PREPARED STATEMENT OF JAMES A. PLACKE, DIRECTOR, MIDDLE EAST RESEARCH, ON BEHALF OF CAMBRIDGE ENERGY RESEARCH ASSOCIATES

OVERVIEW

The world's energy resources are sufficient to fuel a rising living standard for a growing world population for the indefinite future. This view is based on what is known about energy sources today, what is projected for future resource discovery and development, and the additions to world energy supply that can reasonably be expected from advancing technologies. Uncertainty about meeting energy demand at specific places and times comes about because of the need for continued—even rapid—development of the processing and delivery systems to make energy available in acceptable forms where and when it is wanted.

Meeting energy demand in the United States as well as globally involves more than just identifying adequate primary fuel sources. Since a large and growing pro-

portion of the world energy supply system is privately owned and operated, the investment climate must be attractive for rising demand to be met. Delivery means, such as shipping terminals, oil and gas pipelines and power transmission lines need to be regulated to protect the public interest, but in ways that do not inhibit responding to consumers' needs. Finally, environmental standards need to promote the public welfare, but in the context of enabling economic growth, including energy consumption, to support rising standards of living.

Clearly, government has a role to play in reconciling these parallel and sometimes competing interests. For the United States, in particular, there is a need for government to facilitate the further development and delivery to consumers of domestic energy as well as access to needed, and growing, amounts of imported energy resources. Both an informed vision and policy leadership are required.

OIL TRENDS

Over 30 years from 1970 through 1999, the world consumed approximately 657 billion barrels of oil. The world's proved oil reserves stood at 470 billion barrels in 1970. Yet, despite consuming nearly half again this amount of reserves by 1999, world proved oil reserves had grown to 1,038 billion barrels. Moreover, our research indicates that oil will remain the world's dominant source of primary energy to at least 2020, although declining slightly in its share of primary energy demand from 41 percent in 2000 to 39 percent in 2020—with the difference largely taken up by greater use of natural gas.[1]

Unites States' oil production has trended steadily downward since 1973, except for a few years in the late 1970s and mid-1980s reflecting Alaskan production peaks. United States' crude oil production averaged 5.8 million barrels per day in 2000—a little less than two-thirds of the 1973 rate. However, primarily because of advances in deep-water production technology being applied to the Gulf of Mexico, we estimate that the rate of U.S. crude oil production will rise by more than one million barrels per day by 2010. This is apart from any new production that may come from areas presently closed to oil operations.

Rising U.S. oil demand is, however, expected to exceed forecast production increases, and U.S. dependence on imported oil—although increasingly from sources within the Western Hemisphere—is expected to continue to grow, but at a slower rate. The United States imported a net 56 percent of its oil consumption in 2000. Imports are estimated, on the basis of present trends, to grow slightly to 57 percent of consumption by 2010.

*Government and Industry Efficiency*

In the oil arena, the role of government remains one of:

- being an arbiter among competing interests, such as environmental concerns that restrict resource exploitation or impose standards on combustion emissions that increase costs or limit the availability of fuels;
- providing a buffer against supply emergencies, such as through the strategic petroleum reserve;
- regulating the industry's interstate operations as necessary, but in a manner that does not detract from investment incentives and that is consistent with competition.

Innovation has been, and remains, the key both to meeting rising U.S. and world oil consumption while controlling, or even reducing, costs. For example, a rising proportion of additions to world oil reserves is from discoveries made in deep water (below 2,500 feet) on the continental margins of North and South America, West Africa and the outer reaches of the North Sea where exploration and production was not technically feasible only ten years ago. At the same time, the price of oil in constant dollars is now about the same as it was 15 years ago, while world oil consumption has grown by 16 million barrels per day since 1985, or about 1.6 percent per year. For the oil industry to continue this performance, an open, competitive business environment is essential.

ELECTRIC POWER TRENDS

Little new generating capacity was added in the United States through most of the 1990s because of investor uncertainty due to discussion of industry deregulation and restructuring. Over the past few years, as U.S. restructuring plans and rules began to take shape, many power plant developers shifted their development efforts from Asia and Latin America to the United States. Now, a new wave of generating

[1] See: *2020 Vision: Global Scenarios for the Future of the World Oil Industry* (CERA, 2000)

supply has arrived. In 2000, about 27 gigawatts (GW) of new generating capacity came on line. Another 300 GW of capacity is under development and is scheduled to come on-line within the next five years. This represents about 40 percent of today's total U.S. capacity of 770 GW, which is much more than forecast demand growth.

About 80 of the projected 300 GW addition to capacity is already under construction and is scheduled to come on-line by the end of 2002. More than 90 percent of the 300 GW total will be gas-fired. As these power plants come on-line, pressure on natural gas supply will intensify. High gas prices over the past year have already affected power prices, particularly in regions more dependent on natural gas for power generation.

This large increase in power generating capacity, which is a virtual supply tsunami, is uneven—not enough in California and downstate New York and more than sufficient in Texas and New England. We see Texas and New England having excess capacity as soon as this year. Transmission limitations, however, have prevented movement of electricity from regions with a surplus to regions with a shortage. A transmission system set up for one kind of electric power industry needs to be adapted to a different, competitive industry. This structural transition will require at least another five years and probably much longer. This is because, after more than a decade of low investment in transmission capacity, a great deal of uncertainty about transmission restructuring remains. Major physical upgrades will likely not happen until institutional arrangements are settled.

*The Special Case of California*

The source of California's power crisis is a shortage of supply.[2] Over the past five years, California's economy grew 29%, driving electricity consumption up by 24%. But no major power plant was built over the past decade. Flawed market design turned a surplus at the beginning of deregulation in 1996 into a shortage now. The shortage will likely get worse before it gets better. This summer will be very challenging. Given that hydroelectric capacity is about 80 percent of normal, Californians are fated to endure blackouts if summer weather is normal. The summer of 2002 will likely be difficult too. It took a long time to produce the current shortage—ten years of inadequate additions to generating capacity—and it will take several years to work out of it. California may not be back to normal before 2003. Downstate New York is likely to see shortages beginning as early as this summer—again because no major power plant has been built there recently, and transmission limitations prevent tapping surplus capacity elsewhere.

California's experience is affecting the speed of restructuring in other states. Already more than ten states have decided to review whether to delay planned restructuring, of which four have recently decided to delay.

*Summary of the Near-term Outlook*

- Except for California and downstate New York, we do not expect power shortages for the United States in the near term. Downstate New York is likely to be the hot spot this summer along with California. Because of transmission limitations, it is not possible to move a significant amount of additional power into downstate New York, despite present and projected capacity availability elsewhere.
- Most existing coal (330 GW) and nuclear plants (100 GW) can operate economically for at least the next five years, and most likely much longer. We expect that these plants will remain the backbone of the generating fleet even though some of them will need retrofits for environmental compliance with $NO_X$, $SO_X$, Mercury and fine particles standards. Any $C0_2$ restrictions would add to these requirements and pose a different challenge.
- Some have claimed that Internet-related electricity consumption represents about 9-13 percent of total electricity consumption and argue that, since Internet use is still growing fast, we will see higher growth in electricity demand than the historical trend would indicate. We take a different view. Over the past five years, computers and Internet use have penetrated significantly into U.S. businesses, households, and schools. But electricity intensity—measured by kWh consumption per real dollar of GDP—has continued a decline that began in the mid-1970s. This suggests that the new economy is less electricity intensive than the old economy, i.e., it is economically more efficient.
- Natural gas prices have been high over the past year (averaging $4.23 MMBtu at Henry Hub), and we expect them to remain relatively high for at least the

[2] See *Beyond California's Power Crisis: Impact, Solutions, and Lessons*, CERA 2001 (retained in committee files)

next three years. Regions that rely heavily on gas-fired power plants, such as New England, New York, Texas, and Florida will continue to see higher power prices because of high natural gas prices.

NATURAL GAS TRENDS

The natural gas price shock is ongoing. Wholesale prices this past winter reached a peak of as much as $10.00 per million British thermal units (MMBtu) at the Henry Hub—nearly four times the level of the previous winter. Prices have moderated to near $5.00 per MMBtu, but are still nearly double the price level of just one year ago. While this rapid price jump has been shocking to customers and to the economy as a whole, it is, in fact, the result of longer term forces that have strained gas supply availability in North America. Tightening natural gas production capacity was masked by three warm winters beginning in 1997. At the same time, lower cash flows—owing to the oil price collapse of 1998 and low gas prices because of weaker demand—resulted in a fall-off of drilling activity and a decline in U.S. production. In 2000, very cold early winter weather and growing demand for gas use in power generation resulted in a sudden upsurge of demand and a heavy draw-down of storage inventories. When combined, this was the perfect mix for a dramatic price shock.

Deregulation of natural gas prices served consumers well—with a 30 percent decline in real prices from 1985 to 1999. Without a doubt the natural gas price shock this past winter has caused intense pain for customers. Homeowners are facing heating bills that have nearly doubled—costing the typical family $500-600 in disposable income. Businesses are also hard hit—often unable to pass their higher energy costs on to customers. Energy intensive industries, such as steel and fertilizer manufacturers, are seeing higher energy costs devour their profit margins to the extent that some have curtailed production.

The good news is that the gas market worked this past winter:

- There is no threat to reliability. Customers faced sticker shock, but the reliability of gas service has been preserved despite the coldest November/December period in the 106 years that this weather data has been tracked.
- There is no financial crisis among gas utilities. By and large, rates are being adjusted through cost pass-through mechanisms, preventing utilities from being squeezed between high wholesale costs and low retail prices. Many utilities are preparing "risk mitigation" proposals for the consideration of their state commissions in order to prepare for the 2001-2002 heating season.
- The market is pushing off demand. During the peak of the demand pressure in December and early January, more than 7 percent of "base" gas consumption was pushed off the market through a combination of switching to alternative fuels, plant closures, and through processors and pipelines leaving certain gas liquids in the gas stream to boost the Btu's available for customers ("ethane rejection."). While gas prices have moderated since the peak, much of the curtailed demand remains off, as gas prices remain at or above the equivalent level of distillate oil prices, one of the principal alternative fuels.

The result is impressive. Despite fundamental market conditions (low storage, record cold) that were more extreme than the "gas shortage" of the 1975-1977 period, the market managed the shock this winter without the extensive interruptions of businesses and schools that occurred in the previous crisis. While prices are still high, the market has worked to moderate the extremes that were experienced earlier this winter.

*The Gas Market Pressure Continues*

Despite moderating gas prices, pressure on the market continues and, with it, the potential for additional price shocks in the year ahead. Spring has finally arrived and the gas market has already shifted its focus to the daunting challenges that lie ahead: specifically, the need to refill storage inventories for next winter while at the same time meeting potentially higher demand for gas use in power generation this summer. At the same time, there is a need to store at least 400 billion cubic feet (Bcf) more than was stored in each of the previous two summers—representing roughly 4 percent of total gas supply. With production only slowly increasing, storage demand will keep pressure on the gas market.

To provide an adequate supply for storage, gas prices need to remain high enough to continue to suppress demand. Specifically, this means price levels above those of residual fuel and distillate oil—the alternative boiler fuels. Given current oil prices, this means a gas price above $4.50 per MMBtu. Prices must continue to discourage demand, for if demand returns to gas from oil it will cut into storage injections, and the risk of extreme price volatility next winter will increase. Indeed, reaching even

last year's low storage inventory level heading into next winter will prove challenging, and there is little margin for any interruption in what must be a consistent and aggressive pace of injections into storage.

The beginning of the injection season will prove especially critical this year, because there is little prospect to make up later ground lost in April. Unless injections start strongly this season, inventories next autumn are not likely to reach even last year's record low level, and the market could be exposed yet again to crisis pricing in colder-than-normal circumstances. As a result, there will be little price relief for customers until 2002 at the earliest.

Injections this spring will be closely watched for another reason as well: as an indicator of the health of U.S. wellhead supply. If injections are higher (or lower) than demand and imports would appear to imply, the injection rate will be interpreted as a leading indicator of the state of the long-awaited supply response in the United States, just as last year's low injections early in the season indicated a supply decline. This will only add to price volatility this spring and summer.

*Longer-term*

While the gas market has proven remarkably resilient in managing the price shock, many of the underlying market pressures that caused the shock are not abating, principally because the underlying demand pressure in the market from power generation continues to grow. While electric power and gas supply issues are largely separate in terms of their underlying causes, but the solutions are interwoven. Specifically, the more that power generation needs are addressed by a wave of new gas fired power generation capacity additions, the more pressure will be exerted on the gas market. This means a growing probability that gas prices over the next several years will remain in a high and broad price band—principally between $3.00 and $6.00 per MMBtu.

Behind this is a longer term challenge that will test the ability of the gas industry to draw forth new supply. Specifically:

- The power wave. There is a wave of new gas fired generation being built across the nation, with the result that annual demand growth for gas is likely to average between 1.5 and 2.0 Bcf per day. This is more than double the pace of growth in the 1990s.
- The supply challenge. Satisfying this demand pressure will require connecting up to 20 Bcf per day of net new supply capacity during the course of this decade—more than a 30 percent increase in the size of the gas industry. We estimate that more than $400 billion of capital investment, nearly twice the level of the 1990s, will be required for production development alone.
- Discouraging signs from traditional producing regions. Recent trends in production in several key regions point to how difficult meeting this growth imperative will be. There is a gas well drilling boom, but this has occurred in previous years. Typically such a boom increases production by 1.0 to 1.5 Bcf per day within one year. When demand growth was lower, this was more than enough to correct an imbalance and knock prices down, more will be needed this time. At the same time, key regions, such as the Gulf of Mexico shallow water area and the Western Canadian Sedimentary Basin, have experienced an increase in decline rates. For instance, production in the shelf area of the Gulf of Mexico has fallen more than 5 Bcf per day (30%) since the mid-1990s. In Canada, production growth has slowed dramatically despite record levels of drilling in the last several years.

With current high prices and record drilling levels, overall U.S. production is showing signs of a rebound in several promising developments in the Rocky Mountains and parts of East Texas. But this is unlikely to be enough to do more than offset potential demand growth; it will not return the market to surplus. As a result, prices are likely to remain abnormally high ($4-6 range) until there is a more significant addition to North American gas supply.

*The Importance of New Supply Frontiers*

With the limitations on production growth from traditional producing basins, we must increasingly turn to the supply frontiers to bridge the gap. These tend to be capital intensive projects with longer lead times and greater market risk. United States' energy policy needs to be directed toward facilitating the development of several of these "frontiers". The good news is that these regions are highly prospective and potentially highly profitable to develop.[3] Highlights of these alternatives include:

[3] See *Towards New Frontiers: The Future of U.S. Natural Gas Supplies* (CERA 2001)

The deepwater Gulf of Mexico. The deepwater Gulf of Mexico is a preeminent exploration and production hot spot. It is already in active development—with exploration pushing the technological frontier associated with development in water depths of more than 5,000 feet (and potentially as much as 10,000 feet). This area already is producing more than 4 Bcf per day and has the potential to grow to over 10 Bcf per day—with annual growth exceeding 1 Bcf per day over the next several years.

LNG imports. With recent or pending reactivation of the four existing LNG import facilities in the United States, we expect a significant increase in imports, particularly after 2002. With expansions, these terminals could accommodate 3-4 Bcf per day of total imports—principally from Atlantic Basin suppliers such as Trinidad, Nigeria, Algeria, and possibly Venezuela. Beyond this, several new "greenfield" LNG facilities have recently been proposed—including projects on the west coast to serve constrained gas and power markets in California. While these will be challenging to site, they can provide a foundation for additional growth.

Atlantic Canada gas. Major discoveries in offshore Nova Scotia can add to the recently completed Sable Island/Maritimes and Northeast project—which is now delivering nearly 0.5 Bcf per day to New England. These supplies have the advantage of being reasonably close to high value eastern U.S. gas markets. With additional development and major pipeline expansions/looping, Atlantic Canada gas supplies could climb to over 2.0 Bcf per day.

Arctic gas. The highly prospective regions of the northern frontier and arctic represent a tremendous long term resource for the North American market. In Prudhoe Bay alone, more than 8 Bcf per day of gas is already being reinjected. Of course, connecting these supplies will require a major and complex pipeline project—costing at least $6-10 billion and taking more than five years to develop. Nevertheless, this could provide a major new source of supply (2.5-4.0 Bcf per day) before the end of the decade.

Collectively, these frontier sources can account for the majority of incremental gas supplies in North America. Best of all, they are competitive at prices well below current levels, potentially as low as $3.00 to $3.50 per MMBtu, but they are highly complicated and capital intensive projects. Timely implementation will require cooperation among industry members, local communities, and governments, but they have the potential to bring what consumers really need: a low cost, reliable and environmentally attractive form of energy.

*Policy Implications*

Natural gas can and should become a vital part of the nation's energy solution. Long-term policies need to be developed to encourage the environmentally friendly and balanced development of this resource. We, therefore, encourage consideration of five long-term policy objectives pertaining to natural gas:

1. Streamline the infrastructure approval process. All of the new frontiers will require significant investment in gas transmission and handling infrastructure—such as LNG terminals, pipelines and storage fields. Some of these, such as the Arctic pipeline and LNG, have not been seriously examined for over 20 years—having been last considered during the 1970s. But they are not totally new either. State and Federal governments should take steps to ensure the balanced but expeditious consideration of these new facilities.

2. Add economics to the land access issue. Federal land access considerations have become a polarizing issue in North America. Rather than treating this in black and white terms, we need to move to a more deliberate case by case approach to land access considerations—with more balanced consideration of the economic and environmental costs and benefits.

3. Promote environmental flexibility relative to fuels. One lesson of the California power crisis is the growing importance of fuel flexibility during times of shortage or constraints. Natural gas markets go through boom/bust cycles with periods of relatively constrained supply. During these periods there needs to be flexibility to ease emissions restrictions and allow switching to alternative fuels, such as oil.

4. Develop an energy policy with a continental perspective. Many of the most pressing energy issues for gas and power are not limited to the United States—they play out against a continental backdrop. Therefore, U.S. energy policy must be developed in dialogue with Canada and Mexico.

5. Bring a portfolio strategy to energy. If we have learned anything from the energy cycles of the past several decades it is the need for diversity. Whether it is through term contracting for gas and power, mixing new supply with conservation, or in fuel choice, a comprehensive energy policy needs to promote and balance all of the resources and options.

The CHAIRMAN. Thank you very much, Mr. Placke. I appreciate that statement.

We will next move to Mr. William Nugent, commissioner of the Maine Public Utilities Commission. Please proceed.

**STATEMENT OF WILLIAM M. NUGENT, COMMISSIONER, MAINE PUBLIC UTILITIES COMMISSION, ON BEHALF OF NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS**

Mr. NUGENT. Thank you, Mr. Chairman. I have provided written testimony that addresses the topics that my colleagues have already addressed here today. And I would like to take this opportunity to add a dimension to the testimony before the committee, and would appreciate your including my written statement in today's hearing record, as if I had read it.

The CHAIRMAN. Without objection.

Mr. NUGENT. What I would like to add to this is, the next thing I would like to add is, the impact on consumers at the local level. Maine restructured its electricity market a year ago.

On March 1, 2000, we opened to all customers the retail markets, retail competition. To serve customers who chose not to choose a supplier or could not find one, the Maine PUC arranges so-called standard offer service. Our customers' bills now show two separate lines; one for generation service, the other for transmission and distribution service, T&D.

T&D prices have been constant. But as a direct consequence of national energy price increases, the generation prices in our two largest service territories rose sharply from March 2000 to March 2001. There is a table, which staff has put before you, which is titled Generation Prices. And it includes in the top left-hand corner Central Maine Power Company. You will see three categories for Central Maine and Bangor Hydro.

And with the exception of the residential and small business customers in Central Maine's service territory, who have a 2-year contract arrived at prior to March 1, 2000, you can see the price increases for the remaining five customer classes whose contracts were newly arranged to start March 1, 2001. And the price increases, as you can see in the right-hand column, range from 45.3 to 62.2 cents—or percent, I should say.

Generation prices may appear less dramatic when combined with T&D rates to produce an all-inclusive bill, but there is no disguising for Bangor Hydro's residential customers a 2.8-cent per kilowatt hour increase in the price in the past year. That is a 20-percent increase when you come down to even an all-in rate, a double digit, big impact. People are not happy.

To match market circumstances, we let medium and large customer prices vary by season and time of use. CMP's large industrial standard offer customers will see summer peak generation prices this year of 14.6 cents per kilowatt hour plus T&D charges. And a large paper mill can easily use 13 million kilowatt hours in a month.

The story is similar for natural gas customers. The typical bill of a customer who heats with natural gas has increased 85 percent from the winter of 1998/1999 to this coming summer. And equally important for many of them, the numbers do not stand still. The

cost of gas adjustments are coming twice as rapidly now as they have in the recent past.

Maine restructured its electricity and gas industries because we believe that in the long run competition will provide Maine consumers with lower prices than traditional cost of service regulation. We could not responsibly promise lower prices, but we could, and we did, promise that we would do everything to bring about a healthy, vigorously competitive market.

And in choosing to restructure, the one clearly unacceptable outcome for Maine commissioners, as well as regulators across the country, is the elimination of price regulation without competition to take its place.

A fair, well-functioning, competitive wholesale market is a must. No amount of brilliance in designing the retail market will correct defects at the wholesale level.

And remember, these are regional wholesale markets. How much consumers in any one State pay is driven not by supply and demand in that State alone, but by supply and demand throughout the region and, to some extent, in adjacent regions. There is but one hourly clearing price for an entire region.

State commissioners have no legal jurisdiction over retail markets. That authority and responsibility ultimately rests with the Federal Energy Regulatory Commission, the FERC. Now having established the structure for the retail market, I suppose we State commissioners could back away and say that whether or not restructuring works is out of our hands. But we cannot do that. We have to make certain that truly competitive markets, free of market power and gaming, replace price regulation.

As a State regulator who spends, and as do my colleagues across the country, a great deal of time trying to figure out regional energy markets and how to improve them, I cannot tell you today that I believe that they are truly competitive, free of market power and gaming, and that your consumers, as well as mine, are paying just and reasonable prices.

Now do not get me wrong. Markets are functioning. Markets will always function. The question is how stably and reasonably will they operate. They are not yet, in my view, truly competitive and free of that market power.

Now transforming the electricity markets, wholesale and retail, is a difficult process. Each regional wholesale market is different. The markets are still just forming. And the players in the markets need to know the ground rules in order to make decisions that have extraordinarily large financial consequences. You and the FERC, pursuant to the authority you grant it, write the rules. Right now, in my view, the FERC is overwhelmed by the task before it. The regional markets need prompt, informed decision making, not forced compromises among monied interests.

The issues before the FERC have major financial implications for inadequately represented rate payers, typically residential and small businesses. For example, the FERC must pay additional attention to the installed capability matter in New England, an issue which could cost Maine rate payers as much as $90 million a year and ten times that amount across the New England region.

I did a back-of-the-envelope calculation last night as to what that would mean for households in Maine. My estimate comes up to about $84 a year per household. And that is just the household impact, not the business impact.

New England continues to wait for the FERC's decision on complaints regarding last May 8's—this is 10 months ago now—$6,000 megawatt hour price spike. Some people estimate that the incorrect pricing at that time resulted in a cumulative, an additional cumulative, $90 million overcharge to the spot market.

At last count, ISO-New England's website revealed 20 market rules filed with the FERC that are still pending decision. If we are to have competitive wholesale markets, the FERC must give prompt decisions to market participants.

Now let me tell you how fast that moves. When we were buying supplies to start March 1, 2000, we set a 2-month process to evaluate the offerings and pick a winner. In the wake of that process, the supplier said: Too slow; markets move faster.

We condensed it from 2 months to 2 weeks. And let me tell you, that was too slow. And at one time trying to buy supply for this year, we had suppliers offering to call us, in fact calling us, at 11:15 every day and telling us they had to have our yes or no on the offer they made to us by 11:20. We had 5 minutes to examine very complex offers that would commit Maine rate payers for a year.

And if we have to make more rapid decisions, we need a market rules, as determined by the FERC, that will do that.

The CHAIRMAN. Could you react that fast?

Mr. NUGENT. We did not to—to some extent, at first blush, when those prices were instituted, they were not the best prices. But we did arrange our procedures so that we met at 11 o'clock, were there to receive the bid that came at 11:15, and had an official notice deliberations of our commission set immediately after we received them. So we could have, had that been a competitive price.

It is not a usual position for someone that many people describe as kind of a bureaucrat. Right? I mean, we do not normally move like that. But we have to, and at least we are trying to do that. But we also need market rules, which more clearly spell out the alternatives in advance and do so in a way that protects the rate payer interest.

The CHAIRMAN. Now that worked because they knew that there was a competitive market out there to bid that power in. If everybody had said no, obviously some people would have been without energy, but the people that were promoting this would not have been able to make their deals.

Mr. NUGENT. Yes. Their concern is that they get in in the morning and they scan the availabilities and then they fashion a bid. I mean, they were acting very quickly, too. This is not a scheme to squeeze us. Well, maybe it was. But in any event——

The CHAIRMAN. Well, the question is—what they are saying is whatever the traffic will bear is the price.

Mr. NUGENT. That is right. And that is what we have stepped up to, as you can see by the price increases.

The CHAIRMAN. That is called a free market.

Mr. NUGENT. I understand.

The CHAIRMAN. You know, you pay through the nose if you are caught in a bind. And the idea is you are supposed to be smart enough to make sure that does not happen.

Mr. NUGENT. Well, Mr. Chairman, a free market is one in which people price uncertainty. And to the extent that one writes clear rules on which suppliers, as well as consumers, can rely, you will wring that uncertainty out of the market. And right now I think what is happening in the market and the reason I can say that it is not fully fair and competitive and the prices are not just unreasonable right now is that there is too much uncertainty.

And I think we, as government have to step up and form those rules so as to give greater certainty to suppliers, as well as rate payers. And I think that will lead to lower prices and greater confidence in the market.

The CHAIRMAN. Well, go ahead and tell us how to do it then.

Mr. NUGENT. Well, we are still working on that one, too. And we hope we would have a continuing dialogue with you and your colleagues. And I think one thing that would help would be two members on the FERC.

The CHAIRMAN. I agree with you.

Mr. NUGENT. And we need a FERC that will also work closely with State commissioners in addressing regional problems. We are not special interest litigants pleading before the Federal commission. We are the only representatives appearing there, sworn to pursue and exceed the public interest in these matters.

To that end, the New England utility commissioners have asked the FERC to establish a regional market monitoring structure. The Maine commission has proposed going even beyond that to establish a regional organization that could advise and comment to the FERC on critical matters here.

We recognize that such an organization's advice would be fully subject to final determination by the FERC and might in fact be rejected. But to the extent that we have an identity of interest, the public interest, the efforts of an expert, informed, and independent regional body could help ease the FERC's burden and aid the development of those competitive markets.

The FERC must perform its role as a fact finder and decider of these important and complex issues. Every day it does not, rate payers are paying far more for power than even long-run marginal costs would suggest they might.

Now finally, a word about the EIA, the Energy Information Administration. Recently it proposed to treat certain power generation information as confidential and not release it in individually identifiable form. To the extent that State commissions must protect the public interest and help develop markets, we must have access to those data with appropriate safeguards. We deal all the time with commercially sensitive information. And we grant legally binding protective orders.

But today, when gaming and market power abuse are more possible than ever, to deny those charged with protecting the public interest access to the information we need to protect that interest makes no sense at all. That is not in the public interest.

I thank you, Mr. Chairman and members of the committee, for giving me that extra minute or two past your red light.

[The prepared statement of Mr. Nugent follows:]

PREPARED STATEMENT OF WILLIAM M. NUGENT, COMMISSIONER, MAINE PUBLIC UTILITIES COMMISSION, ON BEHALF OF NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. Chairman and members of the committee: Good morning. My name is Bill Nugent. I am a Commissioner on the Maine Public Utilities Commission and First Vice President of the National Association of Regulatory Utility Commissioners, commonly known as NARUC. I greatly appreciate the opportunity to appear before the Senate Energy and Natural Resources Committee on behalf of NARUC and I respectfully request that NARUC's written statement be included in today's hearing record as if fully read.

NARUC is a quasi-governmental, nonprofit organization founded in 1889. Its membership includes the state public utility commissions for all states and territories. NARUC's mission is to serve the public interest by improving the quality and effectiveness of public utility regulation. NARUC's members regulate the retail rates and services of electric, gas, water and telephone utilities. We have the obligation under State law to ensure the establishment and maintenance of such energy utility services as may be required by the public convenience and necessity, and to ensure that such services are provided at rates and conditions that are just, reasonable and nondiscriminatory for all consumers.

NARUC's membership has been and continues to be central to the development and implementation of policy initiatives affecting the nation's energy industry and its consumers. For better or worse, the States are the proving grounds for innovations in energy policy. One observation that can be made regarding State energy policy activities is that one size does not fit all. States and their energy industry stakeholders are experimenting with many different solutions to the energy challenges that are confronting this Nation. These proposals range from retail competition implementation to demand side and renewable energy incentives to the use of new technology applications. Clearly, in light of the difficulties being experienced not only in the Western region, additional solutions are necessary.

As policy makers we all must be cognizant of the fact that, as we explore solutions to the challenges before us, the main obstacle that the energy industry faces is a paucity of predictability and certainty. When the right economic or market signals are sent there is an appropriate corresponding response by the market participants. If the market participants perceive that the rules are constantly changing and therefore the market will never develop or mature, the participants will not invest in development of the market or the production mechanisms to participate in that market.

HISTORICAL PERSPECTIVE

As the electric power industry developed the technical generation and transmission capability in the early part of this century, the industry was transformed from a local and urban industry into one capable of producing large amounts of power at a central location and transmitting this power vast distances. As efficiencies improved prices declined. For most of the twentieth century States have regulated all aspects of bundled retail electric service and rates.

The inability of the States to regulate prices and other aspects of electricity sold in interstate commerce under the Constitution and the absence of Federal regulation of those activities created a vacuum of regulation over electricity flowing in interstate commerce. The enactment of the Federal Power Act in 1935 constituted the first comprehensive effort to bring interstate aspects of the electrical power industry under governmental regulation.

As a consequence of major power outages during the late 1960's-early 1970's and the energy crisis of the 1970's, Congress held extensive hearings looking into specific electricity blackouts and capacity shortages. Much of this attention focused on the matter of interconnection of utilities as a method of assuring greater reliability and coordination among utilities. Out of these congressional reviews, more formalized planning responsibilities and wheeling requirements were incorporated into the Public Utility Regulatory Policies Act of 1978 (PURPA).

PURPA provided that State public utility commissions should consider and determine whether to adopt cost-of-service and other standards that were contained in PURPA section 111 and 113. Section 201 and 210 of PURPA provided that certain qualified facilities (QFs) could sell their power to their host utility at that utility's State-determined avoided cost. There are two categories of QFs: cogeneration facilities, and renewable facilities. The Federal Energy Regulatory Commission promulgated general rules in 1980 on avoided cost calculations, and by 1982 all the State

commissions had developed specific formulas and methods to administratively-determine and implement avoid costs. One State early on, New Jersey, set its avoided costs at the Pennsylvania-New Jersey-Maryland (PJM) wholesale market rate.

While other PURPA provisions purported to encourage wheeling of electricity, they were for the most part ineffective. Wheeling of electricity took place only voluntarily. Wholesale electricity markets were limited, except where State commissions encouraged and utilities formed tight power pools, such as PJM and the New England Power Pool (NEPOOL). To break down the barriers to a more robust wholesale power market, Congress enacted Title VII of the Energy Policy Act of 1992 (EPACT).

EPACT provided that FERC could mandate wheeling of electricity. This provided generators with open transmission access to any wholesale buyer of electricity. EPACT also created Exempt Wholesale Generators (EWGs). These EWGs could, subject to State siting and environmental review, build power plants to sell electricity on the wholesale markets.

By 1994, the wholesale price of electricity fell dramatically because of the surplus of generation capacity. Large industrial customers in high cost States asked their State legislatures or State commissions to allow retail customers to have direct access to wholesale markets. Today, 25 States, plus the District of Columbia, are in the process of implementing retail competition laws and/or regulations. These States have also provided for recovery of stranded costs. Most of these States have also either allowed or required their host utilities to divest themselves of their generation capacity, in order to break up vertical market power.

Independent System Operators (ISOs) were set up in PJM, California, and New England to coordinated regional wholesale markets. After the initial success of these ISOs, FERC required all jurisdictional utilities to organize themselves into Regional Transmission Organizations (RTO) in FERC Order 2000. These RTOs will help to coordinate regional transmission systems and regional power markets. They are also intended to monitor regional markets and plan regional transmission expansion.

State commissions must have a greater role in RTO governance and oversight than is now provided by FERC Order 2000. In particular, State commissions are the entities most directly concerned with monitoring local and regional markets because retail customers are most affected by market power abuses. In addition, the State commissions typically are the entities that must coordinate and approve transmission expansion and siting consistent with regional plans. State commissions have consistently expressed a willingness to work with FERC on such regional issues, but thus far the FERC has taken a position that it can and should preempt the field. Congress should provide an appropriate State role for regional oversight of RTOs concerning market power monitoring and transmission expansion planning, and for other areas where State commissions in a given region can cooperate and have the distinct advantage of knowledge of the region and the workings of its energy industries.

On the gas side, in 1977 the nation had just suffered through natural gas shortages and curtailments that were caused by an imbalance of supply and demand in the interstate gas market. This supply-demand imbalance can be traced to the 1954 *Philips* Supreme Court decision, which interpreted the Natural Gas Act of 1938 to extend federal authority to regulate the wellhead gas price of gas sold in interstate commerce.

Congress, as part of the Energy Policy Act of 1978, enacted the Natural Gas Policy Act of 1978 (NGPA) and the Fuel Use Act (FUA). The NGPA provided for phased deregulation of wellhead gas. By 1985, the wellhead price of natural gas was effectively deregulated. The FUA provided that there would be no new gas-fired electric generation after 1978. However in 1985 the FUA was repealed. Thus, for seven years there was a federally mandated moratorium on new gas-fired electric generation.

As the phase-in for deregulation ended, wellhead prices dropped because the supply of gas was more than adequate for the demand and higher-cost gas wells were shut down. To encourage further gas consumption, the FERC issued FERC Order 436 (in 1985) and Order 500 (in 1987). Specifically, with these two orders, the FERC provided for voluntary open access to gas pipeline transportation, coupled with offering take-or-pay gas wellhead contract relief for high cost gas. This was the equivalent of allowing for a stranded cost recovery. It is worth noting that end use gas customers only paid about 11 cents for each dollar of take-or-pay relief, contrasted with the $1 for $1 stranded cost recovery for electric utilities in FERC Order 888.

During this period, gas supplies remained abundant when compared to gas demand; this was reflected in the continued low wellhead price of natural gas. In 1992, the FERC issued Order 636, which mandated unbundling of gas as a commodity for the transportation service provided by interstate pipelines. Order 636 also

provided for pipeline capacity release and a secondary market for released pipeline capacity. In FERC Order 637, issued in 2000, FERC removed the rate cap on short-term secondary pipeline capacity. This resulted in the development of a spot market for natural gas, a secondary market for capacity, ancillary gas services (such as storage), and 40 gas transportation hubs that are market centers for gas.

Since the late 1980s, nearly all State commissions have allowed large industrial and commercial customers to have unbundled gas service, through which they can purchase gas transportation from their distribution company and directly purchase wellhead gas. Currently (either as a pilot program or part of a broader customer choice program), 23 states and the District of Columbia now allow retail residential customers to purchase gas directly from the wellhead (typically through aggregators or marketers).

ENERGY TRENDS AND MARKETS

The following observations are not listed in any particular order because many build upon each other; they should be considered as a whole, not separately. While these trends do not provide us easy answers to our Nation's energy policy challenges, but these observations may help to identify the problems that we must soon confront.

*Natural Gas Trends*

*Trend 1—Gas demand has increased, production has not kept pace, and there is no "quick fix"*

Natural gas wellhead prices more than doubled for the fourth quarter of 2000 compared to the fourth quarter of 1999, and working gas storage was down in 2000 compared to 1999. Additionally, from 1994 through 1997 while the growth in domestic gas reserves exceeded incremental gas production, domestic gas production was projected to increase by only .05 percent in 2000 compared to 1999 (from 18.66 to 18.76 Tcf). At the same time, nearly all new electricity generation being is gas-fired. Therefore, a principal reason for the increased gas prices is the increased demand for gas caused by new gas-fired electric generation (gas peaking turbines and combined-cycle gas turbines). Domestic gas production is likely to increase in response to higher gas prices, but in the short and mid-term most of the increased supply is likely to come from existing gas fields in Canada. While it might take only six months to explore and drill a gas well, it takes years to build a pipeline to transport it, if the gas does not come from existing or nearby existing gas sources which have pipelines in place.

These trends are well illustrated in Maine. In 1997 the closure of the Maine Yankee Nuclear Generating Station reduced Maine's electric generating capacity from 3,100 megawatts (mW) to 2,200 mW. Over the last three years we have added more than 1,600 mW of new, gas-fired generation, bringing our total to 3,800 mW, more than double Maine's peak demand.

This was made possible by the construction in 1999 and 2000 of two new gas pipelines, the Portland Natural Gas Transmission System, which brings western Canadian natural gas through Maine to the New England Market, and the Maritimes and Northeast Pipeline, which transports gas from the Sable Islands gas fields, 150 miles off the coast of Nova Scotia. These pipes were planned, sited, and permitted before today's higher natural gas prices. There is reason to believe that, in response to today's market opportunities, M&NE will boost its capacity by more than 50 percent through higher compression. And further increases in production off the Canadian Maritimes may be in the offing.

*Trend 2—Convergence*

In 1998, over $30 billion in convergence mergers transpired as electric utilities merged with gas pipelines, gas providers, and local gas utilities. These mergers provide the converged companies an opportunity to vertically integrate and also to market BTUs in the form of natural gas or electricity, whichever is more lucrative. This allows the energy industry stakeholders to respond to market demand and preference, while providing them an opportunity to hedge against the uncertainty confronting this industry today.

*Trend 3—Though the majority of natural gas is still being bought on the spot market, market participants are increasing their use of risk management tools*

Retail gas customer choice programs have been established in nearly half of the states, but nearly 60 percent of the natural gas consumed is still being bought on the spot market. Without hedging, forwards, or futures contracts, most retail customer prices will continue to be volatile placing a heavy burden on many small cus-

tomers. However, in response to this winter's price increases, gas companies and their affiliates, as well as gas marketers, are increasingly emphasizing hedging and other risk management tools.

*Trend 4—States have increased their assistance to residential ratepayers*

Nationwide, as a result of increased gas prices, State commissions have redoubled their efforts to inform consumers of the likelihood of increased prices and ways they can lower their gas bills through more efficient usage. State commissions have also been re-examining their disconnection policies for gas customers, provided information on the availability of levelized or budget billing, and energy weatherization and conservation programs. State commissions have also informed customers of low-income energy assistance programs and in many instances have expanded those programs.

*Electricity Trends*

*Trend 1—Customers are demanding increased reliability*

Recently there have been an increased number of major utility interruptions as a result of a lack of generation capacity or the result of problems with equipment failures at the distribution system. Because of our increasing reliance on electrotechnologies, including the manufacture of solid state electronic silicon chips, there is an increasing customer desire for fewer electricity interruptions and for higher quality of power, that is, power without voltage sags, surges, spikes, interruptions, or harmonics. Internet farms and informational services are particularly sensitive to power disruptions. As our economy increasingly depends on technologies driven by electricity, reliability becomes exceedingly important to our economic health.

*Trend 2—Reserve Margins*

Reserve margins are low in several regions in the country. They are particularly low in California, where utilities are projected to not have enough capacity to serve their customers at times if this summer is average or warmer than normal. And at least according to one major electricity marketer (Dynegy), most regions of the country (the sole exceptions are Texas and New England) will be in a capacity deficit situation through next year.

*Trend 3—Gas fired generation*

During 1999, about 80 percent (11,073 mW of the 13,763 mW) of new capacity additions by utilities and non-utilities were gas-fired. Gas-fired units drew heavily on gas supplies during the summer of 2000, the season when a time gas utilities and pipelines traditionally put natural gas in storage. This led to higher gas prices during the summer, lower inventories last fall, and even higher gas prices this winter. While gas prices have since moderated somewhat, this pattern is likely to repeat itself until increased gas supplies reach the market. While it might take as little as six months for gas production to increase, if new gas supplies are located such that additional pipeline capacity is needed, the period for new gas supplies to reach the market could be two years or more.

Nearly all of the additions of generation capacity that are planned for 2000 through 2004 are gas-fired electric generation. Of the 44,410 MW of planned generation capacity, 41,339 (93 percent) are gas-fired. This additional planned electricity capacity, if completed, will provide upward pressure on natural gas prices. If the capacity fails to come on-line as scheduled, most electric reliability regions throughout the country will face electricity capacity shortages, if not immediately, then within the next few years. While it only takes two years for a gas-fired plant to be built once sited, it takes coal plants several years. Petroleum-fired plants also have high fuel prices, and currently no nuclear plants are planned. New hydro capacity is limited; and the amount of capacity from waste heat (cogeneration) and renewables is also limited.

*Trend 4—Generation jurisdiction shift from State to FERC*

During 1999, three quarters (10,266 mW of the 13,763 mW) of new capacity added was added by non-utilities. Most of this capacity is being sold on regional wholesale electricity markets, which are regulated by the Federal Energy Regulatory Commission (FERC). As State commissions allow retail electricity competition, they often also allow or require generation plant divestiture by the host utility. Most of these generation assets are acquired by non-utilities and the power is sold on regional wholesale markets, regulated by FERC.

This is, I believe, the right model. But it requires a clear vision on the part of the FERC, consideration of the facts on the ground in each of the different regions of the country, and prompt decisions by the Commission. Delay costs ratepayers—the people you and we serve—a great deal of money. At stake right now before the

FERC in a current controversy over installed capability is $90 million for Maine ratepayers alone, and perhaps ten times that amount across the six New England states.

*Trend 5—Competitive markets require States to have access to more information not less*

State public utility commissions around the country, but particularly in the West, increasingly are faced with refusals by utilities and non-utilities that own generation facilities to provide data. Without requested data, State regulators are severely hampered in their efforts to determine whether there is gaming of the market, through bids that are many multiples of production costs, by withholding of capacity at or near peak, or withholding of available transmission capacity. State commissions need to know which units (not plants) are down and/or at what output in megawatts are all units producing. This information needs to be given in a timely manner as a useful average.

Additionally, the Energy Information Administration of the U.S. Department of Energy is proposing to aggregate its data form reports and to withhold data that might be confidential. Without such data, State commissions, State attorneys general, and the FERC will be unable to monitor the markets to ensure the market is free of market power, and that market rates are just and reasonable.

*Trend 6—Nuclear plants are being re-licensed*

Ten years ago it seemed certain to many that the operating nuclear plants in this country would be shut down rather than renew their licenses. But today, two have been renewed, additional license renewals are pending, and generating companies are purchasing nuclear units that could not be given away in the late 1980's and early 1990's. Increasingly, nuclear units are seen as a cost effective way to produce electricity in a competitive electricity market. This trend can continue only if the Federal government meets it's statutory obligation to begin excepting spent fuel for disposal and if the Congress appropriates the necessary monies that America's ratepayers have already paid into the U.S. Treasury for the purpose of building a nuclear waste disposal facility.

In conclusion, I would like to leave you with one last trend that I will call a "general energy trend," which I believe is accurate regardless of the energy source. Demand for energy is at an all time high and, if current estimates are accurate, each year this demand will continue to increase. Prices for energy have followed suit and increased as well. This trend has placed a severe financial burden on many consumers across the nation.

NARUC believes that the impact of the current energy price increases can be mitigated, in a number of ways. First, for our most vulnerable citizens, Congress should provide substantial increases in funding for the Low Income Home Energy Assistance Program (LIHEAP). We believe that LIHEAP should receive a "core" appropriation of at least $3.4 billion as is proposed in Senator Bingaman's bill (S. 352) plus emergency contingency funding of at least $1 billion as is proposed in Chairman Murkowski's legislation (S. 388 and S. 389).

Second, Congress needs to take action to promote development and encourage the production of renewable energy sources and technologies. Congress must also balance supply/production policies targeted at conventional energy sources (nuclear, coal, gas, oil and hydroelectric) with meaningful incentives and policy to encourage demand reduction and conservation.

Thank you for your attention and availing me the opportunity to testify today. I look forward to your questions.

The CHAIRMAN. Thank you very much, Mr. Nugent.

Our last presentation will come from Mr. Frederick Hoover, director of the Maryland Energy Administration. Please proceed.

## STATEMENT OF FREDERICK H. HOOVER, JR., DIRECTOR, MARYLAND ENERGY ADMINISTRATION, ON BEHALF OF NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Mr. HOOVER. Mr. Chairman, members of the committee, I am Frederick Hoover, Jr. I am pleased to testify on behalf of the National Association of State Energy Officials. I serve as an officer of NASEO and a director of the Maryland Energy Administration, the State energy office in Maryland.

We congratulate you for holding this hearing on energy trends. As an initial matter, I want to emphasize that we did not get into our energy problems overnight. And they will not be solved overnight. But as many of you have stated today, we must act.

We know that the general public and most of Congress and various administrations do not worry about energy prices until they go up. At the State level, the energy offices attempt to keep the focus on energy and support a balanced set of policies at the State, regional and national levels. The major trend we see, and what you have heard stated today, is tighter supplies of natural gas, oil, and other distillate fuels and propane.

Another major problem is price volatility, especially tied to extremely low inventory levels of these products. In addition, the interrelationship between fuels has never been greater. For example, natural gas is dramatically expanding its use in electric generation. And interruptible contracts in this area put enormous pressure on heating oil supplies during the winter season. We must focus on fuel diversity.

Whatever action we take at the national and State levels must expand our supply mix, increase inventory levels, and reduce price volatility. Ultimately, extremely high or low prices hurt consumers, business, and energy industry alike. Supply and demand side measures should not be seen as conflicting. We need both.

There are certain actions we can take. Many of the elements in both Chairman Murkowski's and Senator Bingaman's bills are positive and should move forward. For example, tax incentives for new gas pipeline development and energy efficiency tax credits for new and existing buildings, regional approaches of the type suggested by Senator Bingaman. Expansion of funding for the low income home energy assistance program, the State energy program, and the low income weatherization assistance program are needed.

Creation of a new program for energy efficiency in schools is a critical need and passage of reliability legislation, included in basic form in both bills.

The CHAIRMAN. Are you talking about Price-Anderson liability legislation?

Mr. HOOVER. No. I meant to say reliability legislation.

As Commissioner Nugent mentioned, FERC must take a more aggressive role in market monitoring, and strong consideration should be given to the cost of service pricing for wholesale sales in the West. The market is broken, and insufficient supply is present in the market.

If generators think that FERC is not serious, excess profits will be made. The two refund orders and the market orders FERC just issued head in the right direction but do not go far enough. There are enough incentives to build powerplants in California and the West now. It just cannot be ramped up quickly enough. With wholesale price regulation at FERC, the States are put in a very difficult position, if market participants do not take the commission seriously.

The energy emergency function at the Department of Energy needs to be revitalized and funded. We also support Commissioner Nugent's position reflecting the concern on the new EIA proposal issued on March 13. It would make a great deal of powerplant data

confidential and make it more difficult to deal with market problems.

At the State level, NASEO is working with NARUC and our sister organizations representing State environmental commissioners and State air directors and have begun the difficult process of attempting to integrate our energy and environmental policies, programs and regulations. Greater coordination at the Federal level is warranted as well.

Finally, there is an enormous disconnect between authorizations and appropriations. We must set priorities. In addition, information on the preliminary budget numbers raises concerns on our part that if we are in an energy crisis, why is the budget not being produced to reflect that? Cuts in fossil energy programs, other than clean coal, and cuts in energy efficiency programs and renewable energy programs are inconsistent with a smart, comprehensive energy policy.

We need both short- and long-term solutions to this problem. We support the pipeline that was discussed by Mr. Placke earlier to bring natural gas from existing resources in Alaska. And we are attempting to do things at the State level to try and increase the supply of energy.

In my own State, we have a proposal in front of the Federal Energy Regulatory Commission to reopen one of the liquified natural gas terminals that was mentioned earlier as a way of bringing new gas supply into the country. The States are doing their part to try and step up to this. And we look forward to working with the Congress and the administration to solve this problem.

With that, I will conclude and answer any questions you may have.

[The prepared statement of Mr. Hoover follows:]

PREPARED STATEMENT OF FREDERICK H. HOOVER, JR., DIRECTOR, MARYLAND ENERGY ADMINISTRATION, ON BEHALF OF NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

Mr. Chairman, members of the Committee, my name is Frederick H. Hoover, Jr., and I am pleased to testify before the Committee to discuss the views of the National Association of State Energy Officials (NASEO) on current energy trends and changes in energy markets. I am Director of the Maryland Energy Administration. I am also an officer of NASEO, which represents forty-nine of the state energy offices, as well as the territories and the District of Columbia. NASEO's objective is to support balanced national energy policies and to provide state perspectives on important energy issues.

INTERNATIONAL AND NATIONAL ENERGY TRENDS

Complete energy independence is not going to happen. As the Committee knows, our energy markets are tied to the world markets, especially in the oil sector. That is not to say we are helpless as a Nation. On the other hand, we must recognize that we fought the Gulf War to protect our strategic interests, i.e., access to oil. OPEC has now cut production by 2.5 million barrels/day this year, which should push oil prices up this summer. The real cost of energy is much higher than most of us would like to believe.

At a national level we have an energy infrastructure (e.g., production capacity, refinery utilization, pipeline capacity and terminal storage) that is stretched to its limits. We have seen historically low inventories of important energy products in the past year, and we have seen tremendous price volatility for more than two years. Consumers benefited from such downward price swings as $11/barrel oil in 1998, only to face the reality of historically high heating fuel and gasoline prices a year or more later. We would argue that energy price volatility, both up and down, hurts consumers, businesses and the energy industry as each is forced to adjust to boom

and bust cycles. For example, when energy prices dropped to the very low levels of 1998, drilling stopped and supply began to tighten. Even with the high prices we are seeing, new significant supply will take months to come on line.

We saw natural gas prices for the past few years slip to the $2-2.50/mcf range, and this winter spike to $10/mcf, much higher in the West on the spot market, and now hopefully settling down to a range of $4-6/mcf for the foreseeable future. This means the average Midwest household saw yearly heating costs go from $540 to $950. We are concerned that prices will go up much higher later this year.

Last year it was heating oil that spiked to over $2/gallon. While prices dropped back, the average consumer in the Northeast is paying approximately $1,000, up from $760 last year and $520 the year before.

Propane, a critical fuel in rural America for heating and in the agricultural sector for crop drying, hit its highest levels of over $2/gallon in places like North Carolina. While propane has fallen back, it is still high.

What does this tell us? Energy price volatility is the big problem for everyone. Inventories are well below historic levels. Low inventories of a critical commodity, a logical business response to avoid carrying charges with volatility in place, is not acceptable for consumers and businesses alike. Many energy economists tell us that is the way of the markets and is the right way to go. This is not acceptable. Low inventories put consumers and businesses at risk.

As we look at comprehensive energy legislation, we must examine incentives, both tax and direct financial incentives, to encourage inventory build-up for all these fuels. Massachusetts instituted a state-based program this Winter to expand heating oil inventories. With only a few million dollars in state funds, this market-oriented program helped ensure a reasonable level of heating oil in storage so that all consumers could purchase the product they needed. This program should be examined as a model.

Natural gas has experienced explosive growth as the fuel of choice for new electrical generation. Historically we saw inventory build-up in the summer months in natural gas stocks so that the fuel could be used for heating in the winter. Now natural gas is running electrical generation to power air conditioning. We need expanded inventories and we need expanded gas infrastructure. This may require tax incentives to install this infrastructure. Inventories of natural gas stand at 711 billion cubic feet, down by 37% from last year at this time, and 36% lower than the five-year average.

For example, the construction of a gas pipeline from Prudhoe Bay (where gas production rivals that of the lower 48 states) through Canada is a necessity. Accelerated depreciation for this effort would be a good idea.

The tie between natural gas and heating oil/No.2 oil is also clear. As interruptible customers shift from higher priced natural gas they shift to No.2 oil, driving up the price of heating oil. New York established a program to require interruptible customers to hold 7-10 days of supply of alternative fuels in stocks to help protect consumers. This is a good idea. Other states are examining options in this area.

Refining capacity is down in this country. We are concerned with the closure of a major refinery in Chicago and the impact that might have on higher reformulated gasoline prices in the mid-west this summer. Incentives for refining capacity expansion is important.

With lower inventory levels across fuels, we are expecting more out of our transportation sector. This is not a perfect market. For example, the Coast Guard has a reduced capacity to provide ice-breaking services in the Northeast due to budget reductions. With lower inventory levels, ice breaking becomes a critical necessity. As we look at Coast Guard appropriations, we need to examine energy infrastructure to ensure that sufficient funds are provided for ice breaking.

The Northeast Heating Oil Reserve should be helpful in ameliorating future supply problems. It is small, but it could help.

We cannot forget about the value of the Strategic Petroleum Reserve. The idea of tapping the reserve to cover budget shortfalls should never happen again. We should try to expand the reserve and obviously to buy low, not high. The royalty-in-kind effort for filling the reserve is an excellent idea and we applaud both Chairman Murkowski and Senator Bingaman for supporting it.

In FY '96, the energy emergency function at the Department of Energy was slashed. It was done on a bi-partisan basis, with the support of the last Administration. While we complained, energy didn't seem like a big deal to people. We need to focus on appropriations for a vibrant energy emergency function at the Department of Energy. We urge you to encourage your appropriations colleagues to support this effort within the DOE, including regional and national emergency exercises. These are very helpful. We had states, federal officials and industry in attendance

at emergency exercises in New Hampshire in December 2000 and in Nevada earlier in 2000.

Finally, we cannot forget about the impact on consumers and businesses. Moratoriums on utility shut-offs are coming off in the next two months and individuals homeowners will be shut-off. This will lead to consumer reaction and political problems. Low-Income Home Energy Assistance (LIHEAP) funds in FY 2001 are drained in many of the states and the advance appropriations for FY 2002 were eliminated this past year. Quick action on supplemental appropriations will be critical this year. Inclusion of the expanded authorizations for LIHEAP, Weatherization and the State Energy Program in the Chairman's bill and Mr. Bingaman's bill is very positive. Senator Bingaman's amendment on the bankruptcy bill, supported by Senator Murkowski and Senator Domenici, among others, should also be retained in conference. Now we must move to quick appropriations in this area.

ELECTRICITY MARKETS

You have had hearings on California and the House Energy and Air Quality Subcommittee is holding two hearings this week on the same subject. We need to look at this situation and understand how it is both a symptom evidencing problems, but also how it can instruct us how to act differently at the state and federal level, while recognizing political realities.

We have heard much talk about the "failure of incomplete deregulation" in California. We all recognize problems in the California market, principally the failure to permit utilities to enter into long-term contracts; but we must try to remember the context of how we got to this position today. Can this type of problem occur in other places: yes (but probably not exactly in the same way).

We will not provide comprehensive views on why California got to this point, but suffice it to say, the twenty-five states that have moved on restructuring, including my own, are being very careful to look again at our legislative and regulatory mix to evaluate our risk factors. It should be noted, however, that the 1996 California legislation (A.B. 1890), probably would not have passed without retail price caps in place. That is political reality. In many states the trade of stranded cost recovery for retail competition, required retail rate freezes to pass muster. This was driven by the widely held view that residential consumers would be the last to see the benefits of competition.

At the state level we recognize that wholesale price regulation resides at FERC, and that has caused enormous problems. If market participants do not believe that FERC will examine market monitoring seriously, then a free-for-all of market manipulation may be the order of the day. While I am not here suggesting a definitive conclusion, one must wonder how wholesale prices can be permitted to escalate twenty times above the cost of production. While we have not had a full opportunity to review FERC's decisions of last week on refunds, we are concerned that California not be a precursor of what might happen in many other jurisdictions, especially where generation has been divested from incumbent providers.

If the market is not working and prices are set in an un-capped way, consumers and taxpayers are picking up the tab. The Federal Power Act has not been repealed; just and reasonable prices, possible cost-of-service pricing and possibly regional rate caps, should be considered. New generation takes time to bring on line—no amount of price signals will make it happen in a big way by this summer. The state is moving aggressively to permit new generation and to impose new energy efficiency programs to reduce demand.

Certainly environmental rules should be examined, though it does not appear that this was a significant part of the problem in terms of power plant development. Power plants simply were not ordered in California very much during the past decade, because there was not a perceived need.

Whatever is done in California, the west, mid-west, northeast and mid-Atlantic, must include demand responsiveness measures. These are being initiated by state officials and Independent System Operators (ISOs), and should be encouraged.

We also must focus on fuel diversity in the generation mix. Over-reliance on natural gas is not healthy. Clean-coal technology is an important component of a national energy policy. We must promote new generation from a number of conventional and non-conventional sources, utilizing state-of-the-art environmental controls.

Another area which deserves attention is in the area of regional regulation. We have read with interest Senator Bingaman's promotion of regional approaches. We understand that energy markets cross state lines. We must do a better job, both at the federal and state levels, of encouraging regional efforts.

As you examine comprehensive energy legislation, at a minimum we would encourage support for the modified Gorton bill (S. 2071) from last year on electricity reliability. This is basically contained in Chairman Murkowski's bill. This approach, with suggestions from the states and PJM, is necessary to establish uniform standards for reliability. This legislation should move. We would also suggest consideration of a public benefits program so that we can address demand responsiveness issues in a more comprehensive way at the state and federal level. Overall, the electricity sector needs more state-federal and regional coordination and cooperation.

While not directly related to these electricity issues, we also cannot ignore the transportation sector. With two-thirds of our oil use in this sector, we must act on transportation. A simple action would be to allow hybrid vehicles (for purposes of qualifying under EPACT) to clearly fit the definition of alternative fuels. NASEO strongly supports ethanol production, but also supports hybrid gasoline-electric vehicles that are already available in the marketplace and achieving great than 50 miles per gallon. These high-mileage, hybrids can significantly reduce our dependence on imported oil. With the Committee's assistance, the Department of Energy should move to include hybrids as an option for meeting state fleet alternative fuel mandates. This no-cost action can deliver immediate and cost-effective reductions in oil consumption.

The new proposal from the Energy Information Administration (EIA), issued in the Federal Register on March 13, 2001, would provide confidential treatment for power plants of data on fuel quantity, fuel quality, useful thermal output and financial data. This must be reversed. It would prevent the states and FERC from effectively evaluating whether market manipulation is occurring in the wholesale and retail electric markets. It is precisely this information that we need today in order for regulators to monitor market activity.

ENERGY AND ENVIRONMENT CONNECTIONS

NASEO, along with the National Association of Regulatory Utility Commissioners (NARUC), the Environmental Council of the States (ECOS—state environmental commissioners) and the State and Territorial Air Pollution Program Administrators/Association of Local Pollution Control Officials (STAPPA/ALAPCO), initiated an effort almost two years ago to begin coordinating programs, policies and regulations in the energy and environment area. Just as the federal agencies involved have generally not coordinated well, so the state agencies have not necessarily coordinated. We held a meeting in March 2000 and again in September 2000, to first understand the "vocabulary" of the other officials and then to plan programs. This includes pilot state efforts in a number of jurisdictions, including my own, Maryland.

The concept is that if energy and environmental policy is moved in concert then better programs will be developed. With the U.S. Supreme Court's recent decisions regarding the State Implementation Plans for $NO_X$ and the eight hour rule for ozone, this effort should have new immediacy. In my own state of Maryland, we have been working closely with the Maryland Department of Environment to promote joint activities.

There are many areas where energy and environment meet: 1) new power plant siting; 2) fuel sources for generation; 3) siting of gas and electric transmission and distribution; 4) reliability requirements; 5) use of distributed generation (diesel versus other sources); 6) role of energy efficiency and renewable energy; 7) use of tradeable credits, such as $NO_X$; 8) environmental requirements for new generation; 9) transportation sector issues, etc. The states are interested in streamlining processes for moving forward in these areas, with an eye on efficiency and the cost-effectiveness of energy management, while recognizing the need for environmental protection. Individual states may have different priorities, but the need for coordination is there for all. This coordination also extends to regional activities.

Another area where energy and environment meet is in efforts to expand Brownfields development. This is generally positive. While we need to be mindful of environmental justice requirements, these sites could be excellent for development of power plants.

We look forward to working with this Committee as well as the Environment and Public Works Committee on developing rational programs and ensuring state-federal cooperation. We have received support from DOE and EPA in this area, and we hope this will continue and expand.

AUTHORIZATIONS AND APPROPRIATIONS

As Congress and the Administration move forward in crafting comprehensive energy legislation, we have a few cautionary words. As this Committee knows, the en-

ergy problems we are facing today were not created overnight and will not be solved overnight. There is also a risk to promising too much.

As we review Chairman Murkowski's legislation and the legislative proposals of Senator Bingaman, we are pleased that there are many positive features in both bills. However, simply authorizing important legislative initiatives does not produce, in many cases, accompanying appropriations. It would be instructive for us to look back on the Energy Policy Act of 1992 and review the programs that were authorized and then subsequently not funded.

Many of the tax provisions are positive and should be strongly considered. In addition to some of the elements noted above, we would suggest investment tax credits for renewable resources.

On the other hand, we must examine budget and appropriations matters. On the basis of what we are hearing with respect to the President's budget, due to be submitted on April 3, 2001, we are seeing many troubling signs that those developing a comprehensive energy policy are not talking with OMB. We hear of proposed cuts in fossil energy budgets of 30%, with the exception of clean coal technology. We hear of proposed cuts of 30% in energy efficiency funding, absent a very positive increase of $120 million in Weatherization. We hear of proposed cuts of 40-50% in renewable energy programs, absent biomass programs. These budgets should be increasing not decreasing.

The major energy emergency response mechanism for the states involving federal-state cooperation is funded through the State Energy Program (SEP). In FY 2001 SEP received $38 million, down from $53 million in FY'95. The President during the campaign proposed a doubling of the Weatherization Program from $153 million to $306 million and a doubling of SEP from $38 million to $76 million. The President is proposing a $120 million increase in Weatherization, but apparently no increase in SEP. We assume this is either an oversight by OMB, and/or a lack of understanding of the important role of SEP. SEP is the vehicle not only for emergency response, but for leveraging state and private funds to implement energy projects in all sectors of the economy, including businesses, homeowners, industry, schools, agricultural, etc. The failure to support this campaign promise would be a highly unfortunate event. Senator Bingaman's bill (S. 352), which increases funding for LIHEAP, Weatherization and SEP, along with sound changes in the Federal Energy Management Program and promotion of energy savings performance contracts is sound legislation, and should also be passed. Chairman Murkowski's legislation (S. 389) supports similar authorizations for these programs. We support funding of $3.4 billion for base LIHEAP funds and up to $1 billion in emergency funds. Under existing funding, without increases, LIHEAP only serves 20% of the eligible population. Chairman Murkowski and Senator Bingaman also support a new program for addressing the energy problems of our nation's schools. This should be authorized and appropriations should be provided. We have seen dramatic cost increases for schools, while we all recognize education as one of our highest priorities.

The Interior and Related Agencies and Energy and Water Development Appropriations Subcommittees are under a great deal of pressure. Without increases in 302b allocations and support for higher appropriations levels to accommodate energy needs this year, we will be stepping into even greater problems.

Many suggestions have been made for national energy policy development and a national energy summit. These are good ideas, but a summit that needs to occur is one between the energy committees and the appropriators, possibly in the form of a joint hearing to discuss energy priorities. Otherwise, this national energy policy effort will be a hollow exercise, in many ways.

We understand there is a proposal to cut the Energy Information Administration's budget at DOE, included among these cuts would be reductions in state level data and cuts in the State Heating Oil and Propane Program (SHOPP). The so-called "SHOPP" allows approximately one-half of the states to cooperate with EIA to share data and warn of upcoming problems so actions can be taken. This type of cut would be ludicrous.

MARYLAND

Governor Glendening has taken a leadership role in "smart growth" efforts. This is a specific area where the interface between energy and environment needs to be promoted. As we expand our suburbs and outer suburbs we expand our use of single occupancy vehicles. With two-thirds of our petroleum use in the transportation sector, we must focus nationally and in each of our states, on reducing the impacts of unchecked growth. This is an energy issue.

The Governor, just this past week issued a "green" procurement, construction and operating policy for state government. We are attempting to construct energy effi-

cient buildings in Maryland and setting goals for solar and wind power. We are concerned about protecting the Chesapeake Bay and the development of on-site storm water treatment, conservation infrastructure, natural lighting and the use of recycled materials are non-partisan ideas.

Last year Maryland passed the "Maryland Clean Energy Incentive Act, which provides tax credits for energy efficient appliances, promotes renewable energy generation and for the purchase of electric and hybrid vehicles. We will be working to push those credits even harder this year.

CONCLUSION

Thank you for the opportunity to testify. I stand ready to answer any questions you might have. We are also still reviewing the Chairman's bill as well as Senator Bingaman's legislation. We hope to provide more comprehensive comments at a later date.

The CHAIRMAN. Thank you very much, Mr. Hoover. I do not know that I necessarily agree with your generalization on the budget process.

The pass back has gone back from OMB, but it does not necessarily reflect the congressional budget, nor does it reflect what is going to be in the energy bill when it is ultimately debated by the House and Senate, because in both these bills there is significant assistance for new technology, clean coal, and so forth and so on. But your point is well made.

I am going to go through the questions briefly. We will allow members 7 minutes.

But quickly, if we assume that we have an increase in demand and a shortage of supply, and government ability to respond with specifics is limited to a snail's pace, depending on the involvement of a lot of people in many areas of responsibility, in your opinion what is the first thing that we should do, one thing that we should immediately do to try and alleviate this crisis relative to relief? And relief, to me, suggests that you make a drastic improvement in your conservation or you do something immediate about supply.

Now, Mr. Hoover, you are talking about reopening that old Columbia gas facility on the Western Shore, which has been utilized to store gas, but not bring gas in. And the question is, how long is it going to take you to get permits? And you can answer that when it comes down to you. But I think that is one of the problems. But let us take the first question first. What would you suggest we do right now to get relief?

Do you want a pass, Mary, for 30 seconds?

Ms. HUTZLER. Yes. We do not really deal with total policy issues. We do analysis.

The CHAIRMAN. We do not either deal with policy issues. We have to start somewhere.

Okay. Mr. Caruso?

Mr. CARUSO. I think immediately the problem is electricity and, more specifically, California. But as Jim pointed out, it could be New York this summer. So I think we need to do something to stimulate the production of electricity and to remove obstacles and bottlenecks to——

The CHAIRMAN. That may mean cutting temporarily some environmental oversights.

Mr. CARUSO. It may, yes.

The CHAIRMAN. Are people ready to support that, or do they have to go in the dark for a while in order to accept it?

Mr. CARUSO. And the other side of that, of course, is the price issue, that the price signals were not appropriate. And that is one of the reasons we are facing the kind of demand situation that we are. And whatever can be done to allow appropriate price signals to be passed to the consumer, that would be another——

The CHAIRMAN. Well, the Governor of California said he could fix this thing in, what, 3 minutes. He made a statement to that effect, maybe it was 7 minutes—10 minutes or 12 minutes, by simply passing through the price and done. Obviously, there is a political consequence associated with that. But, I mean—go ahead, Mr. Placke.

Mr. PLACKE. Well, I think in the first instance, Mr. Chairman, to do something immediate about the only alternative is conservation.

The CHAIRMAN. Conservation.

Mr. PLACKE. In an immediate sense. In the sense of——

The CHAIRMAN. Now let us talk about that in the sense of California. Because what is the incentive for a Californian to go down and buy a new energy-saving refrigerator when the other one is not worn out yet? And the California consumer is paying a relatively low rate that they have been paying for some time, because they have not felt the price increase. So there is no incentive, is there? So how are you going force—how do you force conservation under that scenario?

Mr. PLACKE. Well, passing through the real cost of energy is obviously part of the solution. Without that market signal, consumers simply will not respond. That is quite correct. Ultimately, industrial users, I think, probably are easier to influence and to monitor than individual households. But it has to be a broad collective effort.

The CHAIRMAN. So if one were a real critic, and objective critic, you are not going to force California to conserve unless there is an incentive, is that right?

Mr. PLACKE. Certainly.

The CHAIRMAN. And the incentive is to pass on the true cost of power, which California's political structure refuses to do.

Mr. PLACKE. Then the problem is just going to drag out, sir.

The CHAIRMAN. The problem will drag out.

Mr. Nugent?

Mr. NUGENT. Mr. Chairman, I do not think there is any one single thing. You have to attack this on a number of fronts. This is——

The CHAIRMAN. But we have to get started. We cannot even figure out how to get started.

Mr. NUGENT. This is too urgent a problem. Obviously, you need some additions to supply, but they take time. I think passing through the price signals, as Mr. Placke has indicated, is a very appropriate response. And you can look to Maine for having done that. Fourteen cents for large industrial users on peak, 50, 60 percent increases in the price of generation.

We have no deferrals in the rates to be recovered, or the bills to be recovered, to pay to generate it. So the signals are out there, and I expect that we will see the public responding.

On the other hand, we, as regulators in government, must give mechanisms to the public which enable them to have the information in real time and to be able to respond. Large users in Maine are doing that. They have suspended operation at certain peak hours, sold the obligations they had back into the market. They have benefitted, and they have also eased the ultimate energy clearing price spike in the region.

The CHAIRMAN. And you have no caps.

Mr. NUGENT. There is—we have no caps. New England has a $1,000 cap, which I think is not an unreasonable one. I mean, you are not going to get hurt bumping your head too often on $1,000. It happened on maybe one or two——

The CHAIRMAN. $1,000 per——

Mr. NUGENT. $1,000 per megawatt hour in the regional market clearing price. It exists up till April 1. We are looking for it and expect it to be extended. That—this is kind of reinsurance or catastrophic insurance. It keeps you from being really mortally wounded, but enables the market to function and to give the incentives to producers to go out and build new supply. They apparently have that inducement. Maine increased its generating capacity in the last three years by 75 percent. And we are not big, but we built twice as much as California did.

The CHAIRMAN. That is big in comparison. How close have you come to that $1,000 in bids?

Mr. NUGENT. I do not know that off the top of my head. I will get the information for the committee, if you care. I will.

The CHAIRMAN. Now that is electricity, your capacity. Was it gas fired or——

Mr. NUGENT. Yes. We have had the benefit in Maine, which has been at the end of the road and down a little narrow path when it comes to gas. We have two new pipelines, 22-inch, 24-inch pipelines, with Canadian supply. And we have put in five new generators of more than 1,600 megawatts within a two- or 3-year period.

The CHAIRMAN. I am not going to ask you whether you recommend $1,000 for California. But clearly, there are some things that are working out there. We look at Pennsylvania sitting there with both retail and wholesale caps. But they are so high that there is enough flexibility, so that they have been able to attract companies to come in and put in generation. And now they have adequate generation, and it works.

Mr. Hoover, did you have——

Mr. HOOVER. The only addition I would make to the conservation issue is, in my own State, as a way of trying to move the market, the question you asked earlier about how do you get people to buy these higher efficiency appliances, we eliminated the sales tax on Energy Star appliances in the State of Maryland.

Retailers can now say to consumers, if you buy this appliance and upgrade, not only will you save money over the long term in the operation of it, but, you know, the State of Maryland is not going to take their traditional cut from the price.

We have a number of programs to try and encourage people to do that. We tie a lot of our energy efficiency situations to our environmental ethic with the Chesapeake Bay, because of our concern about air pollution to the bay and the amount of money that Con-

gress and the State of Maryland have spent in trying to restore the Chesapeake Bay.

We use a combinational approach to try and give financial incentives for people to do the right thing, but also to appeal to their better nature.

The CHAIRMAN. I think it was Mr. Caruso's reference—and my time is almost up. But the implication that people really do not care where the oil comes from, as long as it comes.

You gentlemen, Mr. Nugent and Mr. Hoover, come from parts of the United States that, from the standpoint of developing oil in my State of Alaska for the most part are pretty much opposed. The environmental activism has been very prominent.

And as a consequence, those of us who produce the oil and feel we can do it safely are rather provoked, if you will, by the observation that we have, that you really do not care where the oil comes from as long as you can get it.

You just do not reflect on whether it is coming from the rainforests of Colombia, where there is no environmental sensitivity, but since you are motivated by an environmental concern, you do not question the legitimacy of that concern, you just say no.

So, you know, from the standpoint of the Northeast, you are very dependent on heating oil. Where it comes from is incidental. Am I missing something there, or is there an old adage that charity begins at home, if indeed you can keep your house clean?

Mr. NUGENT. No. I think you fairly characterize the problem. The public and its views on things is not always consistent.

The CHAIRMAN. I would agree with you there. Well, if you can enlighten me, you have more time. If not, I will go to Mr. Hoover.

Mr. HOOVER. Well, I know in my State, I mean, it is difficult to site energy producing facilities. I mean, we have a relatively small coal industry in the western part of my State. Now we have brought on line a coal plant. The people in that part of the State actually saw that as a great benefit because of the economic impact, and we were able to bring it on line and mitigate the environmental consequences of it.

I do not think that people are to the extent that they do not care, because I think they understand the geopolitical concerns that we have about energy production. I mean, a lot of American citizens sent their sons and daughters to the Persian Gulf to defend those supplies and understand the commitment we have to make there.

I think overall the American people feel that we need a balanced approached to this and do not think that it is any one region's responsibility to take care of our energy needs.

The CHAIRMAN. Senator Bingaman.

Senator BINGAMAN. Let me ask Mary Hutzler about the criticism of EIA that we have heard here about your decision to keep data on powerplants proprietary. I think most of the trend in government seems to be toward more transparency. This seems to be an aberration from that.

Could you explain how that decision was made or whether that is still subject to review or what your position is?

Ms. HUTZLER. In competitive markets it can be detrimental to producers if certain statistics are published on an individual basis. So what we do is we aggregate these statistics and release them

in an aggregated fashion. We do this in the oil and gas area, for instance. And this would be following up in the electricity area in the same way.

Now those forms are out for review. There was a public register notice in March, earlier this month. And I do encourage people to comment, and we could still discuss the issues. But we do have to deal with the issue of confidentiality. Otherwise we do not get the data, and without the data, we could not even provide aggregate statistics.

Senator BINGAMAN. As I understand Commissioner Nugent's point, the State utility commissioners need that information. Even if they have to obtain it on a confidential basis, it is useful for them in making their decisions. Is that something that is being considered?

Ms. HUTZLER. That is something that we can look into. There have been Federal Government agencies who have asked us for certain data, which we were allowed to release. So we will evaluate that.

[The information follows:]

Over the past three years, the Energy Information Administration has been evaluating its data collection forms in light of the many changes occurring in the electric power industry. It particular, EIA wanted to assess the impact of these changes on its data confidentiality policy.

From our analysis of the industry, we have determined that the wholesale trade of electricity and the retail sales in a number of States have become increasingly competitive. Because of this, EIA is proposing to not disclose data that could result in competitive harm to companies participating in competitive electricity markets. This is consistent with the Trade Secrets Act and Exemption 4 of the Freedom of Information Act. Therefore, EIA has proposed to hold the following types of information confidential: quality and quantity of fuel receipts and consumption, fuel stocks, useful thermal output (i.e., heat or steam), plans (i.e., retirements, capacity additions), selected financial and cost data, heat rates, amount of purchased power, amount of power exchanges between companies and information from energy service providers who only provide electricity. While EIA is proposing to hold the individual data confidential, we would still make aggregated data available to everyone.

Our proposal for changes to our data collection forms and confidentiality policy was published in the Federal Register on March 13, 2001, for the express purpose of soliciting comments from all concerned parties. The comment period lasts until May 11, 2001. After that period closes, we will evaluate comments and determine how to best address them. We will then submit our final proposal to the Office of Management and Budget for its approval. If someone disagrees with our proposed confidentiality policy, it is important that they tell us why a particular data element is needed in the public domain, despite possible competitive harm, demonstrate that public disclosure would not result in competitive harm, or suggest measures which would permit release while mitigating competitive harm. We can then consider those comments in our final evaluation.

It should be noted that over the past three years, EIA has met with a variety of stakeholders to obtain their input to our evaluation process. This was done using several methods. First, 11 focus groups met to discuss what information EIA should provide in the future. These groups included State and Federal officials, investor-owned utilities, publicly owned utilities, media, nonutilities and renewable energy companies, investment bankers, consumer organizations, academic consultants, and congressional staff. In addition, EIA staff has briefed over 20 organizations representing these types of groups on our project. In particular, the National Association of Regulatory Utility Commissioners and the National Association of State Energy Officials participated in the focus groups and were briefed on a variety of occasions on EIA's work. While the proposal that EIA is now sharing with the public was not made public prior to March 13, it was developed with input from all interested parties and we look forward to hearing their comments on it.

Subsequent to the hearing, Commissioner William Nugent of the Maine Public Utility Commission was contacted by ETA. He explained that they are in the process of collecting comments from within his agency, from the other New England public utility commissioners and from members of NARUC. In their reply, he plans

on explaining the needs of the States for the individual data elements that ETA proposes to hold confidential. ETA offered to give a technical briefing to a NARUC subcommittee on the ETA data collection forms to help them better understand how to use ETA electric power data. Commissioner Nugent will investigate the need for such a briefing and coordinate with ETA.

Senator BINGAMAN. Okay. I have sort of a printout of an article in *Megawatt Daily*, dated March 14, entitled "Deutsch Bank Sees Excess Capacity by 2005." It goes on to say "Power generation capacity will be tight across the United States for the next few years, but the Nation as a whole should be faced with a glut of power by 2005, according to this new analysis."

I just wondered, Mr. Placke or anybody else or Ms. Hutzler, any of you, do you agree or disagree with this analysis? Are you familiar with it?

Mr. PLACKE. I am not familiar with that specific article, Senator. But in general, it sounds like it is consistent with our analysis that, as I indicated, we anticipate that 300 gigawatts, which is 40 percent of our capacity nationally, will be added over the next 5 years. In part, I suppose, as usual, it depends upon the definition of excess or surplus.

I think California illustrates more than adequately the point that you cannot program your generating capacity to equal exactly demand. There has to be a cushion in electric power, unlike other forms of energy where you can gauge it more closely to the rate of consumption. But power demand is a variable. It varies with season and other conditions. And there has to be a cushion.

Now I do not know whether that definition includes a cushion or if it does not. But I do not think we would regard the additions to generating capacity as excessive or likely to produce an unwanted surplus. And I think one of the keys to gauging that is the reaction of investors themselves. Investors do not have a habit of building plants that are not going to produce a profit.

Senator BINGAMAN. Yes. This article does go on to say that by 2004 they project that the national average capacity reserve will be about 15 percent.

Commissioner Nugent, let me ask you about—we have a bill that was developed by two of our members here on the committee. Senator Feinstein and Senator Smith jointly have put together a bill to try to deal with the situation in California. I did not know if you have had a chance to look at that.

The bill directs FERC to control wholesale prices of power coming into the State contingent upon the State passing through a significant portion of that cost to the rate payers in the State. Have you had a chance to look at that? Have you taken any position on it?

Mr. NUGENT. No, sir. I have not seen it.

Senator BINGAMAN. That would be useful to the committee, I think, if you do get a chance to look at that legislation.

Do any of the rest of you, who have looked at the bill, have a comment on it? I would be anxious to get any expert advice we could on that issue.

Let me also ask any of you to respond. I know several of you criticized FERC. Is there something that we need to do with regard to the Federal law governing FERC to allow them to consider demand responsiveness in their review and FERC's review of whole-

sale rates? Is there something that we should be doing to change the law related to FERC? Or do you think that the law is not the problem and that they have just not aggressively enforced or implemented the authority they have?

Mr. Nugent?

Mr. NUGENT. Mr. Bingaman, I am unaware of any shortcoming in the Federal law with regard to demand responsiveness. New England has mounted a demand responsive program for its wholesale markets. And I will go back and ask the people who know it in greater detail if there are any points at which that was abrading against Federal law limited in its effectiveness by that.

But as a matter of fact, we do have buy-backs that are possible when one is able to forecast moments of peak demand coming. So I think we are able to operate all right.

Senator BINGAMAN. Okay.

Mr. Hoover, I think you alluded to this perhaps. But we do have some provisions in this bill that I have been working on with other Senators that try to move us toward this region-wide coordination and planning process. Any of you have thoughts as to changes we need to make in Federal law to accomplish that more effectively?

Mr. HOOVER. The proposal that we have seen in your bill we think goes in the right direction to do this. As these boundary lines sort of disappear as electricity starts going across the country, I mean, a regional approach to doing this is going to be the only way to really figure this out. I mean, States cannot become islands in and of themselves, either from an electricity supply standpoint or the demand standpoint.

So the communication and coordination among State regulatory commissions and the regional power authorities is going to be a necessity.

Senator BINGAMAN. Do you have any thoughts on this, Mr. Nugent?

Mr. NUGENT. I think cross-regional effects are important as well, because while we may be able to perfect the market within the New England region, if market power is being demonstrated in adjacent areas, or dysfunctional elements are apparent in those adjacent areas, you can see suppliers flee our market, driving our price up, to take advantage of even higher prices in adjacent regions.

We have to give some more attention and look forward to continuing our——

Senator BINGAMAN. Mr. Placke, you mentioned there are likely to be power shortages in New York this summer, particularly in the New York City area, not because there is inadequate power, but because of transmission problems getting the power from New England to New York. What, if anything, can the Congress do or should FERC do to solve that problem? Is there anything?

Mr. PLACKE. Again, I am afraid there is probably not a very short-term solution. But in the longer term, facilitating the construction of transmission facilities, which means expediting the permitting process and perhaps dealing with the right of eminent domain, I think, are the areas that I would point to.

Senator BINGAMAN. You believe those permitting problems and the difficulty of getting eminent domain has been the major factor that has kept that transmission capacity from being built.

Mr. PLACKE. I would say that—I would look to those prospectively. I think those are the areas that could expedite a solution to the problem.

Senator BINGAMAN. Okay. Anyone else have a comment on that point?

Mr. NUGENT. There are moves to meet that need. There are proposals for building generation, both within the New York City load pocket and out on Long Island. And there is also a proposal for a merchant transmission line to be built, my recollection is, between New Haven and the central part of Long Island to bring power in that way. And they are working through the siting problems, you know, through the New Haven oyster beds, right now.

It is a value judgment as to whether you want to ride roughshod over those interests or whether you want to give them a full hearing. I am not sure how I would suggest you intervene at this time. I think the problem is being worked.

Senator BINGAMAN. Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Bingaman.

I believe, Senator Craig, you were next, and then Senator Thomas.

Senator CRAIG. Thank you, Mr. Chairman.

Let me thank all of you for your testimony. You have added a great deal of information to and thought to our concerns and our thought processes, and we appreciate it. A couple of questions and appreciate your reactions. Mr. Nugent, you struck a sensitive positive chord with me when you talked about regional concerns. Everybody is focused on California at this moment. California is dragging the whole Pacific Northwest down with it. It is very much a regional problem. California is not feeling the price shock, but California's price shock is hitting the wholesale market in the Pacific Northwest. And Oregon and Washington and Idaho's prices are going up dramatically.

The bill that Senator Bingaman mentioned and produced by Senator Feinstein and Senator Gorton is a regional bill, would have a regional impact. I know he mentioned California. It is not just California that it would impact. It would be a regional hit or positive or negative, I think. And so I would appreciate you looking at it. I mean, obviously it is sensitive, it attempts to be sensitive, to the short-term reality.

And, of course, in the Pacific Northwest we remain fairly heavily hydro. We have something else going on out there this year. It is called a drought. And our hydro capacities could be substantially lessened, even with just a slight warming trend in the L.A. Basin and a little pull-back by Pacific Northwest production in the last week, we can see what happens. Wait until it gets hot this summer, if California does not get real.

And I agree. I do not know how we get California to conserve. Finally, I heard someone out there talking about in the 24 hours, but the marketplace is not reacting. Testimony from the investor-owned utilities would demonstrate to us that quite the opposite has happened.

As they have leveraged down their retail price and then capped it, conservation went away. And it is not back yet in California, and it will not be back until they begin to feel the bite of the mar-

ket in part, I would have to think. And of course, that is the reaction that that legislation deals with.

So I would appreciate your reaction to that. And as a State PUC person, I think that would be extremely valuable for us.

Mr. NUGENT. Senator Craig, I am in touch from time to time with my colleagues, Mr. Alan Becker in Wyoming, those in Montana, Idaho, and throughout the Pacific Northwest. But for me to give testimony or to offer it would be really somewhat hearsay evidence. We will work to get their views and try to give you the comments you seek.

Senator CRAIG. Well, I think all of us—I have been somewhat resistant to restructuring. Coming from our least-cost state with a hydro base, I did not see that our costs could go down much further. And now, of course, quite the opposite is happening. They could go up pretty dramatically.

But in other words, my point is, and the point you have made, is that regional realities are there. And something happening outside your State clearly has, could have, a substantial impact in your State. And that is appreciated.

You mentioned in the State of Maine that you had new gas capacity, new gas pipelines, and therefore new gas generation. Do you remember how long it took from the time the gas pipelines were an idea until they were in place and functional?

Mr. NUGENT. Well, some of these ideas go back 15 years or more.

Senator CRAIG. But I mean——

Mr. NUGENT. But as a practical matter, I would say it was about 3 years.

Senator CRAIG. It took you only 3 years to site those and get it out of the ground.

Mr. NUGENT. You are dealing here with—when you go back 15 or 20 years, you are dealing with Sable Island offshore production. To some extent what happened was the economics of offshore production coming down because of experience gained in the North Sea. So things became economically possible.

At some point, the energy companies pulled the trigger and said, we can make a go of this. And it first appeared, really, with us in 1996 or 1997. And the lines were in place and operating by 2000.

Senator CRAIG. Because I know in an effort to bring gas into the Northeast, especially in those areas where they are still dependent upon oil for space heating, several of those gas pipeline companies finally just walked away. They could not cost it out. It became so economically unfeasible, based on environmental concerns and regulations and——

Mr. NUGENT. Well, actually here I think you have an illustrative contrast between the siting, which is controlled by the FERC in the gas area and what goes on in electricity. And my sense is that once the decision was to go forward with that pipeline that those problems were worked through in fairly reasonable order. And we are including in that 3-year period construction. That is a year and a half.

Senator CRAIG. No, I am aware of that. That is why I asked you the question. And that is why I thought 3 years is short term, really.

Mr. NUGENT. Yes.

Senator CRAIG. And you are right. The FERC, in fact, it appears they were quite busy trying to front load some of these things. And we think that could change a bit now. And certainly we are encouraging that the FERC get under way with full employment. And I think it will get there fairly quickly.

Mary, a question of you, and it comes from—well, John Kane of NEI sent a letter to Representative Boehlert on March 14 relative to your testimony of February 28 before the House Science Committee. Mr. Kane suggests that EIA is modeling nuclear in such a way that disadvantages nuclear with respect to coal and natural gas. Are you familiar with the letter? And how do you respond to Mr. Kane's assertion?

Ms. HUTZLER. Yes, I am familiar with the letter. We do not believe that we are modeling nuclear to be in a negative situation compared to gas and to coal. We looked at nuclear plants in terms of what it would cost to keep the capacity operating. We cost that out, and we take a look at it in terms of what the competition is, that is building a new plant. Combined cycle plants today can be built for $400 to $500 a kilowatt.

So when you look at the economics of it, we do retire some of the existing nuclear plants. But we also retire some of the existing coal and oil and gas steam plants as well. As a matter of fact, our forecast has about 70 gigawatts of retirements. And more of that is in the fossil category than it is in the nuclear category.

Senator CRAIG. Obviously, your figures and your modeling is important to us. And all of us, not all of us, some of us are of the belief that in the pursuit of clean energy that nuclear can play a role, and an increasing role.

And as these costs go up, if we can do new generation nuclear and license it, site it and license it, more expeditiously, then those costs come down. In fact, there are some interesting models out there now that can show that some of these current operating plants are actually operating below costs of other types of energy. And I think that is why we are concerned.

Kane asserts that you are not factoring in future clean air compliance costs. Is that true?

Ms. HUTZLER. In our Reference Case, we look at current laws and regulations. We do look at the Clean Air Act Amendments. Anything that has passed is included where the specifications are such that we can represent them.

Senator CRAIG. Then you can factor them in.

Ms. HUTZLER. Right. Right.

Senator CRAIG. But any additional or any new plants would not be a factor there yet.

Ms. HUTZLER. Not in our reference case. We have done other studies at the request of House congressional committees. But in those studies, they have asked us not to build new nuclear capacity.

Senator CRAIG. Mary and gentlemen, thank you very much.

The CHAIRMAN. Thank you, Senator Craig.

Senator Thomas.

Senator THOMAS. Thank you, Mr. Chairman.

Mr. Nugent, I do not quite understand your arrangement in Maine. Have you re-regulated at all? What is your process?

Mr. NUGENT. Effective March 1, 2000, all or the two large investor-owned utilities had to divest themselves of their generating——

Senator THOMAS. Why? Why did they have to?

Mr. NUGENT. Because—and they would continue to operate as transmission and distribution companies. And anyone, any licensed seller of generation, could sell to any customer they chose.

Senator THOMAS. So that is your State regulation.

Mr. NUGENT. It is State regulation. And the attempt here was to provide a level playing field for all sellers of generation. There was a concern that a special relationship between one seller and the transmission and distribution company would unfairly influence that market and would inhibit the entrance of other players.

Senator THOMAS. Well, it has not been a market. It has been controlled, has it not, by your PUC?

Mr. NUGENT. I mean, it is fully open. And it——

Senator THOMAS. I mean, I am talking about where it was. You had the distribution and generation were provided by the same person, and they serve——

Mr. NUGENT. Transmission and distribution are provided by one company. That is correct.

Senator THOMAS. And they—no, and generation.

Mr. NUGENT. Well, historically, prior to March 1, 2000.

Senator THOMAS. Okay. So then they serve their service area under a price that you all establish.

Mr. NUGENT. That is correct.

Senator THOMAS. You separated it so you could have competition, then, among the wholesale.

Mr. NUGENT. Correct.

Senator THOMAS. Then I do not understand your role in the pricing of it, if you wanted competition.

Mr. NUGENT. We have no role directly on the pricing between customers and competitive energy supplies. But believing that many customers, typically residential and small business customers, would either not choose or would be unable to find a supplier——

Senator THOMAS. Well, it is not up to the customer, is it? It is the distribution system, is it not?

Mr. NUGENT. No.

Senator THOMAS. You mean each customer gets to select his own wholesale supplier.

Mr. NUGENT. Every customer in Maine has the right to go out and find his own competitive energy——

Senator THOMAS. So you essentially have tried to deregulate it and give choice.

Mr. NUGENT. That is correct. And we have a default category for people who do not.

Senator THOMAS. But then you still have your position of controlling the wholesale price.

Mr. NUGENT. We do not control the wholesale price.

Senator THOMAS. Then why do you have to find out 11:20 and do something by 11:50?

Mr. NUGENT. That is for the category of customers who make no choice and still want to be served. I mean, there are a lot of people out there who do not understand this and do not want to be in the

middle of it, others who cannot find a supplier. So to cover them, we have a default category.

Senator THOMAS. I am sorry. I do not understand that. If they cannot find a supplier—they have a supplier, do they not? If they do not choose to do it differently, they have a supplier.

Mr. NUGENT. As selected by the State pursuant to competitive——

Senator THOMAS. So you are halfway re-regulated.

Mr. NUGENT. It is not a regulated price. It is the market price we find.

Senator THOMAS. Okay.

Mr. NUGENT. We go into the market, and we try to get the best price. But it is the market that determines it.

Senator THOMAS. It does not sound like you are really into the market business, but that is okay.

Mary, you are part of the Energy Department, correct?

Ms. HUTZLER. Yes.

Senator THOMAS. As you went through this and we are at $1, $1.50 gas, was that a market message? Did they share that with the department? Would you not imagine that production would go down at $1.50 wellhead price?

Ms. HUTZLER. Yes, that is correct.

Senator THOMAS. What did they do about it?

Ms. HUTZLER. What did the Department of Energy do about it?

Senator THOMAS. Yes.

Ms. HUTZLER. I cannot speak for the Department of Energy.

Senator THOMAS. Are you not part of the Department of Energy?

Ms. HUTZLER. We are an independent agency within the Department of Energy. We supply data and forecasts, but we do not deal with policy issues.

Senator THOMAS. I see. We have not had a policy on this then, have we?

Ms. HUTZLER. On natural gas pricing?

Senator THOMAS. On energy.

Ms. HUTZLER. I believe the policy of the last administration was competitive markets, and that is what they have indicated in their testimony.

Senator THOMAS. Okay. I do not quite understand why you use storage as the component, as opposed to production.

Ms. HUTZLER. Storage is an indicator of price volatility. If storage levels are very low, then that means that to meet your demand; you either have to produce or you have to take more from storage. And as storage gets lower, your prices are going to go higher.

Senator THOMAS. You would not have storage if you did not have production, would you?

Ms. HUTZLER. Well, that is correct. You do need to produce it. But what is happening now is we are withdrawing from storage faster than we are producing. Our production is not keeping up with demand.

Senator THOMAS. So production is the key.

Ms. HUTZLER. All factors, all those factors, are keys.

Senator THOMAS. Okay.

Ms. HUTZLER. But if you want to look at pricing——

Senator THOMAS. It is interesting that you list storage all the time, when there is relatively little storage available often in a gas field. And indeed, if you do not have a place to go with it, you just do not produce it. So storage is kind of iffy, is it not?

Ms. HUTZLER. It depends on what factor you are looking at. If you want to look at price volatility, it is an extremely important factor.

Senator THOMAS. Storage went down there, and the price stayed the same for the last several years until recently.

Ms. HUTZLER. You are talking about natural gas markets?

Senator THOMAS. Right.

Ms. HUTZLER. Yes. We need to go back to the chart and look at the precise timing. But I believe that storage was fairly high during the period when production was up. But then we had the severe weather patterns.

Senator THOMAS. Yes.

Ms. HUTZLER. And that weather pattern meant that demand was higher than what was anticipated.

Senator THOMAS. Did you not mention 1,400 3-megawatt plants?

Ms. HUTZLER. Fourteen hundred 300-megawatt plants.

Senator THOMAS. Three hundred megawatt plants.

Ms. HUTZLER. Right.

Senator THOMAS. And so you are expecting that they will be gas fired and relatively small.

Ms. HUTZLER. When I gave that statistic, it was an average statistic. These plants will vary in size over time. But it is one way for me to show the magnitude. The total capacity that we are talking about is 413 gigawatts, 92 percent of which we think will be gas fired.

Senator THOMAS. I guess, you know, what we really—certainly we have an immediate problem. But it seems like what we ought to be doing is looking at the future a little bit. And if the gas price is what it is now, it is interesting to see. It seems coal is our best opportunity over time, I think, for stationary generation. And yet we seem to not be dealing with that at all. We just seem to think, well, we are going to go for gas. And that was kind of the plan when gas was $1.50 at the wellhead. It is not now. And it is interesting that that is your projection.

Ms. HUTZLER. When we did these forecasts, we did not anticipate the very high natural gas prices that we are seeing right now in 2001. We were very close to the price that we anticipated in 2000. We were about 20 cents from the actual price in that year.

The coal plants that we do build are built in the earlier time horizon of our forecast because of the higher gas prices right now. But we do believe that the resources are there for the natural gas prices to come down over time.

And because of the resources and because there are other benefits for natural gas, which include the lower capital cost, the friendlier environmental issues associated with natural gas, the shorter lead times to construct and also to get permits, that natural gas is going to be favored in markets that have deregulated electricity.

Senator THOMAS. Well, I think that is a great thing, but I do not think that looks ahead. We really ought to be looking at our most—our greatest volume resource, which happens to be coal. We can do

some more research on the cleanliness part. I think if you talk about a 2,000-megawatt plant, the idea that it is cheaper is probably not true.

If you want to build a small plant, then gas is probably easier. If the idea is going to go to close to the market instead of having a national transmission grid, then perhaps that is right. But we ought to be talking a little bit about what we want, where we want to be over time, do you not think?

Ms. HUTZLER. Our forecasts, as I mentioned, are based on current law and regulations and also based on current economics. So based on those economics, as we see them, that is where the future will be over the next several years.

Senator THOMAS. Well, I hope all of us will give some thought to the future, as to how we see it in 15 years, what kind of energy is going to be the most useful for us, and where can we do it, where can use a flexible energy source like gas, as opposed to coal. Some of these kinds of things, I think, are part of the mix, and we really ought to be—and we need people like you in research to be able to at least stimulate some thought in those kinds of directions, it seems to me.

One more question. What about the Middle East? Did we work as closely as we could? Do we not have any leverage with OPEC?

Mr. PLACKE. With OPEC as an organization, I do not think so, Senator.

Senator THOMAS. Of all the things we do for the countries in OPEC, and we do not have any leverage.

Mr. Placke. No. The rest of my statement was that within individual members of OPEC, indeed we do. And I would point in particular to Saudi Arabia, which continues to be the largest foreign supplier of crude oil to the U.S. market.

And the relationship with Saudi Arabia that goes back, really, to the end of the Second World War, the tradeoff between an implicit and an increasingly explicit U.S. guarantee of Saudi Arabia's external security, in exchange for a preferential treatment of American companies in the early days of the oil development there, and increasingly Saudi commitment expressed through price to maintain itself as the leading and reliable supplier of crude to the U.S. market.

When I say price, Saudi Arabia deliberately maintains its position as the number one supplier, when it could in fact get another 50 cents a barrel or so by sending that crude oil to Far Eastern markets. So in that sense, there is even a subsidy built into it.

Senator THOMAS. A subsidy.

Mr. CARUSO. Senator, could I add to what Jim said?

Senator THOMAS. That is pretty hard to accept. But you can try it, yes.

Mr. CARUSO. I agree that the best way to deal with OPEC is on a bilateral country basis and certainly with the Saudis. But probably more importantly, since they are going to do what is in their best interest, is for us to pursue what is in our best interest. And that is diversifying our resources.

Senator THOMAS. Absolutely. But we have allowed ourselves—and we have all been involved in it, including you guys, for years we have allowed ourselves to become dependent to almost 60 per-

cent on OPEC. And I have not heard a lot of complaining about it before, and here we are.

I guess that is why I am saying, you know, it is pretty easy to get up now and talk about where we are and how we got there, but we ought to be thinking a little more about the future and see if we want that. Do we? I do not think so.

And so we ought to be talking about what we are going to do in terms of production and access and a few things here, which we have not heard much about until very recently.

Anyway, yes, sir.

Mr. PLACKE. The United States is approximately 60 percent dependent upon foreign sources of crude. Actually, we estimated 56 percent for the last year. But that is all sources, OPEC and non-OPEC.

Senator THOMAS. I understand.

Mr. PLACKE. Two of the largest suppliers to the U.S. market are Canada and Mexico, neither of which, of course, are members of OPEC.

Senator THOMAS. No, that is true. But we also have friends like Venezuela and others that it seems like maybe we could get a little more pressure there somehow. At any rate, thank you, sir.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Let me just bring out a couple of points, and I would ask if you agree. If you agree, there is no necessity of commenting further. But the statement was made by Mr. Caruso in his presentation that the irony of the 21st century, with all our technological advantages, is that through the year 2020, at least, we will depend on the same basic energy sources, namely coal, oil, natural gas, that prevailed in the 20th century. Would you agree with that?

Well, since nobody is saying otherwise, I think it is important to recognize that, because there is a significant portion of the public that assumes that through technology alternatives, renewables, we can substantially relieve ourselves of our conventional sources of energy. Now you and I know that we have expended about $5 billion to $6 billion in grants, subsidies, to bring on and assist alternative renewables, but they are still less than four percent of the market.

So if we can generally agree upon that, then I would hope that we would establish that as a premise that we are going to continue to develop alternatives and renewables, but they are not going to replace for the next 20 years our conventional sources of energy.

Now, Mr. Nugent, you feel uncomfortable with that. If you have something to say, please say it, because I want to try and move through this in a way that at least draws some conclusions.

So if we have no objection to that, then—also, Mr. Caruso, you indicated that developing an adequate and reliable energy supply to realize the promise of robust global economic growth will require significant investments that must be made immediately. Obviously you are talking about domestic investments in power generating facilities, transmission and so forth.

Further, you state decision makers in both the public and private sectors face the special challenge of balancing the objectives of economic growth and the legitimate concern about the environment.

Now, we have in the area of nuclear energy an environmental opposition, clearly. We cannot come to grips with what to do with the waste. Yet obviously nuclear has something to offer, as far as emissions are concerned. Coal, we cannot come to grips with currently the permitting process necessarily, so we are not building coal-fired plants. We have the coal and environmental objection.

Again, certain areas, if you look at the Overthrust Belt, where you have energy resources, a lot of it is withdrawn. The east coast has been withdrawn from offshore production through moratoriums, also the west coast. These are environmental objections.

Is there a way to bring the environmental community into a realization that we are an electronic society, we use more energy in spite of our efforts to conserve, and they are going to have to join with us? Otherwise, we are going to continue to, you know, dance the dance of the crab going down the beach sideways. We will not achieve what our objective is, which is to clearly get some reasonable relief from the four conventional resources of energy that we have had.

Am I missing something? How do we bring the environmental community into an awareness that conservation is not going to do it alone? Is there a way, or does the shoe have to pinch to the point where the public is inconvenienced with gas lines around the block or power outages or—anybody want to try that one? Yes, Mr. Placke?

Mr. PLACKE. Well, being a research organization, Senator, that is part of what we would suggest might contribute to the solution.

The U.S. Geological Survey could perhaps do a more complete analysis of the Overthrust Belt that you mentioned, for example, and come up with a more precise estimate of what the hydrocarbon resources are in these environmentally sensitive areas, and I think also contribute—and you might bring in the national laboratories to analyze more fully the environmental impacts and how they could be mitigated. That might begin to form the basis for a dialogue with the environmental organizations.

Ultimately, they are dependent upon public opinion. And I think in the end it is public opinion that has to be persuaded.

The CHAIRMAN. But does public opinion have to be determined by public inconvenience and public price increases?

Mr. PLACKE. Well, again, California provides a case where that is exactly what has happened.

The CHAIRMAN. I mean, I do not know if you have seen this, but I think this is food for thought. Okay? It says, "The last thing California needs is more powerplants." Now somebody is either misreading reality or knows something the rest of us do not know.

Mr. PLACKE. Well, as you had pointed out, Mr. Chairman, the consumers in California and the voters, as well, they are the same, have been protected from the impact of price. I think if there were less of that, perhaps that ad would read differently.

The CHAIRMAN. I know, but these are well-meaning people. And we assume that the people who, in the *New York Times*, take these ads and read them before they allow them to be printed and that they make some sense, even though I am sure the *New York Times* is happy to get the revenue. Maybe this same thing is playing in the State of California. I do not know. But it is inconceivable to me

that—this is called the Energy Foundation Towards a Sustainable Energy Future, which is something we all want. But if California has a supply problem, these people are not buying it. And these people represent a portion of public opinion, which they are certainly entitled to do.

This is part of the problem, ladies and gentlemen. And I do not know what we can do here, and we are supposed to be able to fix things through changes in Federal law. But if the public is not inconvenienced or does not believe that they really need more supply, I do not know.

Anyway, the last point I want to make—we have been joined by Senator Dorgan. And we appreciate his participation—is, you say, Mr. Caruso, on the issue of sanctions, which is a legitimate concern relative to bilateral sanctions, Iran, Iran, Libya, if our estimates of world oil demand in the year 2020 are reasonably correct, then these countries will have to substantially expand their current production.

By the same token, they are members of OPEC now. Saudi Arabia has a tremendous capacity for increased production. Cannot Saudi Arabia and the other OPEC countries, with the exception of these two or three, meet the demand?

Mr. CARUSO. Not according to the projections we have reviewed, including those of Mary Hutzler's office and the International Energy Agency. CERA's outlook, I think, indicates that Saudi Arabia alone would not be able to meet the demand increase.

The CHAIRMAN. Now we have oil companies, American oil companies, we are going to lose a position over in Libya or some of these countries relative to the sanction issue. And the question is, do we take off the sanction law, which expires in, what, August? And is called what, the law? Anybody know?

STAFF. The Iran/Libya Sanctions Act.

The CHAIRMAN. Yes, the Iran/Libya sanction law. Do you have any opinion on whether we should continue the sanctions when they expire or leave the matter of foreign policy up to the President?

Mr. CARUSO. It should be allowed to expire, in our view.

The CHAIRMAN. And leave it up to the President. Now Israel does not like that.

Mr. PLACKE. Well, I would also, I think, Senator—it would be worth looking into how effective the Iran/Libya Sanctions Act has been. There has not been a single country, that is, a single company, foreign company, investing in either of those two countries that has been sanctioned during the nearly 5 years that the law has been in effect.

The CHAIRMAN. You are absolutely correct.

Mr. PLACKE. So it would not seem to me that the purpose of the legislation has been served.

The CHAIRMAN. Well, you conclude with your statement, there are troubles ahead. Where is the growth of energy demand coming from? Unstable countries. Where is the growth in energy supply coming from? Unstable countries.

I could not agree with you more. You indicate that people do not care where the oil comes from in the United States, as long as it comes. It can be coming from the scorched earth of a rainforest in

Colombia. They do not care. They are unconscious. They do not care whether it comes in a foreign leaky tanker. As long as it does not leak on our shores, they do not care who has it, as opposed to the ability to develop oil domestically, keep it in U.S. tankers, under U.S. flag, with U.S. jobs.

And I think it is a responsibility of the media, who are supposed to tell the American people both sides of an issue relative to the exposure of the continued increasing our dependence on foreign oil.

Senator Dorgan, you can wind up the hearing. You can have the gavel. You can answer every question that ever came to mind.

Senator DORGAN. Mr. Chairman, let me just say that you are sounding a little bit like a protectionist here.

The CHAIRMAN. I am.

Senator DORGAN. We have this debate on globalization, and anyone who says that the interests of this country somehow ought to be considered is called a protectionist. And now I come here, and, on this energy issue, you sound a little like I do on some of the trade issues. So——

The CHAIRMAN. Well, like on the farm issues, we believe charity begins at home.

[Laughter.]

The CHAIRMAN. Thank you.

Senator DORGAN [presiding]. I will only ask two brief questions. I was at a committee hearing on defense appropriations this morning, and so I was unable to be here, but thank you for holding this hearing.

I mentioned this issue of globalization. And there is an interesting tension here with respect to energy supply and energy demand and to the robust discussion about globalization in other areas. All of a sudden, we are very concerned about our interests, but there is this tension now on the issue of globalization. And I think that it is interesting for us.

Let me ask any one of you who is able to answer this—there is a discussion among Middle Eastern OPEC countries about opening opportunities for private capital investment in oil expiration in those countries. If that were to happen, what impact would that have on investment in the United States by the major oil companies? Anybody have any observation about that?

Mr. PLACKE. Well, Senator, the process that you referred to, the so-called upstream opening in Iran, Kuwait, Saudi Arabia, has been moving very slowly.

Given the growth that we anticipate in world demand for petroleum, which we see continuing to grow at about 1.6 to 1.8 percent annually, from a base of now 76 million barrels a day of consumption worldwide, there is plenty of room for investment and development of resources around the world. Those areas attract investment because they are the low-cost producers.

Senator DORGAN. Money moves where it has its best return. So the reason I am asking the question is, if that is open to private investment in the future, that you make decisions about those investments based on return you expect. And better returns will exist in areas where it is less expensive to explore and to find oil. Would that not be the case?

Mr. PLACKE. That is certainly true.

Senator DORGAN. Would it not be the case, then, that there would be a shift in investment potential from here to there?

Mr. PLACKE. If it were an uncontrolled market, but it is not really on either end. Foreign investment—this may sound bizarre—is still regarded with some suspicion in each of those areas, or at least it is regarded as something that needs to be controlled, so that the national influence over the national resources is not lost. So it is not likely that the investment opportunities are going to be fully opened to the extent that the kinds of tradeoffs that you describe will take place.

Also, there are advantages to investing in the United States, not only locational, but the political risk factor in the United States is as close to zero as it can get. That is not true anywhere outside the United States. And as you get into riskier areas, I think companies simply would be careful about how much of that risk they chose to absorb in all of their investment alternatives.

Senator DORGAN. Ms. Hutzler, your conclusion is fairly bleak on page seven. You do, however, say that the forecasts, which you have made here, incorporate an expectation of efficiency improvements in both demand and supply, although different paths for technological development could lead to slower or more rapid efficiency gains.

What kinds of things do you think are on the horizon that could lead to more rapid efficiency gains? And what kind of public policy requirements would have to exist to make that happen?

Ms. HUTZLER. What we look at in those cases are different rates of new technologies coming on line and different capital costs and performance for them. In our Reference Case, which is based on historical trends in technology development, we see that intensity changes could decline by about 1.6 percent per year.

In the High Case that you are looking at, if we could develop some of these technologies to come on at a lower cost and greater performance, you could in fact improve that intensity to about a 1.9 percent decline rate. So it does deal with development of technologies.

Senator DORGAN. Let me make just a concluding comment. The chairman held up, I believe it was, the *Washington Post* ad asking a question about powerplants in California. Whether it is California or the general energy outlook for this country, I think we have to do a lot of things and do them right. Frankly, this may well come from one side of the debate that believes that we ought not build more powerplants, we ought to do more in conservation, radically more in conservation.

On the other hand, there are those on the other side who could probably just as easily put an ad in and probably say, no, no, what we need to do is just build, build, build. I mean, that is the only issue. Go find and produce.

Well, that is one side of the equation, but neither of these approaches provide an answer. If we do not do a lot of everything and do it right, we are not going to begin to address this country's energy issue.

I do not know whether you put up Senator Bingaman's chart today, the one that shows energy usage and shows the transportation line going up and shows production over a long period of

time and shows that either stable or going down. It seems to me that you have to address all of these issues, such as transportation usage.

Well, the next time you pull up to somebody that is driving a huge gas hog full of chrome and weight, belching smoke and getting 8 miles to the gallon, and who is complaining because they have to stop at the gas station every few miles, you know, we might ask ourselves—does this contribute to the problem? Do we have a right to drive these things? Yes. But should we complain about them? If we drive them, probably not.

We need conservation. We need aggressive, robust conservation efforts in this country. We need renewable resources. And frankly, I am a little sick and tired of the energy companies telling us renewable energy sources are largely irrelevant. They have done most of what they can to depress renewable energy sources for a long while. We need to use them, and we need to encourage them. And I think they will become commercially successful, viable, and important.

And we also need to find more and to produce more energy, oil, natural gas, and coal, using clean coal technology. We need to do a lot of things. And I just think that the voices coming down in one crevice or one corner saying "this is my position, this is what I am going to sit on," I am just telling you, is the wrong way to address this issue.

Mr. Caruso, your statement, I thought, was very interesting, because you really talk about the tensions I tried to describe to the Chairman with some mirth here about the global economy and domestic needs and our dependence and so on.

So this is a highly complicated issue. It is not going to be solved any time soon. We can go back 10, 20 or 30 years, or perhaps 70 years, and find a similar debate that was held in this U.S. Senate with just as distinguished folks testifying and folks at the dais here. And we would all be talking about, yes, we need to cut this cord, and we need to move in another direction. And perhaps 20 years from now, we will be having similar hearings.

But my hope is—I think, Mr. Caruso, you said it in your testimony. One of the ironies at the turn of the century is that, at an age where the pace of change, technological change, is almost overwhelming, the world will remain dependent up to the year 2020. And the same sources of energy, oil, natural gas, and coal, everything, virtually everything in our lives, has changed except most of the engines in our vehicles. You have to drive up to a gas pump and stick a hose in and pump some gas in. That has not changed much at all. But everything else has changed.

And there ought to be ways for us, as a society, to think our way through these problems to branch out, and give us ample opportunity to find new sources of energy and new approaches.

And even as we do that, reach agreement between the parties and the philosophies about how to do a lot of things right in developing an energy strategy that is comprehensive, and do that soon.

Thank you all for being here. I regret the brevity of my appearance, but it was a necessity caused by another hearing.

This hearing is adjourned.

[Whereupon, at 11:52 a.m., the hearing was recessed, to be reconvened on April 3, 2001.]

# U.S. ENERGY TRENDS

**TUESDAY, APRIL 3, 2001**

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, DC.*

The committee met, pursuant to notice, at 9:43 a.m., in room SD–628, Dirksen Senate Office Building, Hon. Frank Murkowski, chairman, presiding.

## OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, ladies and gentlemen. We will call the hearing to order on the Energy and Natural Resources Committee. I apologize for being tardy, and I have already been taken to task by my colleagues, so we will start off even.

The purpose of the hearing today is to consider the role of our domestic oil and natural gas resources that play such an important part of our overall energy security. We want to talk about what impediments exist to domestic production. We are pleased to have, I think, an outstanding panel of witnesses to provide expertise on the topic and look forward to their testimony.

I would encourage you as you address energy and oil specifically to address the issue of our continued dependence on oil for transportation. In spite of what you believe, even when we leave Washington, D.C., to go home, we do not go home on hot air. We have to get some gasoline for that airplane, and it has to come from some place. As we look at relief and relieving our dependence on that fuel, we need to look at some specifics. What are the alternatives, or are there any in the foreseeable future? I would hope that you can enlighten us.

The same is true as we become more dependent on natural gas for our homes and for our power generation. We look forward to the findings of a study currently be conducted by the Department of the Interior under legislation which I authored that will further define the impediments to production, or limiting production.

This last week Secretary Gale Norton, as you know, Senator Bingaman, Mary Matalin, representing the Vice President, and a group of staff were part of a delegation that visited my State of Alaska, visited the Arctic North Slope. It was a relatively quick visit; we left Friday and came back Sunday. I think we had twelve take-offs and landings, if I am not mistaken. You counted them, Jeff, on Saturday, but we went from Fairbanks to Deadhorse to Kaktovik to Nuigsut, to Alpine back to Nuigsut, to Barrow. It must have been about sixty or seventy below in Barrow on Sunday, and

even for Alaska it was a little chilly. The ranking member here finally found a pair of gloves and got some relief, but it was like it is. It is interesting to see a place like it is for most of time. There has been some criticism we did not take the group up during the summer, but I assure you there is going to be another group.

We have, as you know, considerable gas reserves in Alaska. I think there's about 12 billion barrels have been recovered from Prudhoe Bay, and there were supposed to be 10 billion barrels in the field. It is estimated by responsible geologists that about 35 trillion cubic feet of natural gas are associated with discoveries in Prudhoe Bay, and the natural petroleum reserve in Alaska, 4.5 million acres have been opened for exploration. Of course, the 1002 area of ANWR is unknown, but it is clear if we look to reducing our dependence on foreign oil, a good deal of the energy wealth of North America lies above the Arctic Circle, and we also need to use our petroleum products more efficiently to get greater conservation and, of course, develop alternative fuels. Maybe you can enlighten us on that.

There are other promising areas, of course, for development of natural gas—OCS, overthrust belt—that are necessary given our growing demand for gas, but it is interesting to look at some of the charts and recognize that OCS availability offshore on the East Coast from Maine to Florida is pretty well covered by moratoriums that mandate that there shall be no development. The same is true on the West Coast of the United States: Washington, Oregon, California. So the question is where are we going to find it?

So we have several barriers that prevent use of these resources to meet our growing energy needs. Many areas, as I have indicated, are under moratoria. Even when leases are granted, it gets hard to get the permits through. We have got administrative inaction and duplicate regulatory environment processes, disputes and legal challenges by stakeholders, local communities, environmental groups, regulatory structures not keeping pace with technology. The reduced footprint is relatively dramatic, relative to the technology available. I am told that when two thousand acres was developed in 1973, today we do it in two hundred acres. We have 3D seismic mapping, which we did not have a decade ago; horizontal drilling allows one well to replace several.

We saw this this weekend in Alaska. We have seen wells that reach out using directional drilling as much as 15 miles. So we have a technology to find and develop our oil and gas reserves in a way that minimizes impact on the environment, and we can respect the land that both people and animals depend on for their welfare. So we have got the potential here to preserve and develop at the same time, and we must preserve cultures and ecosystems alike. Some would suggest that this particular issue has become so politically polarized that it is very difficult to get people to objectively view it. It has been threatened with filibusters, and I would hope that we would rise above that and use sound science and factual information to make our decisions.

I have said before we cannot produce and cannot drill our way out of this. We need all the sources of energy to address the shortfalls, but we must look at the barriers, review them with the ways

to streamline leasing while encouraging stakeholders' dialogue to ensure safe environmental responsibility.

It is kind of interesting to see where we have been on this area. Some say progress has been made, particularly in the deep waters of the central and western Gulf of Mexico. Nearly 35 million offshore acres were leased from 1993 to 1998, representing over a 50 percent expansion in the cumulative leasing prior to that time. However, this was not due to increased access to those areas, the areas had been previously available. The increase was due to the combined effects of major technological breakthroughs and deep water royalty incentives passed by Congress in 1995 and passed, I might add, by this committee. At that time, Senator Bennett Johnson was chairman of this committee, and I supported him on that effort. That was a considerable consequence, I think, for much of the offshore development that we see today.

It is interesting to note that Western States contain 45 percent of the proven oil reserves, 35 percent of the proven gas reserves, and even a larger share of the estimated undiscovered oil and gas in the lower 48 onshore. It is kind of interesting to reflect on the reality that when we have seen moratoriums designed from time to time to accommodate some of the special interests within those States, while obviously there is a certain sensitivity, it simply takes these promising areas and puts them off-limits and we do not go back and prioritize them again.

Some of the problems that we have had continually that we are going to have to overcome are the delays by BLM in processing applications for permits, expansive interpretations of The Endangered Species Act by the BLM, Forest Service, U.S. Fish and Wildlife Service which have led to the creation of de facto critical areas which unreasonably restrict oil and gas activities by imposing dramatically reduced drilling windows. BLM's designation of previously studied wilderness study areas have become again de facto. We seem to be going through a de facto process without the Congress making the determination. The administrations and the agencies have been doing it.

In the absence of cooperation and coordination between BLM, Forest Service, EPA, FERC and other agencies in implementing national environmental policies or NEPA requirements, it has led to tremendous interagency disputes, delays for permitting, leasing. I could go on and on with what the problems are, but the problems result in obviously it becoming more difficult, more time-consuming, and more expensive. The question is, is this done in the interest wholly of environmental sensitivity and compatibility, and is it all necessary? Hopefully today we will find out a little bit more about that process—what is holding up the development and why we are becoming more and more dependent upon foreign sources for energy.

Senator Bingaman, good morning.

[The prepared statements of Senators Campbell and Dorgan follow:]

PREPARED STATEMENT OF HON. BEN NIGHTHORSE CAMPBELL, U.S. SENATOR FROM COLORADO

Thank you, Mr. Chairman. I would like to welcome all of the witnesses and my colleagues for appearing before the committee today. I am looking forward to the

testimony that you all will be providing us shortly. I am delighted to see that so many of you are here to address this critical problem.

In the past, public lands were locked up, and were prohibited from oil and gas exploration and extraction, often without legislative oversight. Known resources are sifting idly by when our nation is reeling from a dwindling supply of energy. And, our crisis is only going to get worse this summer from our inadequate supply of energy.

Granted, some of the lands which are locked up are worthy of the protection, but others were locked up for the sole purpose of prohibiting exploration and extraction of oil and gas. These are the lands and regulations that need to be revisited. Since 1992, U.S. crude oil production is down while our consumption has substantially climbed. We can help ourselves get out of this mess, but we have to be allowed to do so, even if that means opening up more lands.

Don't get me wrong, we have to have environmental safeguards so that we do not do more harm than good. The technology is there to accomplish this goal. We just have to be able to prove it. Many people think that mining operations are all big open pit mines, which is not the case. There are mining operations that are environmentally sound and have minimal degradation to the surrounding areas.

Many are going to say that even this isn't good enough, that any environmental harm is unacceptable. But, we have to be realistic. Many want the cheapest and cleanest form of energy, but they do not have any "real" solutions to replace our traditional types of power. Sure they claim that renewables are up-and-coming, but they are not in full swing yet. We have to deal with what is in front of us.

We are a nation that could use our land to supply a majority of our power needs, which would also help us to decrease our dependence on foreign oil. Our locked lands have discouraged many from trying to do what is right and now our nation is reaping the bitter fruits of this practice. I will have some questions for the witnesses that I would like them to address so that we can further explore this issue during the time for questions.

Thank you Mr. Chairman.

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PREPARED STATEMENT OF HON. BYRON L. DORGAN, U.S. SENATOR FROM NORTH DAKOTA

Mr. Chairman, I am concerned that we are having yet another hearing pertaining to the supply side of energy policy.

While I believe that we do, in fact, need to examine oil and gas exploration and development options, I also emphatically believe that we must have a balanced energy policy. That means we also need to focus on the demand side of the energy equation. I am pleased that at least one of our witnesses, Mr. Hayes, agrees with this policy approach.

We cannot drill our way out of our energy problems. Even my colleague, Chairman Murkowski, will agree with me in this regard. We must do more to promote renewable energy and energy efficiency. Yet, the Administration is proposing to cut renewable energy and energy efficiency research and development funding by approximately 30-50 percent.

Moreover, the Administration is considering delaying or doing away with proposed efficiency standards, at this very moment. These standards would improve the efficiency of clothes washers, water heaters, air conditioners and commercial heating and cooling systems. These standards, combined with others for refrigerators and room air conditioners completed earlier, would cut residential energy use by about 13% by 2020. The air conditioner standard would be the single most effective standard in reducing residential energy use. Further, the new standard for washing machines is projected to save the equivalent of the annual energy use of 21 million households, with water savings of as much as 11 trillion gallons. Not enacting these standards during an energy crisis is incomprehensible to me.

Unfortunately, the Administration instead seems to want to open up public lands and drill our way out of this problem. Opening up every last public land is not the answer. In addition, one must only look at the facts to realize that there do not appear to be so many obstacles to drilling on public lands, either, as some would have us believe.

Drilling on public lands actually increased during the past eight years, while having decreased on private lands. In fact, public lands provide a greater percentage of oil and gas to meet U.S. energy needs today than at any time in the past two decades. In 1992, during the first Bush administration and following eight years of Reagan policies, oil and gas production from the Federal lands provided 13% of overall domestic oil and gas production. By 1999, the contribution of oil and gas produc-

tion from the Federal lands as a percentage of overall domestic oil and gas production had risen to 25%. Moreover, the Bureau of Lands Management (BLM) is in the process of granting more than a thousand permits to drill for oil and gas in the Powder River Basin in Wyoming, an extremely prospective area for western oil and gas production. Again, one of our witnesses will testify to these facts.

Opening up the Arctic Refuge also is not the answer. Even President Bush is realizing this, as he stated last week. Drilling in the Arctic Refuge would take years to access and would produce only a small amount of petroleum supply. What we need instead is natural gas. I support exploring natural gas supplies in Alaska's North Slope. But this proposal, too, will take time to see to its fruition. We also need to examine exploration and development on private lands.

In the interim, the most effective steps we can take to address our immediate problems is to implement alternative conservation and renewable energy measures. These measures can be put in place far more quickly than pipelines or power plants.

So, rather than exploring impediments to oil and gas exploration and development, which are limited, we should instead be exploring ways to expedite and facilitate means to improve efforts for energy efficiency and alternative energy resources.

Thank you, Mr. Chairman.

## STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

Senator BINGAMAN. Good morning, and thank you for having the hearing, Mr. Chairman. I do think this is an important issue. I believe that there is a real need to inventory our public lands and our private lands as well and look at where the opportunities are for additional production of oil and gas in particular. I think we need to look at the various moratoria, which you have alluded to, and see whether there is any genuine prospect for relaxing any of them.

My sense is that there probably is not in most cases, at least the offshore moratoria. Those are moratoria that the previous administration supported. I believe former President Bush supported those when he was in office. I believe that current President Bush has indicated his support for those moratoria, so I do not know how far we get in trying to pursue relaxation of those moratoria. I do not know if that would be wise or productive on the part of the committee.

I do think that we need to look at all opportunities for increasing oil and gas production in an environmentally-sensitive way. I think that in addition to looking at Federal lands, we need to look at private lands. My impression is that we have seen increases in production from Federal lands in the last decade. At the same time we have seen decreases in production from State lands and private lands, and we need to see if anything can be done about that.

I also agree with you that there are enormous resources on the north slope of Alaska where we were this weekend and we need to find ways to develop some of those resources. One specific that I know the chairman is very interested in, and I also support, is to try and find a way to bring that natural gas to the lower 48 as quickly as possible and build a pipeline to accomplish that. Therefore, we have a provision in the energy bill that I introduced a week or so ago that tries to provide an incentive for early construction and use of that pipeline. I would be interested in anyone's reaction to that as to whether that is the correct direction to go in or not, but I do think we should hear some good testimony and hopefully understand the issue better when the hearing is over.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, very much. In the order of Senator Burns, Senator Thomas, Senator Cantwell, and Senator Landrieu.

## STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA

Senator BURNS. Thank you, Mr. Chairman, and I will just put my statement to record.

The CHAIRMAN. Without objection.

Senator BURNS. I think that never at a time since I have been around has there been so much interest in energy, and this shortage that we have this time covers all bases. Not only is it the production of electricity, our transportation fuel, and the overall costs—and I come from the agricultural community, and right now it has hit all segments of our ability to produce food for this nation. We do not want to forget about that for the simple reason that I do not know what the first thing you do when you get up every morning, but I know what the second thing you do is, and that is eat, and we must not forget about that. Our ability to produce a food supply, fertilizers, transportation costs, processing, purveying is all equally hit in this country, and that is going to start showing up right away, so thank you for holding this hearing, and I am interested in listening to the witnesses today.

Thank you.

[The prepared statement of Senator Burns follows:]

PREPARED STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA

Mr. Chairman, I'd like to thank you for holding this hearing to look at impediments to domestic oil and gas development. We have been spending a lot of time lately discussing this energy crisis and I appreciate that, but in my mind this hearing is different in one very significant way. Up to this point we have talked a lot about the problem, and I see this hearing as focusing on potential solutions.

I know that Montana can be part of this solution, because we are fortunate to possess great quantities of gas, oil, coal and coal bed methane reserves within our state. In fact, I held a hearing in Montana on March 10 to investigate what coal bed methane could mean in our State, and what we need to do before we proceed. Coal bed methane is one promising possibility in the range of federal land use, but that is what makes it rare. Unfortunately, most of our stories about energy development in Montana have had one common theme: lost opportunity at the hand of federal land use restrictions.

Today we have with us some folks who are very experienced in the gas and oil business, and I am looking forward to what they have to say. I think they will tell us we have the opportunity to make this country more energy independent by using some of our vast energy reserves. I believe that these energy resources can be tapped to help bring energy prices back down to a reasonable level. A great deal of these reserves exist on public land, and we owe it to the public to use these lands wisely. To me, it is only common sense that energy production should be seen as a legitimate use for public lands where that is appropriate. We seem to have forgotten that part of the equation in the last few years.

I am glad the U.S. Geologic Survey has released its report on potential energy reserves within recently declared monuments. From that report, you will see what we have known in Montana for quite a while, which is that there are significant energy reserves underlying the Upper Missouri River Monument. There is a great deal of natural gas in that area, and considering that it is in high demand as a clean-burning fuel and as an input into agricultural fertilizer, I believe we need to do what we can to use it well. Prudent development is already taking place just north of the Breaks and a reasonable boundary must be established for the Monument to allow access to this known resource and even natural gas development within the Monument.

To further this access discussion there is already a gas pipeline crossing the Missouri. Expansion of the pipeline because of increased future volumes and routine maintenance must be able to continue for both safety and continuing power genera-

tion and heating needs. This infrastructure consideration must be dealt with in any document that is finalized on the Missouri Breaks.

The Upper Missouri River Monument is a good example of how the federal government has restricted oil and gas exploration on public lands. The declaration of this monument in north central Montana was one of President Clinton's last actions in office. The monument is about 495,000 acres and includes BLM land, state land, and private land, much of it along the Missouri River. It is beautiful, remote, remarkably well-preserved, and home to some of the most promising land for natural gas in all of Montana.

Within the monument are thousands of acres of valid leases, mainly natural gas, numerous producing wells, and gas pipelines. Under the current arrangement, these have been tied up from any further development. Even though the draft management plan states that the "designation does not affect valid oil and gas leases" the truth is that without access to pipelines, and reasonable turnaround time for permit approval, leaseholders will not be able to pursue their rightful ownership to the gas within monument boundaries. According to current leaseholders, the permit approval for these leases has averaged about 60 days, up until word leaked that the Monument designation was being considered, and since then some have been waiting for a year or more.

When we look at States like Montana and others like it, the careful extraction on natural gas and oil could contribute significantly to the tax base of the State and local governments. When we tie that land up and bar development of the resource base, we also limit the ability of state and local governments access this valuable source of income. Instead, the federal government locks it up, and pays the counties PILT money for the lost revenue. That just doesn't make any sense. There is a very real economic impact to the State treasury, and to the Federal tax rolls (the State would receive one-half of Federal revenues from royalties and land sales).

Continued restriction on the Federal land base and the contribution it makes to western States treasuries needs to end. The tax burden continues to shift back to the State level without due compensation from the Federal government. The Federal government cannot afford to take revenue sources off the table and continue writing checks to cover bad policy decisions and extremely poor management. That just isn't right.

I support careful management, and that includes looking at all options for a piece of land. The mindset that no management is good management does not sit well with me, and that is the attitude I have seen in regard to energy resources on public lands. I look forward to hearing the testimony of our witnesses today, and finding out how we can improve the viability of energy development on public lands.

The CHAIRMAN. Thank you very much, Senator Burns.

Senator Thomas.

## STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM WYOMING

Senator THOMAS. Thank you, sir, and I too appreciate this hearing. I am very much interested in today's topic, of course, which is how we improve and increase our domestic oil and gas production. Obviously one of the things that has to be done is dispel this myth that development versus environment is the key issue. I am persuaded we can do both; we have shown that we can do that, I think, in Wyoming. There is substantially less of the mineral reserves that is leased now on Federal lands than there was. It has declined by more than 65 percent since the early 1980's, only about 17 percent of the total estate compared to 72 before. I am not suggesting it ought to be back where it was, but we have to take a look at it.

I think the broader thing—and I have said this over and over again, but I feel very strongly—if we are going to have a policy that brings us in energy where we want to be, we have to improve domestic production, we have to have access to public lands, the same time protect the environment. That's our task. I think we have to have diversity in the kinds of sources that we have. We have to

begin to use them in that way. We have produce renewables. They are a very small factor now but can be larger. We have to have some conservation as part of that policy. We have to do something about rights of way so that we can move this energy from one place to another so that it can be used. I think there is a possibility for incentives when they have low production wells and things of that kind. Regulations need to be reasonable, and we have to respond as we go along to some of the market signals which we failed to do in California.

In any event, there is a lot we can do. I look forward to it. I was listening to the radio—something about his reaction was a little less talk and a little more action. Maybe we need to do that.

The CHAIRMAN. Thank you very much.

Senator Cantwell, good morning.

Senator CANTWELL. Good morning, Mr. Chairman. Thank you. And I too will submit my comments for the record.

The CHAIRMAN. Would you speak a little more in the microphone, please? It doesn't pick up very well.

**STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON**

Senator CANTWELL. Thank you, Mr. Chairman. Please excuse the fact that I will not be here for part of the hearing. I also have a Judiciary hearing and I think some of our other members are doing double duty too.

This is an important hearing, and I would like to associate myself with the comments of Senator Bingaman. We have to look at this energy crisis that we are facing in the Northwest, not only on the supply side but also making sure that we do not put undue pressures, permanent strains, on our environment. This past weekend we just had a day-long conference of the entire delegation on conservation. I was most impressed by a group of students from a middle school in Seattle who said, "What have we learned from the last energy crisis that we are going to apply today so as not to make the same mistakes?"

We also have a group of high school students from Port Townsend who are in the audience, and who will provide various members here with research that they have done on recyclable materials. While today we are going to hear about the supply side and appreciate the chairman's dedication to the supply side of this issue, we need to remember that there is a delicate balance here both in the short term and the long term.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Cantwell.

Senator Landrieu.

**STATEMENT OF HON. MARY L. LANDRIEU, U.S. SENATOR FROM LOUISIANA**

Senator LANDRIEU. Mr. Chairman, I thank you and the ranking member for holding this hearing, and I look forward to hearing from our distinguished panelists and am hopeful they can shed some additional light on this important issue for our nation. I am going to submit my statement for the record.

The CHAIRMAN. Without objection.

Senator LANDRIEU. I would just like to make a couple of brief comments. First, the chairman has held hours of hearings over the last year and I am convinced that the most immediate problem is the transmission grid. Before we even work on supply or demand, the transmission grid, the transmission lines, the way that we move from the production to the use, whether it is gas lines or electricity lines, is something that has to be a priority in any legislative initiative that we take up in this committee.

Secondly, I agree with our chairman and ranking member that the diversity, quality and quantity of our supply are important, and that one lesson we can learn from the last energy crisis is we have to emphasize diversity of supply and cannot be over-reliant on one source of energy. As a State that has been a proud producer of oil and natural gas and continues to advocate for their use, I also support other sources of energy such as clean coal and nuclear.

In addition, I do think that we must focus our efforts on efficiency and conservation. However, we should continue to look at opportunities to expand our supply. The question is should one or two States stand in the way of a Nation that needs a steady supply of energy to keep our economy moving?

I know these are tough issues, and there are some delegations that feel very strongly about moratoria, but we must evaluate whether these moratoria are serving our Nation's best interest. I believe we need to look at all opportunities for production whether in the Rocky Mountains, the Gulf of Mexico, or even Alaska, while still emphasizing energy efficiency and conservation.

Thank you, Mr. Chairman.

[The prepared statement of Senator Landrieu follows:]

PREPARED STATEMENT OF HON. MARY L. LANDRIEU, U.S. SENATOR FROM LOUISIANA

Thank you, Mr. Chairman. I want to thank you for holding this hearing today on the development of domestic oil and natural gas resources as part of a national energy policy.

We are well aware that the U.S. is currently experiencing unusually high and volatile energy prices. Residents of my state of Louisiana as well as citizens across the country faced abnormally high gas prices this past winter and often could not pay their bills. Most of the forecasts for this summer are even more ominous. While there are some steps we can take in the short run to help, the situation is complex in nature and any attempt at an overall solution will require a number of different remedies over the long run focusing on both the supply and demand side of the equation. However, the need to increase our domestic supply of energy is apparent.

One of the great strengths of the electric supply system in this country is the contribution that comes from a variety of fuels such as coal, nuclear, natural gas, hydropower, oil and renewable energy. The diversity of available fuels we have at our disposal should enable us to balance cost, availability and environmental impacts to the best advantage. Unfortunately, we have not made adequate use of this supply. Today our focus is domestic oil and natural gas resources. In 1998, natural gas and petroleum combined for approximately 65% of total energy consumption in the U.S. I am hopeful that during today's hearing we can explore any and all reasonable opportunities for potential development of these respective resources.

We have available in this country plentiful natural gas and oil resources that can be developed in an efficient and environmentally sensitive manner. One area with great potential is the deep water of the Gulf of Mexico which has had an explosion of development in recent years. The Mineral Management Service (MMS) is scheduled to hold a lease sale, Lease Sale 181, in December of 2001 for an area in the Eastern planning area of the Gulf. The lease sale would cover a narrow strip of federal waters directly south of the Alabama coast line which expands into a broader area a hundred miles out in the Gulf. Industry has developed oil and gas in this huge expanse of federal waters for years in a safe and environmentally sound man-

ner. The MMS estimates 240 million barrels of oil and 1.8 trillion cubic feet of natural gas will be developed from this area. Those figures could go as high as 370 million barrels of oil and 3.2 trillion cubic feet of natural gas. When the MMS prepared the leasing plan for this five year period, extensive public meetings and consultations with states were conducted. This area is a huge expanse of federal waters where industry has developed oil and gas for years in a safe and environmentally sound manner. The Minerals Management Service (MMS) should proceed with Lease Sale 181 in December of this year as planned.

The waters of the Gulf of Mexico have proven to be a plentiful source of oil and natural gas and are predicted to remain so in the immediate future. Nearly 80% of the Federal oil and gas that is produced annually from the Outer Continental Shelf is produced from the waters adjacent to the State of Louisiana and I am happy for this development to continue. However, the supply in the Gulf is not without limits. One day this supply will cease. We owe it to ourselves and future generations to at least consider other areas both on and offshore for prospective development. While we cannot recklessly cast aside any restrictions to development on certain lands and off certain shores that are in place out of concern for the environment, an analysis of the costs and benefits of such development which takes into account advances in exploration and production technologies does not seem unreasonable.

One area in particular that I am interested in hearing about from the witnesses is the Rocky Mountain region and its potential natural gas supply. The 1999 National Petroleum Council study on Natural Gas found that, in addition to the Gulf of Mexico, the other most promising region for future gas production was the Rocky Mountains. The report estimated that an estimated 40%—or 137 TCF—of potential gas resource in the Rockies is on federal land that is either closed to exploration or is open under restrictive provisions. To ignore the potential of this area does not seem like good policy.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much. I appreciate your statement, and we will proceed with our witnesses now. Let me introduce them at this time. We have Panel One, Dr. Patrick Leahy, a good Irishman, Associate Director of Geology, U.S. Geological Service from Reston, Virginia; Mr. Matt Simmons, president, Simmons & Company International from the great State of Texas, downtown Houston; the Honorable David Hayes, who is no stranger to us, although he is wearing a new badge—he has joined the fraternity of lawyers which is expanding all the time in Washington—as a partner with Latham & Watkins here in Washington, D.C.; Mr. Mark Rubin, who is general manager of Upstream. And do you want to explain the difference between upstream and downstream?

Mr. RUBIN. Upstream is exploration and production.

The CHAIRMAN. And downstream is?

Mr. RUBIN. Refining, marketing, that kind of thing.

The CHAIRMAN. I wanted to make sure because some of our colleagues, including myself, have been both upstream and downstream, but not necessarily in the petroleum business.

Mr. RUBIN. It is up the creek.

The CHAIRMAN. It is up the creek? Okay. Well, I was maintaining the metaphor here, and I thought it was appropriate for this distinguished group, but he comes to us as general manager, Upstream, American Petroleum Institute in Washington, D.C. Mr. Neal Stanley—Mr. Stanley is vice president, Western Region, Forest Oil Corporation of Denver, on behalf of the Independent Petroleum Producers of America. If we have got that right, we will proceed and would ask that you try to keep your statements to about seven minutes, and then when we are all through, we will have some questions for you. Is that fair enough? Thank you.

**STATEMENT OF DR. P. PATRICK LEAHY, ASSOCIATE DIRECTOR FOR GEOLOGY, U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR**

Dr. LEAHY. Mr. Chairman and distinguished members of the committee, thank you for this opportunity to present on behalf of the U.S. Geological Survey, testimony regarding our assessment of oil and gas resources nationally, and our assessment strategy of Federal lands as called for in the recently enacted Energy Act of 2000. I will summarize my written statement in the interest of time.

The USGS is responsible for assessing undiscovered oil and gas resources of all onshore and State offshore areas of the Nation. In February 1995, the USGS released the National Assessment of the U.S. Oil and Gas Resources. We are updating that assessment in selected regions thought to have high potential for undiscovered natural gas, including coal bed methane and gas hydrate. This update will be completed in 2004 with interim products available in early 2002. The updated assessment will include allocations of undiscovered oil and gas resources to Federal lands. Additionally, the USGS is completing a national coal resource assessment during 2001. Assessments of some areas have already been released relative to the coal.

The 1995 USGS assessment of the Nation's undiscovered oil and gas was conducted in collaboration with the State geological surveys, the Minerals Management Service, and other Federal agencies, and industry geologists under the auspices of the American Association of Petroleum Geologists. Assuming existing technology, there are approximately 113 billion barrels of technically recoverable oil on shore and in State waters. The technically recoverable conventional natural gas equals approximately 716 trillion cubic feet. When one includes unconventional gas resources, the total increases to 1,074 trillion cubic feet.

The total technically recoverable oil and gas resource base on shore and in State waters of the United States is displayed in the table on page two of my written statement.

In January 1998, the 1995 assessment was used and USGS published a report that provided estimates of the volumes of undiscovered oil and gas on Federal lands. Estimates of oil in undiscovered conventional fields ranged from 4.4 to 12.8 billion barrels, with a mean value of 7.5 billion barrels. Estimates of technically recoverable gas in undiscovered conventional fields ranged from 34 to 96 trillion cubic feet.

The CHAIRMAN. What is the difference between a conventional field and a nonconventional field?

Dr. LEAHY. Nonconventional fields make our continuous gas resources. They are not in structural traps or sedimentary traps, so things like coal bed methane would be considered unconventional.

The CHAIRMAN. What is conventional?

Dr. LEAHY. Conventional are those gases that are in stratigraphic traps so that you drill into the trap and structural traps, so they are discrete resources.

As before when unconventional gas resources are included, the volume increases. Estimated volumes of undiscovered oil and gas

and natural gas liquids in onshore Federal lands of January 1994 are displayed in the table on page three of my statement.

[Chart.]

Dr. LEAHY. I would like to refer to this poster now. This shows the 113 billion barrels of oil, as well as the 1,074 trillion cubic feet of natural gas in onshore and State waters. It also shows the breakdown as a percentage into four major categories: crude resources, reserve growth in known fields, and undiscovered resources on both Federal lands and non-Federal lands. And the colors that were used are identical in both graphs.

What I would like to do now is talk a little bit about the Energy Act of 2000. Section 604 of that Act requires the Secretary of the Interior to conduct an inventory of energy resources and the restrictions and impediments to their development on Federal lands. It is our understanding that the role of the USGS will be to assess the oil and gas resources of basins with Federal land ownership using USGS assessment methodology. Then USGS geologists will allocate resource estimates to those specific land parcels owned by the Federal Government. USGS resource assessments will be combined with reserve volumes from the Department of Energy and will be incorporated into a geographic information system which shows the spatial distribution of potential resources as well as the known reserves. The resource and reserve information will be integrated with geographic information on the restrictions and impediments constructed by BLM and the Forest Service, and the inventory will be provided to Congress within two years of the enactment of the legislation which was this past November.

I have also been asked as part of my testimony to talk a little bit about the Minerals Management Service, and I will provide to you the results of the Mineral Management Service 2000 assessment of the Federal Outer Continental Shelf undiscovered oil and gas resources. The part I have not talked about are shown in these graphs.

MMS estimates that the total mean undiscovered conventionally-recoverable resources for the United States OCS are 75 billion barrels of oil and 362 trillion cubic feet of gas.

Mr. Chairman, thank you for the opportunity to testify, and I will be happy to respond to any questions the committee has.

[The prepared statement of Mr. Leahy follows:]

PREPARED STATEMENT OF DR. P. PATRICK LEAHY, ASSOCIATE DIRECTOR FOR GEOLOGY, U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

Mr. Chairman and Members of the Committee, thank you for this opportunity to present, on behalf of the U.S. Geological Survey (USGS), testimony regarding our national assessment of onshore oil and natural gas resources. Additionally, the Committee has requested that we include information recently provided by the Minerals Management Service (MMS) to the Congress concerning estimates of the undiscovered oil and natural gas resources of the Outer Continental Shelf (OCS).

Within the Federal Government, the USGS is responsible for assessing undiscovered oil and gas resources of all onshore and State offshore areas of the Nation. In February 1995, the USGS released the *National Assessment of United States Oil and Gas Resources.* Currently, we are updating that assessment in selected regions thought to have high potential for undiscovered natural gas, including coal-bed methane and gas hydrate. This update will be completed in 2004, with interim products available in early 2002. The updated assessment will include allocations of undiscovered oil and gas resources to Federal lands. Additionally, the USGS is completing a National Coal Resource Assessment during 2001. To date, coal resource

assessments of the Colorado Plateau and of the Northern Rocky Mountains and Great Plains have been released, and coal resource assessments of the Appalachian and Illinois Basins, and Gulf Coast Region will be available later in 2001. USGS coal assessments also identify volumes of coal under Federally owned lands, and of Federally owned coal under privately owned lands, where present.

MMS is responsible for developing estimates of Federal offshore crude oil and natural gas resources. The most recent MMS resource assessment was completed in 2000, and I will discuss some of the highlights of that assessment later in my testimony. I would also like to submit for the record a copy of the testimony MMS presented on its most recent resource assessment before the House Resources Subcommittee on Energy and Mineral Resources on March 22, 2001.

USGS 1995 NATIONAL ASSESSMENT OF UNITED STATES OIL AND GAS RESOURCES

The 1995 USGS assessment of the Nation's onshore undiscovered oil and gas was published in digital format on a CD-ROM (USGS Digital Data Series-30) and in a non-technical summary, as USGS Circular 1118. The Assessment was conducted in collaboration with State Geological Surveys, with MMS, and with industry geologists under the auspices of the American Association of Petroleum Geologists. Additional cooperation with the Bureau of Land Management, National Park Service, U.S. Forest Service, and Bureau of Indian Affairs was essential for the USGS to generate information regarding oil and gas resources on Federal lands. The current update of the 1995 assessment is being conducted with many of the same partners.

Assuming existing technology, there are approximately 112 billion barrels of technically recoverable oil onshore and in State waters, according to the USGS's most recent assessment. Technically recoverable resources are those that may be recoverable using current technology without regard to cost. Economically recoverable resources are that part of the technically recoverable resource for which economic factors are included and which can be recovered at a given market price. This includes measured (proved) reserves, future additions to reserves in existing fields (reserve growth), and undiscovered resources. The technically recoverable conventional resources of natural gas in measured reserves, future additions to reserves in existing fields, and undiscovered accumulations equal approximately 716 trillion cubic feet of gas.

In addition to conventional gas resources, the USGS has made an assessment of technically recoverable resources in continuous-type (largely unconventional) accumulations. We estimate about 308 TCFG (trillion cubic feet of gas) of technically recoverable natural gas in continuous-type deposits in sandstones, shales, and chalks, and almost 50 TCFG of technically recoverable gas in coal beds. The total technically recoverable oil and gas resource base onshore and in State waters of the United States is displayed in the table below.

RESULTS OF THE USGS 1995 NATIONAL OIL AND GAS ASSESSMENT

| Resource category | Oil (billion barrels) 1995 | Gas (trillion cu. ft.) 1995 | Natural gas liquids (billion barrels) 1995 |
|---|---|---|---|
| Undiscovered resources | | | |
| Conventional Accumulations | 30 | 259 | 7 |
| Unconventional Accumulations. | | | |
| Sedimentary reservoirs | 2 | 308 | 2 |
| Coal-bed methane | NA | 50 | NA |
| Anticipated Reserve Growth | 60 | 322 | 13 |
| Total | 92 | 939 | 22 |
| Proved Reserves (in 1994) | 20 | 135 | 7 |
| Total | 112 | 1,074 | 29 |

The estimates presented in this testimony reflect USGS understanding as of January 1, 1994. They are intended to capture the range of uncertainty, to provide indicators of the relative potential of various petroleum provinces, and to provide a useful guide in considering possible effects of future oil- and gas-related activities within the United States.

The geographic information system (GIS) coverages contained in this assessment and related databases provide the capability to estimate oil and gas resource poten-

tial on specific tracts of land, including those owned and/or managed by the Federal Government. This process is called allocation, based on expert opinion, and is accomplished using a methodology that takes into consideration all geologic information available about the basin.

1995 NATIONAL OIL AND GAS ASSESSMENT AND ONSHORE FEDERAL LANDS (1998)

In January 1998, the USGS published an Open-File Report (OFR 95-0075-N) that reported estimates of volumes of undiscovered oil and gas on Federal lands. Estimates of oil in undiscovered conventional fields range from 4.4 to 12.8 billion barrels (BBO), with a mean value of 7.5 BBO. Estimates of technically recoverable gas in undiscovered conventional fields range from 34.0 to 96.8 trillion cubic feet (TCF), with a mean value of 57.9 TCF. Almost 85 percent of the assessed natural gas in undiscovered conventional accumulations was non-associated gas, that is, gas in gas fields rather than gas in oil fields. Estimates of technically recoverable resources in conventional (continuous type) accumulations for oil are from 0.2 to 0.6 BBO, with a mean value of 0.3 BBO, and for gas, from 72.3 to 202.4 TCF, with a mean value of 127.1 TCF. These ranges of estimates correspond to 95 percent probability (19 in 20 chance) and 5 percent probability (1 in 20 chance) respectively, of a least those amounts occurring.

An economic evaluation was applied to these technically recoverable estimates. Our study concluded that at $30 per barrel for oil and $3.34 per thousand cubic feet of gas, 3.3 BBO oil and 13.6 TCF in undiscovered conventional fields can be found, developed, and produced. In addition, at these estimated prices, 0.2 BBO oil and 11.4 TCF in continuous-type accumulations and 11.8 TCF of coalbed gas can be developed.

Estimated volumes of undiscovered oil, gas, and natural gas liquids in onshore Federal lands, as of January 1994 are displayed in the table below.

| | Technically recoverable | | | Economically recoverable* | |
|---|---|---|---|---|---|
| | $F_{95}$ | Mean | $F_{05}$ | $18/bbl $2/mcf | $30/bbl $3.34/mcf |
| Conventional | | | | | |
| Oil (BBO)** | 4.4 | 7.5 | 12.8 | 1.6 | 3.3 |
| Gas (TCF) | 34.0 | 57.9 | 96.8 | 9.7 | 13.6 |
| NGL (BBL) | 1.1 | 1.8 | 2.7 | 0.7 | 0.9 |
| Unconventional | | | | | |
| Oil (BBO) | 0.2 | 0.3 | 0.6 | 0.1 | 0.1 |
| Gas (TCF) | 72.4 | 127.1 | 202.4 | 6.1 | 11.4 |
| NGL (BBL) | 0.1 | 1.5 | 2.6 | 0.0 | 0.1 |
| Coalbed methane (TCF) | 13.0 | 16.1 | 19.6 | 7.0 | 11.8 |

* Includes cost of finding, developing, and producing the resource. Based on mean values of technically recoverable estimate.

** BBO=billion barrels oil; TCF=trillion cubic feet; BBL=billion barrels liquid, mcf=thousand cubic feet.

APPLICATIONS OF THE USGS 1995 NATIONAL OIL AND GAS RESOURCE ASSESSMENT

The results of the USGS National Oil and Gas Resource Assessment have been used by the Energy Information Administration for its *Annual Energy Outlook*, by the California Energy Commission and Canadian Energy Board to model inter-regional natural gas supply and demand and the resulting economic impacts, and by numerous petroleum companies as a basis for evaluating risk associated with exploration and development of domestic oil and gas resources.

Many Federal agencies use the information in the USGS National Oil and Gas Assessment for land-use planning, energy policy formulation, and economic forecasting. Customers include the Department of the Interior, Bureau of Land Management, National Park Service, U.S. Forest Service, Bureau of Indian Affairs, Energy Information Administration, and the Department of Energy, among others. In addition, most State Geological Surveys and/or State Divisions of Oil and Gas use the USGS assessment for regional and local resource evaluation and lease planning purposes. Many private sector organizations also use the digital oil and gas assessment results, including environmental protection advocacy groups, petroleum exploration companies, and utility companies (including natural gas and electricity utilities).

SEC. 604 ENERGY ACT OF 2000

The Secretary of the Interior is charged with conducting an inventory of energy resources and the restrictions and impediments to their development on Federal Lands in Section 604 of the Energy Act of 2000, signed into law on November 9, 2000. The exact text is given below:

SEC. 604. SCIENTIFIC INVENTORY OF OIL AND GAS RESERVES.

IN GENERAL.—The Secretary of the Interior, in consultation with the Secretaries of Agriculture and Energy, shall conduct an inventory of all onshore Federal lands. The inventory shall identify—

(1) the United States Geological Survey reserve estimates of the oil and gas resources underlying these lands; and

(2) the extent and nature of any restrictions or impediments to the development of such resources.

(b) REGULAR UPDATE.—Once completed the USGS reserve estimates and the surface availability data as provided in subsection (a)(2) shall be regularly updated and made publicly available.

(c) INVENTORY.—The inventory shall be provided to the Committee on Resources of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate within 2 years after the date of the enactment of this section.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated such sums as may be necessary to implement this section.

It is our understanding that the role of the USGS will be to assess the oil and gas resources of oil and gas-bearing basins with Federal land ownership, consistent with the USGS assessment and allocation methodology. Then, USGS geologists will allocate resource estimates to those specific land parcels owned by the Federal government. The USGS resource estimates will be combined with reserve volumes from the DOE/EIA, and will be incorporated into a geographic information system (GIS) that shows the spatial distribution of those potential resources and known reserves. The resource and reserve GIS will be integrated with a GIS of restrictions and impediments constructed by BLM and USFS. The USGS has met several times with representatives of the Bureau of Land Management (BLM), the US Forest Service, the US Department of Energy and their Energy Information Administration and the staff of this committee to discuss plans to produce this inventory.

The USGS intends to use some of the resource estimates from the 1995 National Oil and Gas Assessment, for which there are not significant new data, and will update resource estimates for the gas-prone areas of the country for which we have new data and are developing improved assessment methods.

THE MINERALS MANAGEMENT SERVICE'S 2000 OCS RESOURCE ASSESSMENT

As background, MMS's mission consists of two major programs: Offshore Minerals Management and Minerals Revenue Management. The leasing and oversight of mineral operations on the Outer Continental Shelf (OCS) and all mineral revenue management functions for Federal (onshore and offshore) and American Indian lands are centralized within the bureau. In 2000, OCS oil and natural gas production accounted for roughly 25 and 26 percent, respectively, or our nation's domestic energy production—oil production was over 500 million barrels and natural gas production was over 5 trillion cubic feet. The amount of oil and natural gas production in 2000 was the most ever produced on the OCS. In addition, in fiscal year 2000, MMS collected and distributed about $7.8 billion in mineral leasing revenues from Federal and American Indian lands.

In its role as manager of the Nation's OCS energy and non-energy mineral resources, MMS is responsible for assessing those resources; determining if they can be developed in an environmentally sound manner; and if leased, regulating activities to ensure safety and environmental protection. An integral element in that mission is to identify the most promising areas of the OCS for the occurrence of crude oil and natural gas accumulations and to quantify the amounts of oil and natural gas that may exist in these areas.

Since its creation in 1982, MMS has completed four systematic assessments of Federal OCS undiscovered oil and natural gas resources, including its most recent assessment. The 2000 resource assessment was done to support staff work and analysis needed in formulating the next 5-Year Oil and Gas Leasing Program covering the timeframe 2002-2007. It should be noted that the methodology for the 2000 assessment has not changed significantly from that used in the previous 1995 assessment.

The 2000 assessment presents the updated assessment results since the 1995 assessment for the Alaska, Atlantic, and Gulf of Mexico OCS Regions. In the Alaska

Region only the Beaufort and Chukchi Seas, Hope Basin, and Cook Inlet areas were updated, as other planning areas lacked new data and changes since the last assessment. The Pacific OCS Region was not updated for the same reasons. The Atlantic OCS Region was re-evaluated to reflect recent exploration results offshore Nova Scotia, current exploration and production technologies, and to make the water depth divisions compatible with the ones now being used in the Gulf of Mexico.

The MMS has recently made public the 2000 assessment, and I have included a copy of the assessment with my written testimony for the hearing record. MMS estimates that the total mean undiscovered, conventionally recoverable resources for the United States OCS are 75.0 billion barrels of oil and 362.2 trillion cubic feet of natural gas. Within that total, MMS determined that the undiscovered conventionally recoverable resources foregone by the 1998 moratoria (i.e., the President's June 1998 OCS decision) would be approximately 16 billion barrels of oil and 62 trillion cubic feet of gas.

The total mean undiscovered economically recoverable resources for the United States OCS are 26.6 billion barrels of oil and 116.8 trillion cubic feet of gas at prices of $18 per barrel and $2.11 per thousand cubic feet, respectively, and 46.7 billion barrels of oil and 168.1 trillion cubic feet of gas at prices of $30 barrel and $3.52 per thousand cubic feet, respectively.

Mr. Chairman, this concludes my remarks. However, I would be happy to respond to any questions members of the committee may have.

The CHAIRMAN. I think when we get to your questions, we will probably get some questions relative to how much of this OCS is off-limits because of moratoria, and how much is actually available.

Mr. Matt Simmons.

**STATEMENT OF MATTHEW R. SIMMONS, PRESIDENT, SIMMONS & COMPANY INTERNATIONAL**

Mr. SIMMONS. Chairman Murkowski and Senators, I first of all commend this important committee for conducting hearings on the impediments to developing added oil and gas supplies. For far too long this topic lingered on the sidelines of America's critical issues. America no longer has the luxury of debating whether domestic energy is important or not because we are now in the early stages of, in my opinion, the most serious energy crisis this country has ever faced. It will become more serious over time, and if we do not correct the severe energy problems we now face, America's economic future is grim.

As our energy crisis unfolds, it could become the most critical threat to our economy since World War II. The energy crisis is very real, as we have run out of virtually all spare energy capacity in all three basic forms of energy: oil, natural gas, and electricity. And we have run out of all three almost simultaneously. We accidentally created a perfect energy storm.

There are still many skeptics—most well-intended but simply misinformed—who say the energy crisis is not real. Other skeptics argue that even if the problem is real, the solution is not on the supply end. This is merely a bad policy of draining America first. Instead they would argue that we should either conserve our way out of this problem or finally embrace renewable energy which has been ignored for too long. These concepts would be worthy topics to debate had we not allowed a true crisis to arise. It is now time to buckle down to the real energy issues we face, to roll up our sleeves and finally solve our current energy mess.

Winter is finally coming to an end, and it became a true energy winter of discontent, causing the most prosperous State in the most affluent country on earth to suffer through frequent energy blackouts. The Northeast got through the winter without running out of

heating oil but had Europe's winter been colder, the record levels of Russian and European heating oil we imported would not have spared yet another energy crisis on our east coast, too. With winter ending, America now needs to shift its focus to the threat of a potentially hot and humid summer. If this summer's weather is as hot as the summer of 1999, peak electricity demand will be far higher than last year and we could get ultimately get a wake up call with blackouts that potentially stretching on both of our coasts at the same time.

To make matters worse, our gasoline stocks are lower than the low levels of a year ago, and reformulated additives are at far lower levels. The grim reality is that we are now in the early stages of a very serious energy crisis. For years America had a comfortable cushion of spare energy capacity. In the petroleum market, this was a combination of commercial petroleum stocks with days or even weeks of extra supplies, but we've whittled this down to less than a day, or even a few hours, in too many aspects of our petroleum system. In natural gas, our spare margin was a massive underground system of natural gas storage. Today, natural gas storage levels are also at historic lows.

In electricity margins, the reserve margins are now gone in most States whenever weather reaches hot or cold extremes. These energy problems cannot be ignored. I certainly do not need to remind this committee that the U.S. economy has never grown when energy consumption has declined. There are only two ways to solve this problem. The easy way is to merely use a lot less energy. On the surface, this sounds like a plea for energy conservation, but anyone doing any hard analysis of the real numbers will see the numbers do not work.

Let me give just two examples to illustrate this point. If we suddenly had a fleet of one million 80-mile-per-gallon vehicles on our roads taking the place of one million average automobiles, this would only save 50 thousand barrels of oil use each day. Ten wells or less in the deep water Gulf of Mexico produces an equivalent energy amount. Refrigerator——

The CHAIRMAN. Could you repeat that?

Mr. SIMMONS. If we created a fleet of one million 80-mile-per-gallon cars and they replaced one million conventional cars, that would save 50 thousand barrels a day. Not much.

Refrigerators are the single biggest energy consumption unit in all of our homes. If a new generation of refrigerators using 50 percent less electricity suddenly took the place of all 100 million refrigerators in all of our homes, this would save 2.5 percent of the electricity use we use each day, or 1 percent of America's daily energy use.

Conservation is extremely important for America to embrace, but it does not provide a silver bullet to solve our energy crisis. Renewable energy sources are an important ingredient of our long-term energy mix, but we need to be extremely realistic about how tiny these future energy sources are. Less than one-tenth of 1 percent of the electricity we use this year came from wind, solar, and biomass. Take away biomass, and the balance provides only one-thousandth of 1 percent of our electricity use.

There is only one way to solve our energy problems, and the solution involves increasing our energy supplies in all forms of energy, including an ultimate return to more nuclear power in the United States, and major increases in coal use, hopefully accompanied by startling breakthroughs in clean coal technology.

We can also never wean the country from imported oil and imported natural gas, but it is a dangerous assumption to believe that foreign imports of oil and gas will always solve our severe energy crunch. Our infrastructure is simply not plumbed for any additional foreign supplies, and the foreign oil and gas markets are also getting very tight. No country is ever going to supply our needs before taking care of their own energy demands first. At the end of the day, we have to increase our domestic supply of oil and natural gas, but getting this done requires fast action by both public and private sectors to begin eliminating all of the obstacles that now make it so hard to make real gains in the supply of either domestic gas or oil.

Access to where these reserves reside is obviously extremely important. While it is politically popular to attack the need to open up a few thousand acres of ANWR, this important area could create several hundred thousand barrels a day of extra oil and natural gas, and possibly even far more. So it is too important to abandon. It is time for ANWR's opponents to stop broadcasting photographs of pristine alpine mountain meadows of areas within the 19 million acre reserve which happen to be hundreds of miles away from where any oil and gas development would ever take place.

Lease Sale 181 in the eastern portion of the Gulf of Mexico is just as vital as ANWR, perhaps even more so. This highly gas-prone area is over 100 miles west of Florida at its closest point, but it is right next to the most efficient infrastructure to bring these reserves to where they can be consumed.

The Department of the Interior is just beginning a critically important survey or inventory of all of the reserve prospects to the lower 48 States. I would highly encourage expanding this inventory assessment to the entire Outer Continental Shelf of the United States, including the waters offshore of California. This exercise does not commit any area to development, it would merely help identify where emergency relief might be found.

How tragic it would be to see the economy of a State like California destroyed through a lack of natural gas and electricity, all because natural gas lying just off its coast was never developed. Access is not the only impediment to increasing domestic supplies. The list of other barriers is very lengthy. Many of these obstacles involve a fragile capacity throughout most of the private sector. Few of the various parts of the energy business have any near-term ability to respond in any quick matter to creating more domestic supply if all the access issues were resolved, but no private sector participant is likely to begin a costly and complex expansion of its capacity on the mere hope that access will someday be granted.

Solving our energy crisis will take a long time. The quicker our country gets started on this task, the sooner the first signs of relief will occur.

Mr. Chairman, thank you for the opportunity to address this hearing.

[The prepared statement of Mr. Simmons follows:]

PREPARED STATEMENT OF MATTHEW R. SIMMONS, PRESIDENT, SIMMONS & COMPANY INTERNATIONAL

Chairman Murkowski and members of the Senate Energy and Natural Resources Committee, I am Matthew Simmons, president of Simmons & Company International, a specialized energy investment bank. I have spent the past 28 years focusing exclusively on energy related investment banking and energy research. I am a member of the National Petroleum Council and was a member of the Bush-Cheney Energy Transition Advisory Committee. I also am a past Chairman of the National Ocean Industry Association. I served as the Demand Task Force Chairman on the National Petroleum Council's extremely important review of natural gas and the challenges we face in addressing a future market likely to exceed 30 tcf per year.

I commend this important Senate Committee for conducting these hearings today on the impediments to developing added domestic oil and natural gas supplies. For far too long this topic lingered on the sidelines of America's critical issues. While some would occasionally warn that the country was taking its energy issues far too casually, as long as cheap energy prices persisted and no energy shortages occurred, it was hard for most Americans to focus on energy issues, particularly if a serious review implied the need to ultimately pay higher prices for a key resource that had become virtually free.

America no longer has the luxury of debating whether domestic energy is important or not. We are now in the early stages of the most serious energy crisis this country has ever faced. It will become more serious over time and if we do not correct the severe energy problems we now face, America's economic future is grim. As the energy crisis unfolds, it could become the most critical threat to our economy since World War II.

Many are still skeptical about the actual severity of this crisis. Some think all of our energy problems are contained within the state of California. But the problem is now not only nationwide, it is spreading to most other parts of the globe. So, the USA makes a critical mistake by assuming we can solve our nation's energy problem by simply consuming more foreign energy supplies. This was one of the classic energy mistakes California made. It assumed states like Arizona, Nevada, Utah, Idaho, Oregon and Washington would always have ample spare energy supply, on the slight chance California's internal supplies ran out.

Our Energy Crisis is very real. We have run out of virtually all spare energy capacity in all three basic forms of energy: oil, natural gas and electricity and we ran out of all three almost simultaneously. We accidentally created a perfect "Energy Storm."

America must take the lead in solving this crisis. There is no other country with the resources, or the likely intent, to bail us out. The idea of America continuing its economic expansion without being able to expand its energy use is a true oxymoron. For the U.S. to remain the leader of the world and also struggle with a chronic energy shortage is just as far fetched. So we have now created a true crisis. But true crises are when American ingenuity has historically been at its best.

There are still many skeptics, most well intended but simply misinformed, who say that the energy crisis is not real. Time Magazine took a savage poke at the Bush Administration on this thesis just last week. Other skeptics argue that even if the problem is real, the solution is not on the supply end. This is merely a bad policy of "Draining America First." Instead, we should either "conserve" our way out of this problem or finally embrace renewable energy which has been ignored for too long. Some argue that we need to do both and then all our energy woes will be solved.

These concepts would also be worthy topics to debate, had we not allowed a true crisis to arise. But, we failed to postpone this event so the debate would be fruitless effort. It is now time to buckle down to the real energy issues we face, to roll up our sleeves and finally solve our current energy mess. After we solve the energy crisis, we can return to a polite and gentlemanly debate on theoretical issues.

Winter is coming to an end. It became a true "Energy Winter of Discontent," causing the most prosperous state in the most affluent country on earth to suffer through frequent energy blackouts. This caused billions of dollars of lost productivity and took two first rate triple A electric utilities to a point of insolvency. This should have been a classic wake-up call for all Americans that something had gone very wrong on our energy front. But too many viewed these problems as a unique situation in California.

The Northeast got through the winter without running out of heating oil, but had Europe's winter been colder, the record levels of Russian and European heating oil we imported would not have spared yet another energy crisis on the east coast too.

With winter ending, America needs to shift its focus to the threat of a potentially hot and humid summer. If this summer's weather is as hot as the summer of 1999, peak electricity demand will be far higher than last year and we could get the ultimate wake-up call with blackouts that potentially stretch from coast to coast.

To make matters worse, our gasoline stocks are lower than the low levels of a year ago and reformulated additives are at far lower levels. Unless a poor economy begins to slow America's driving habits way down, we could face gasoline shortages, or at least high price spikes at the same time as electricity problems envelope the country.

The grim reality is that we are now in the early stages of a very serious energy crisis. It was no single entity's fault. Rather, it is the cumulative effect of multiple energy mistakes stretching over the past two or three decades. At the heart of the problem is that we all consumed more energy than anyone planned to produce. So, energy demand is constantly bumping against the daily ability to create energy supply. There is only one irrefutable physical law about energy demand. It cannot exceed supply without triggering shortages.

For years, America had a comfortable cushion of spare energy capacity. In the petroleum markets, this spare capacity was a combination of commercial petroleum stocks with days or even weeks of extra supply. But, we whittled this down to less than a day, or even a few hours in too many aspects of our petroleum supply. In natural gas, our spare margin was in the massive underground system of natural gas storage that gets built-up during the 7 months when heating needs are minimal or non-existent. Today, natural gas storage levels are also at historic lows, running a third less than last year's levels. In the electricity market, various regional regulatory commissions mandated stiff "reserve margins" of spare power generating capacity. Through bad supply estimates and ultra-strong demand growth, these reserves are now gone in most states whenever the weather reaches hot or cold extremes.

These energy problems cannot be ignored or they will severely harm our economy and cause pain and hardship to virtually every American. I do not need to remind any of this committee that the U.S. economy has never grown when energy consumption has declined. There are only two ways to solve this problem. The easy way is to merely use a lot less energy. On the surface, this sounds like a plea for energy conservation. But if anyone does hard analysis of the real numbers, no technology available within the next ten years eliminates enough energy demand to make a dent on the severity and magnitude of the problem.

Let me give just two examples to illustrate this point. If we suddenly had a fleet of 1 million 80-mile per gallon vehicles on our roads, taking the place of 1 million average automobiles, this would only save 50,000 barrels of oil use each day. Ten wells in the deepwater Gulf of Mexico produces an equivalent energy amount. Refrigerators are still the single biggest energy consumption unit in many homes. If a new generation of refrigerators using 50% less electricity suddenly took the place of all 100 million refrigerators in all of our homes, this would only save 2.5% of the electricity we use each day or only 1% of America's total daily energy use.

Conservation is important for America to embrace. But it does not provide a "silver bullet" to solve our energy crisis. The only available conservation measure that really works would be a major shrinkage of our economy, possibly including cutting demand through energy rationing and blackouts. Not a single American would wish this on our country.

Renewable energy sources are an important ingredient of our long-term energy mix but we need to be extremely realistic about how tiny these future energy sources are. Less than 1/10th of 1% of the electricity we used this year came from wind, solar, and biomass burning. Take away biomass burning and the balance provides only one-thousandth of 1% of our electricity use.

While some well-intentioned Americans would like to argue otherwise, there is only one real way to solve these problems and the solution involves increasing our energy supplies in ALL forms of energy, including an ultimate return to more nuclear power in the USA and major increases in coal use, hopefully accompanied by startling breakthroughs in clean coal technology.

We can also never wean the country from imported oil and imported natural gas but it is a dangerous assumption to believe that foreign imports of oil and gas will always solve our severe energy crunch. Our infrastructure is not "plumbed" for any additional foreign supplies and the foreign oil and gas markets are also getting very tight. No country is ever going to supply our needs before taking care of their own energy demands first.

At the end of the day, we have to increase our domestic supply of oil and natural gas as long as there is any reasonable prospect of being able to do so.

But getting this done requires fast action by both public and private sectors to begin eliminating all the obstacles that now make it so hard to make real gains in the supply of either domestic oil or natural gas.

Access to where these resources reside is obviously extremely important. While it is politically popular to attack the need to open up a few thousand acres of ANWR, the prospect that this important area could create several hundred thousand barrels a day of extra oil and possibly even far more, is too important to our economic future to abandon this key resource because it is not politically popular to do so. It is also important to realize that extra natural gas from ANWR could help make one or even two pipelines economic, bringing additional supplies to the gas-starved lower 48 states.

It is time for ANWR's opponents to stop broadcasting the photographs of pristine alpine mountain meadows of areas within the 19 million acre wildlife reserve which happens to be hundreds of miles away from where any oil and gas development would ever take place and seriously examine the importance of these valuable reserves to our country. Prudhoe Bay has demonstrated for over 30 years that oil developments, the environment and ecology can live in harmony.

Lease Sale 161 in the Eastern portion of our Gulf of Mexico is just as vital as ANWR, or even more so. This highly gas-prone area is over 100 miles west of Florida at its closest point. But, it is right next to the most efficient infrastructure to bring these reserves to where the will be consumed by all of America. If our natural gas supply turns out to be as fragile as I worry it will be, the reserves lying beneath Lease Sale 181 just might prevent Florida and Georgia from becoming the next California.

The Department of the Interior is just beginning a critically important survey or inventory of all the reserve prospects throughout the lower 48 states. I applaud this effort but would highly encourage expanding this inventory assessment to the entire Outer Continental Shelf of the USA, including the waters offshore California. This exercise does not commit any area to development. It would merely help identify where emergency relief might be found. How tragic it would be to see the economy of a state like California destroyed through a lack of natural gas and electricity: all because natural gas, lying just off its coast, was never developed.

Access is not the only impediment to increasing domestic supplies. The list of other barriers is lengthy. Many of these obstacles involve the fragile capacity through most of the private sector. Few of the various parts of the energy business have any near term ability to respond, in any quick manner, to creating more domestic supply if all access issues were resolved.

But no private sector participant is likely to begin a costly and complex expansion of its capacity on the mere hope that access will someday be granted.

Solving our energy crisis will take a long time. The quicker our country gets started on this task, the sooner the first signs of relief will occur.

I applaud this committee for the comprehensive energy bills that both sides of the aisle have tabled. In my opinion, energy is as just as bipartisan an issue as our foreign policy. It is one of the few issues that literally impact every single American. When we have plentiful energy, everyone benefits. When we do not, we all suffer.

Mr. Chairman, thank you for the opportunity of addressing this hearing.

The CHAIRMAN. Thank you very much, Mr. Simmons. I appreciate that statement.

David Hayes, please proceed.

## STATEMENT OF DAVID J. HAYES, FORMER DEPUTY SECRETARY OF THE INTERIOR

Mr. HAYES. Thank you, Mr. Chairman. It is a pleasure to be here back again. Thank you. I am the former Deputy Secretary of Interior now, and on the private side I have submitted a written statement for the record, Mr. Chairman.

The CHAIRMAN. It will be included in the record.

Mr. HAYES. Thank you.

I will make a few points orally. My focus will be on the Federal lands piece this morning, Senators. I am not qualified to speak on the general issue of what is obviously a very serious energy situa-

tion, and there is obviously a need for comprehensive policy. I know that Senators Bingaman, Daschle and others have submitted a bill, and that the chairman and others also have done so, and that the President will.

What I would like to talk about is give a little perspective on the Federal lands piece, because I think there are some great expectations about the potential for new energy development on the Federal lands, and I would like to talk about some of the realities of it, and also some of the potential constraints per the subject of today's hearing.

First, a bit of history. There is a sense that oil and gas development on Federal lands has been in decline. That is, in fact, not the case. While there has been a long-term decline in domestic oil production across the board since 1970, the high water mark, and in fact the low point came in 1992 when oil prices were extremely low, and then oil and gas drilling activity in the United States was at its lowest level since 1942—since then on the Federal lands there have been significant increases in oil and gas production.

Those statistics are laid out in our written statement, and let me give a few examples. Chairman Murkowski, you mentioned an important aspect of the increase has been in the deep water Gulf where, in 1995, supported by this committee and signed by President Clinton, deep water royalty relief led to very significant increases in both oil and gas production in the Gulf. In the last 2 years alone, gas production in deep Gulf of Mexico waters increased by 80 percent. And overall in addition to the Gulf increases, there have been significant oil and gas drilling on both on-shore lands and in Alaska leading to, over the 8 years of 1992 to 1980, an actual increase in the contribution of energy from the Federal lands for the total domestic energy picture.

In 1992, 13 percent of domestic oil and gas production came from the Federal lands; last year, it was up to 25 percent. So the contention that the Federal lands are essentially closed for business is simply not correct. And, in fact, I would like to talk about that a little bit more, if I can. There have been efforts in the last few years that I think we should build on to continue to open up some public lands for energy production. One, in addition to the Gulf of Mexico example, where seven thousand new leases were issued on the Outer Continental Shelf. The National Petroleum Reserve in Alaska was opened up in 1998, and up to 4 million new acres area available for oil and gas production. A lease sale was held that netted 100 million dollars in terms of bonus bids for those leases. Exploration is only now beginning, but there should be great productivity from that very large oil field.

Also in the Powder River basin there has been significant new oil activity. BLM has issued over one thousand new permits in Senator Thomas' backyard and is geared up to issue several thousand more if we can get BLM the funding and the wherewithal to help them proceed in that manner. They certainly have the willingness, and had a green light from our administration, and I am sure do from Secretary Norton as well. Also, the Clinton administration in front of this committee agreed with Senator Bingaman and the chairman that there should be a natural gas pipeline from Alaska,

and suggested that the Joint Pipeline Office in Alaska would be a good forum for helping to expedite permitting for such a pipeline.

As you know, there are 25 trillion cubic feet of natural gas in the current Prudhoe Bay fields that are simply being wasted, and it is appropriate to get a pipeline to bring those——

The CHAIRMAN. Did you say wasted?

Mr. HAYES. Well, not utilized by Alaskans or for the lower 48.

The CHAIRMAN. Are they utilized for the recovery of oil?

Mr. HAYES. Yes, there is some reinjection. Wasted is too strong a term.

The CHAIRMAN. I think you are right. I think it is too strong a term.

Mr. HAYES. Let me amend my statement by saying that there's 25 trillion cubic feet of natural gas that could be productively utilized by consumers in the lower 48 at Fairbanks and in Alaska—I think there is strong bipartisan support for that.

Now with regard to the issue of lands that are unavailable for oil and gas drilling in the Federal domain—I would like to talk about some of the areas. There is a potential here to issue sweeping statements about unavailability of lands. It is true that there are significant potential reserves that are currently unavailable, but it's not helpful I do not think to talk about large numbers.

Instead it is more helpful to look in breakdowns where those lands are located. Perhaps the most significant lands that are not available for oil and gas drilling are the offshore resources that Dr. Leahy discussed—offshore California, Washington and Oregon, also the east coast and down into Florida. Most of that area was established as a moratorium in 1990 by then-President George Bush and confirmed in an Executive Order in 1992 which was reconfirmed by President Clinton. The issue of opening up that moratorium is obviously an important public policy issue, but to suggest that it can easily be opened up as Senator Bingaman questioned is an issue that will involve the public policy interests of all of the members of those delegations in those States. I know that Governor Jeb Bush and Governor Davis and many others feel very strongly about the importance of maintaining those moratoria.

Let me close by mentioning the national monuments. This is another area where there has been criticism of President Clinton's naming of national monuments and a suggestion that very large reserves of oil and gas were thereby put aside from potential development. The Interior Department recently reconfirmed a survey of oil and gas prospects in the 21 national monuments that were named during the Clinton administration, and it confirmed that of those 21, only five had potential oil and gas reserves.

One of the five are the offshore rocks in California which are already subject to a moratorium; another of the five was in the Canyon of the Ancients, southwest Colorado, where in fact the monument designation allows continued leasing. The other three, there were moderate oil and gas capabilities there—Hanford Reach, Corizo Plain, and the upper Missouri River Breaks, but the Interior Department analysis that was just reached last month demonstrates that the quantities involved are quite insignificant, particularly when compared with the environmental values that are incorporated in those monuments.

So again, my main message here is that it's not helpful, I do not think, to the debate to make sweeping statements about lands that have been withdrawn from potential oil and gas development. The facts show that concerted good policy can lead to significant increases in oil and gas development on the Federal lands, and on appropriate offshore areas. That is what the track record has been in the 8 years of the Clinton administration, and I am convinced that with your guidance it can continue in that way.

I know the MMS has continued to promote the deep water Gulf activity with new regulations that it came out with in working with industry last fall, and I think it will be very helpful to have the inventory that is now being conducted by the Department of the Interior to see if there are further administrative changes that can be done to help streamline the permitting process to make sure that oil and gas reserves are, and can be, productively produced with environmental sensitivity, that those opportunities in fact do come on line, because energy needs in the United States certainly are acute, and the Federal lands have to play their part, but we need to be realistic about what that part is.

Thank you very much.

[The prepared statement of Mr. Hayes follows:]

PREPARED STATEMENT OF DAVID J. HAYES, FORMER DEPUTY SECRETARY OF THE INTERIOR

My name is David J. Hayes. I am the former Deputy Secretary of the Department of the Interior. I currently am practicing law in Washington, D.C., as a partner at Latham & Watkins. I am appearing today in my personal capacity, at the request of the Committee.

I appreciate the opportunity to testify on the important subject of the development of domestic oil and gas resources in the United States. My expertise on this issue relates to oil and gas development on the public lands in the U.S., and I will focus my testimony on that subject.

I would like to address four primary points in my testimony today:

1. Significant efforts have been made over the past few years to enhance, where appropriate, oil and gas production from our public lands. Even though energy prices remained very low throughout the 1990s, the pace of oil and gas production on federal lands increased during the Clinton Administration, rising from 13% of total domestic production in 1992 to approximately 25% of total domestic production in 1999.

2. Important new areas have been opened up for oil and gas exploration in recent years and additional opportunities are available for development including, in particular, 4 million acres in the National Petroleum Reserve in Alaska that are newly available for oil and gas production. Also, more than 25 trillion cubic feet of existing natural gas supplies currently are available for export from Alaska"s North Slope without any additional exploration or production activities.

3. Although significant oil and gas opportunities continue to exist on federal lands, some sensitive public lands are, and should be, off limits for oil and gas production, in accordance with our nation's longstanding recognition that some public lands and offshore resources are inappropriate for oil and gas drilling. In addition, even if we were to reverse course and impose a new federal mandate to engage in new oil and gas drilling in, for example, the offshore waters of California and Florida (to name two protected areas that have the most significant potential reserves), opening up these protected areas for new oil and gas production would not "make the difference" and lead to energy independence for the United States.

4. A balanced energy policy is needed—one that continues to address supply side needs by promoting responsible oil and gas development on public and private lands in the United States and encouraging the development of renewable energy sources, and a policy that gives equal weight to demand side issues by addressing energy efficiency and energy conservation. Our nation cannot and should not expect new drilling activities on our federal lands to address and resolve long-term supply and demand imbalances that have been in place for several decades.

OIL AND GAS PRODUCTION ON PUBLIC LANDS: THE TRACK RECORD

There is a significant amount of revisionist history that is being written regarding oil and gas production on our public lands. A myth is being perpetuated that oil and gas development activities on federal lands have been shut down in recent years, with the shut-down occurring based on one-sided environmental concerns.

I would like to address the history as it stands, and take on the myths that are being conjured up on this important issue.

First, for the history.

Domestic oil production in the United States has been declining for several decades, after peaking in 1970 at 9.6 million barrels per day. During the prior Bush Administration, domestic oil production decreased by an average of 250,000 barrels per day each year. During the last year alone (1992), domestic gas and oil drilling activity decreased by nearly 17%, and was at its lowest level since 1942.

The causes for these declines are varied including, in particular, plentiful global oil supplies, including significant new sources of supplies from non-OPEC nations, and correspondingly depressed prices. Except for the oil price spike associated with the Gulf war, the average price of crude oil during the 1990s approximated $15 per barrel. The price of natural gas, while less volatile, also was quite low at $1.83 per million cubic feet (mcf) due to a "gas bubble" of excess supply following restructuring in the natural gas markets. Indeed, the Asian recession which began in late 1997, coupled with an increase in OPEC production, caused the world oil price to fall to $10 per barrel by the end of 1998.

Despite these severe price pressures, several steps were taken in the Clinton Administration to maintain healthy levels of oil and gas production on federal lands. Deep water royalty incentives, proposed by former Senator Johnston and supported by the Clinton Administration, contributed to a 65% increase in offshore oil production over the last eight years. This new incentive system also boosted natural gas production dramatically, with gas production in deep Gulf of Mexico waters increasing by 80% in the past two years alone. The previous administration also implemented royalty reductions on marginal oil wells and heavy oil on federal lands to maintain production and ensure maximum recovery. (Other proposals, including President Clinton's request for nearly $1 billion in tax incentives for the oil and gas industry unfortunately were not implemented by Congress.)

I have attached an exhibit that was prepared by career staff at the Department of the Interior which tracks overall oil and gas production, and outer-continental shelf leasing activity, during the past twenty years. The data confirm that oil and gas production on federal lands have continued at a robust pace, despite unfavorable world prices, throughout the past decade. Indeed, as I summarized in testimony that I presented to this Committee on July 26 of last year, the contribution of oil and gas production from the federal lands, as a percentage of overall domestic oil and gas production, increased from 13% in 1992, to 25% of total domestic production in 1999.

"CLOSING OFF" FEDERAL LANDS FOR OIL AND GAS PRODUCTION: SOME ADDITIONAL FACTS

In addition to the myth that oil and gas production declined unacceptably during the Clinton Administration, a corollary myth has developed: namely, that the Clinton Administration inappropriately and without balanced decisionmaking—closed off large areas of productive lands from oil and gas production due to one-sided environmental concerns.

At the outset, it is important to note that the previous Administration took significant steps to open up significant new areas of federal lands for exploration and production. The vast expansion of deep water natural gas production in the Gulf of Mexico is one notable example. From 1992 to 2000, 7,091 new leases were issued on the Outer Continental shelf, covering approximately 38 million acres.

Of equal note is the opening up of nearly 4 million acres of the National Petroleum Reserve in Alaska for oil and gas exploration and production in 1998. Exploration of these vast new lands, adjacent to the existing Prudhoe Bay fields, is now underway, following an initial lease sale that netted more than $100 million dollars for the U.S. treasury.

Likewise, when it appeared that the Powder River Basin could become a productive oil producing region, the Bureau of Land Management geared up its permitting effort in the area. BLM is in the process of granting more than a thousand permits to drill in that Basin, with many more expected to follow.

Finally, the Clinton Administration indicated its willingness last year to help facilitate the construction of a new natural gas pipeline from the North Slope of Alaska that would bring to market the more than 25 trillion cubic feet (tcf) of known

natural gas reserves that currently are available at Prudhoe Bay. These unutilized natural gas supplies can, and should, be made available to Alaskans, and to Americans in the lower 48.

With regard to potentially productive public lands that are closed to development, many of these lands have been unavailable to oil and gas development for many years, based on a recognition that not all of the nation"s shared landscapes are appropriate for oil and gas drilling activity. The National Arctic Wildlife Refuge illustrates this point. In 1980, Congress explicitly stated that "production of oil and gas from the Arctic National Wildlife Refuge is prohibited and no leasing or other development leading to production of oil and gas from the range shall be undertaken until authorized by an Act of Congress." (See Section 1003 of ANILCA; 16 U.S.C. 3143.) In accordance with Congress' explicit instruction, the Arctic Refuge has been, and continues to be, unavailable for oil and gas production activity.[1]

Likewise, long-standing concerns have led to the imposition of a moratorium on additional oil and gas production off of the California coast, and in the offshore waters of Florida, and other East Coast states. These moratoria are not new, and they do not represent ill-considered policy choices that can or should simply be reversed.

The moratorium on oil and gas leasing activity in offshore California, for example, was initiated by President Bush in 1990, and reaffirmed in a 1992 presidential directive. (President Bush's presidential directive also covered waters offshore of Washington, Oregon, Florida, and New England (George's Bank)). When campaigning, now-President Bush indicated that he intends to continue to honor his father's actions, at least as they relate to the continued ban on new drilling in California's offshore waters.

Limitations on drilling offshore of the Eastern States likewise has a bipartisan history. The current dispute regarding potential lease sale 181 in the eastern Gulf of Mexico illustrates the point. The USGS and MMS have indicated that a very large reservoir of natural gas is available at this lease location, but Governor Jeb Bush of Florida has objected to moving forward with proposed development of that site. I assume that President Bush will honor Governor Bush's wishes and decline to proceed with drilling in this gas-rich area.

As these examples demonstrate, important facts lie behind the "restrictions" on oil and gas development on federal lands that typically are presented in sweeping, unqualified terms (as, for example, in the National Petroleum Council's recent report). No one should assume that lease restrictions reflect arbitrary decisionmaking that can or should be easily undone or reversed through broad policy pronouncements.

Finally, of course, our nation has a long history of restricting oil and gas leasing activity on sensitive landscapes. We would not accept drilling for oil or gas in our National Parks, or in many other treasured public lands. Because we have made this policy choice, our nation loses the potential energy potential associated with the extraordinary geothermal resources in Yellowstone Park, the potential hydropower available if we were to flood the Grand Canyon, or potential oil or gas production from the red rock canyons of Bryce or Zion, or from the Indian ruins at Mesa Verde. But in all of these cases we have recognized, and are honoring, competing values associated with conserving these lands in their natural state.

Against this historic backdrop, President Clinton set aside approximately 5 million acres of public lands as national monuments that should be protected from further development. The United States Geological Survey recently confirmed that only 5 out of the 21 national monuments had moderate to high probability for the occurrence of oil and gas resources. Of these five, one of the monuments (California Coastal National Monument) is covered by the existing moratorium on off-shore

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[1] In previous testimony before this Committee, on April 5, 2000, I outlined the reasons why it is appropriate to continue to honor the long-standing restriction on exploration and production activities in the Arctic Refuge. The area proposed for drilling is the coastal plain that has been called the "biological heart" of the Refuge because it is the primary calving grounds for the Porcupine Caribou Herd. Unlike the Prudhoe Bay area, the coastal plain narrows significantly in the Arctic Refuge, inviting a direct conflict between the untouched wilderness and proposed oil and gas drilling, pipeline infrastructure, and related industrial activities. In addition, because it appears that oil and gas reserves in the Arctic Refuge are spread out in several pools, rather in one large formation like Prudhoe Bay, additional "footprints" and pipeline connections may be required to develop oil and gas resources in the area. Finally, water resources are much more limited in the coastal plain area of the Arctic Refuge, as compared with the Prudhoe Bay region. Substantial water consumption is required for oil and gas activities; utilizing the limited available water supplies would likely negatively impact the existing ecosystem. (The construction of ice roads requires approximately 1.35 million gallons of water per mile and 30,000 gallons of water per day is necessary to support a drilling rig. Exploratory wells require approximately 15 million gallons of water per well.)

California lease sales, three of the others allow continued oil and gas development under existing leases (Carrizo Plain National Monument; Hanford Reach National Monument; Upper Missouri River Breaks National Monument), and the fifth monument, Canyons of the Ancients, is open to further leasing.

While new exploration and production activities will not be allowed in most of these special places, this limitation is fitting, and consistent with long-standing American values, given the unique treasures that these lands hold. In any event, the total acreage covered by these four national monument is less than one million acres—far less than 1 percent of the Bureau of Land Management's land base.[2]

The story is the same for other areas that are being protected for environmental purposes. In connection with the limitations on development in the roadless areas of our National Forests, for example, it is my understanding that the oil and gas industry historically has demonstrated limited interest, over the years, in pursuing these remote areas for oil and gas production. (In those limited areas in which the oil and gas industry has shown interest, and where they have leased federal lands for oil and gas exploration or production purposes, such activities will remain unaffected by the roadless rule.) I understand that additional studies of these areas are now underway, and I will defer further discussion of these points to those who are more knowledgeable than I am about these National Forest lands.

CONSTRUCTING A BALANCED ENERGY POLICY

As the testimony indicates, reversing public policy decisions and seeking to open up protected lands for new oil and gas production—be they in offshore waters, in the Arctic Refuge, or in national monuments—would raise fundamental public policy issues. While it certainly is appropriate to discuss these policy issues, it would not be responsible, in my view, to assert that there are economically and politically realistic opportunities to increase oil and gas production on our public lands so as to achieve domestic "energy independence." Our nation is consuming 9.6 million barrels of oil per day. While domestic production on public lands has held its own in recent years (see Attachment A), we have been importing more than 50% of our nation"s oil needs for many years. Even if we were able to reverse the long-term declining trend of domestic oil production, and greatly increase our oil production on federal lands, there is no plausible scenario by which new oil production from our federal lands (which supplies approximately 10% of our total oil needs) could enable the United States to become independent of the foreign oil markets, or even to reduce our oil imports to less than 50% of our total needs.

A balanced energy policy is needed—one that continues to address supply side needs by promoting responsible oil and gas development on public and private lands in the United States, and provides incentives for the development of renewable energy sources, and a policy that gives equal weight to demand side issues by addressing energy efficiency issues, and energy conservation needs.

Thank you for the invitation to present testimony on this important topic.

ATTACHMENT A

PRODUCTION OF OIL, GAS, AND COAL FROM OFFSHORE AND ONSHORE FEDERAL & INDIAN LANDS—1981 TO 2000

| | Oil (Barrels x $10^6$) | Gas (BCF) | Coal (short tons x $10^6$) |
|---|---|---|---|
| Clinton Administration (1993-2000 *) | 18,615 | 156,705 | 8,477 |
| Bush Administration (1989-1992) | 10,788 | 73,933 | 4,004 |
| Reagan Administration (1981-1988) | 25,154 | 142,674 | 6,983 |

*(CY2000 data is preliminary)

[2] One of the witnesses testifying today alleges that the designation of the Grand Staircase-Escalante Monument in Utah in 1996 withdrew promising valid oil and gas leases on state lands. A recent USGS report confirms that oil and gas reserves in Grand Staircase-Escalante are not significant. Recent history confirms this observation. Pursuant to the Utah Schools and Land Exchange Act of 1998, state leases in the monument were converted into federal leases, and were allowed to be developed. Conoco subsequently drilled wells in the monument, but it is my understanding that none of the wells produced viable quantities of oil or gas, and that leaseholders are allowing existing leases in the monument to expire.

OUTER CONTINENTAL SHELF LEASING

| | Reagan administration *1981-1988 (8 years)* | | Bush administration *1989-1992 (4 years)* | | Clinton administration *1993-2000 (8 years)* | |
|---|---|---|---|---|---|---|
| | Total OCS | Gulf of Mexico | Total OCS | Gulf of Mexico | Total OCS | Gulf of Mexico |
| Tracts Leased | 6,509 | 4,948 | 2,754 | 2,669 | 7,091 | 7,032 |
| Million Acres Leased | 34.7 | 26.0 | 14.2 | 13.8 | 37.7 | 37.5 |

The CHAIRMAN. Mr. Mark Rubin. Mr. Rubin is upstream manager, American Petroleum Institute.

**STATEMENT OF MARK RUBIN, GENERAL MANAGER, UPSTREAM, AMERICAN PETROLEUM INSTITUTE**

Mr. RUBIN. Thank you. I appreciate this opportunity to discuss oil and natural gas issues on behalf of API's over 400 member companies. We are very appreciative of the efforts by the chairman and ranking member of the committee to forge energy legislation and are encouraged by much of what we see in the two bills that have already been introduced.

Federal offshore production now supplies 24 percent of the oil and 27 percent of the gas produced in the United States, and DOE forecasts that offshore production will rise to nearly a third of our domestic oil and gas supply within a decade. Clearly we must maintain access to those areas currently open to development in the Gulf of Mexico and elsewhere, including that small portion of the eastern Gulf included in Federal OCS Sale 181 scheduled for December.

We are encouraged that Senator Bingaman's legislation S. 596 endorses this lease sale. We continue to believe, however, that the sale should include all of the tracts planned for the sale volume in this. To do otherwise would significantly reduce the amount of energy, natural gas in particular, that Sale 181 is expected to provide.

The 3,900 oil and gas platforms operating offshore have an outstanding safety environmental record. U.S. offshore exploration production are among the most heavily-regulated activities in this country and meet the world's most stringent government regulations and industry standards. Protecting the environment is a national imperative, and our operations have an impressive record of protecting coastal waters.

Moving to onshore, last fall this committee directed the Departments of the Interior and Energy and the Forest Service to conduct an inventory of oil and natural gas resources on onshore government lands and identify the restrictions limiting access as part of the reauthorization of the Energy Policy and Conservation Act. This inventory is critical to creating a more informed decision-making process that will allow Congress and the agencies to focus attention on providing access to the areas with the greatest potential for oil and natural gas production.

Over the last several years, we have seen numerous decisions that have eliminated access to millions of acres with high potential for oil and natural gas exploration. DOE studied the recently-

adopted Forest Service roadless moratorium and identified significant oil and natural gas resource potential. What is more, the vast majority of these resources could have been developed if the Forest Service had merely withheld a small amount of the roadless area from the final rule. In the Rocky Mountains, for instance, access to 83 percent of the total gas resources in the roadless areas could have been preserved with a less than 5 percent reduction in the acreage included nationwide.

Recently, as Mr. Hayes mentioned, the USGS conducted an assessment of the new national monuments designated since 1996 and found that five of these monuments had moderate to high potential for oil and gas resources. We believe that these actions underscore the importance of understanding the resource potential of government lands before such far-reaching decisions are made, not afterwards. And although, as Mr. Hayes mentioned, production from Western U.S. lands has actually increased over the last several years, the actual amount of producing acreage in the West on Federal lands has actually declined since 1990.

Alaska still holds much promise for new energy development, not only in ANWR, but in also in the National Petroleum Reserve in Alaska west of Prudhoe Bay. These are areas where advanced technology has allowed us to make great strides in developing fields with little impact to the environment.

For example, in Phillips' Alpine field, only 97 acres are needed on the surface to produce from 40 thousand sub-surface acres. North Slope exploration takes place during the winter using ice roads and ice pads that melt in the spring, leaving no trace of exploration activities.

These technological advances would allow us to limit our impact in the coastal plain of ANWR, should Congress decide to allow development. In spite of the claims to the contrary by those who oppose opening ANWR, the resource potential in ANWR is enormous. The EIA predicted that if oil is found in ANWR, the area could produce well over 1 million barrels per day for over 20 years. Anyone who doubts the positive impact this could have for consumers should consider the fact that when OPEC recently decided to reduce production to affect the price of oil, they cut their production by 1 million barrels per day.

If our industry is given the opportunity to explore for and produce our country's oil and natural gas resources, it is the U.S. consumer who will derive the greatest benefit. We are willing to make enormous investments to increase domestic production of both oil and gas, and to do so in a manner that minimizes environmental impacts, but we must have access to our national resources for exploration and production. Thank you.

[The prepared statement of Mr. Rubin follows:]

PREPARED STATEMENT OF MARK RUBIN, GENERAL MANAGER, UPSTREAM, AMERICAN PETROLEUM INSTITUTE

The American Petroleum Institute (API) welcomes this opportunity to present the views of its member companies on the question access to government lands for the United States. API is a national trade association representing over more than 400 companies engaged in all sectors of the U.S. oil and natural gas industry, including exploration, production, refining, distribution, and marketing.

We are gratified that this committee is working towards a national energy policy. For too long, energy has been an afterthought, rather than a key component of gov-

ernment decision-making. This has to change. The events of the past year—heating oil problems in New England, gasoline shortfalls in the Midwest, and the California electric power disruptions—have forced us to start thinking comprehensively about the energy issues facing our country. The only way we can deal with these issues is by forging an effective national energy policy. Fundamentally, a sound national energy policy will be market-based, rely on all forms of energy, encourage technological advancement, improve energy efficiency and conservation, and ensure environmental quality.

We applaud the Bush Administration for creating a cabinet-level task force on the subject, and we are encouraged that you and other members of Congress of both parties are putting energy policy at the top of your agenda.

It is important to emphasize one point: Americans can be provided with reliable and affordable energy supplies and a clean environment. This is not an either-or situation. We are confident that, with the proper changes in the policy arena, we can help keep the nation supplied with fuel while at the same time continuing to improve our technology for the future—technology that will also enable further extraordinary environmental gains.

That is the encouraging news. The sobering news is that there are no quick fixes to a serious situation that has developed over the last 25 years. It will take some years to rectify our energy problems.

Our nation is going through a period of economic uncertainty. We do not know whether this will turn out to be a bump in the road or the beginning of an economic downturn. What we do know is that every 2-percent growth in Gross Domestic Product requires an almost 1-percent growth in energy usage. If we are to continue America's economic prosperity, creating jobs and wealth for our growing population, we must have the affordable, reliable energy that fuels our economy and supports our way of life.

We must face the fact, though, that our energy infrastructure is straining at the seams and barely keeping up. Let me cite some examples:

- U.S. crude oil production peaked in 1970 at 9.6 million barrels per day (B/D). During 2000, it averaged 5.8 million B/D, some 40 percent less than 30 years earlier;
- U.S. oil imports are meeting 57 percent of U.S. needs, compared to 47 percent 10 years ago and 35.7 percent 20 years ago;
- In the face of tremendous demand, U.S. production of natural gas declined 14 percent between 1973 and 1999;
- Half the nation's refineries closed their doors over the past 20 years, and not a single new major refinery has been built in the U.S. in more than 20 years. The refineries we do have operate at well more than 90 percent capacity on average, at times exceeding 95 percent.
- The continuing California crisis underscores the serious electric supply problems we face; and
- No orders for new nuclear units have been placed since 1978, and no construction permits have been granted since 1979.

Today I will focus on the two energy sources provided by my industry: oil and natural gas—and what we see ahead.

## CRUDE OIL

The petroleum industry is vertically integrated. That is, we finds, produces, and transports crude oil, and then refines it into a wide variety of products that we deliver to the retail level. A comprehensive national energy policy requires that we address both our capacity to produce crude oil and natural gas as well as our capacity to refine and distribute petroleum products.

Chart No. 1 shows how the Department of Energy forecasts U.S. energy consumption by fuel between 1999 and 2020. Natural gas rises from 23 percent of consumption in 1999 to 28 percent in 2020, while oil maintains its current share. This reflects the reality that 70 percent of petroleum consumed in the United States is for transportation. Most recent energy studies agree that this share is likely to continue well into this century—even with strong increases in energy efficiency and a rapid infusion of new technology. Thus, we need to focus on our future needs for reasonably priced petroleum products and not be misled by the false hope that new and dramatically cheaper sources of renewable fuels are available just around the corner. Such hopes have led us in the past to waste billions of dollars on government efforts to develop and promote so-called renewable and alternative fuels that turned out to be expensive and unavailable. However, renewables used in gasoline—ethanol—play an important role and will continue growing well into the future.

Chart No. 2 shows how we are becoming more and more dependent on oil imports. This dependency now amounts to about 57 percent of U.S. oil demand. DOE projects that 64 percent of oil demand will be met by imports in 2020.

In order to ensure reliable and secure sources of oil, we have no choice but to diversify the sources of our supplies, both domestic and foreign, and to increase both. To do this, we must remove the barriers that currently impede the U.S. oil and natural gas industry's ability to compete both domestically and abroad.

THE NEED FOR ACCESS

What is access to government lands? The U.S. oil and gas industry does not ask to drill on parklands or in wilderness areas set aside by acts of Congress. Rather, we seek access to areas offshore, in Alaska and in the American West that have been designated as "multiple-use" by Congress so that numerous activities can take place there.

Most of these multiple-use areas are simply vast expanses of nondescript federal lands. However, because they lack the beauty and grandeur of the Grand Canyon or the Grand Tetons does not mean that we treat them with less respect than we do any other lands entrusted to us by the government, or by private landowners. Most people driving near or hiking in one of these areas would be hard-pressed to locate one of our facilities once the drilling rig is removed. Safety and environmental protection are critical concerns, regardless of the location of drilling, and where our contractual obligations with the government require us to, we return the land to its original condition once drilling and production cease.

Yet, despite our record of sound stewardship, President Clinton used his executive powers under the Antiquities Act to bar oil and gas exploration and other activities on vast regions of government lands.

For example, the designation of the Grand Staircase-Escalante Monument in Utah in 1996 summarily withdrew promising valid oil and gas leases on state lands without even notice to or consultation with state and local authorities, or affected communities. Likewise, the U.S. Forest Service recently banned our companies from exploring for oil and natural gas on promising government lands when it published rules to bar road building on nearly 60 million acres in the Forest System that, according to a Department of Energy study, could hold 11 trillion cubic feet of natural gas.

In the lower-48 states, a study by the Cooperating Associations Forum found that federal lease acreage available for oil and gas exploration and production in eight Western states (California, Colorado, Montana, Nevada, New Mexico, North Dakota, Utah and Wyoming) decreased by more than 60 percent between 1983 and 1997—and that does not count the major land withdrawals, such as Monument designations, since 1997.

Approximately 205 million acres of federal lands in these states are under the control of two federal agencies with broad discretionary powers. The Bureau of Land Management (BLM), whose land management planning authority is derived from the FLPMA of 1976, and the U.S. Forest Service (USFS), whose jurisdiction is derived from the National Forest Management Act, administer these federal, non-park lands. (Chart #3 shows the extent of government lands.)

Both agencies are required to manage lands they administer under the congressionally mandated concept of multiple use. Yet, BLM and USFS discretionary actions have withdrawn federal lands from leasing, and long delayed other leasing decisions and project permitting.

Congress has directed the BLM and Forest Service to allocate non-wilderness lands for resource use, identify areas that are available for oil and gas leasing, identify important wildlife habitat areas, and inventory wilderness candidate lands among other uses. Each agency has completed land resource management plans for the lands they administer, including lands that are candidates for wilderness designation. Yet, some lands found unsuitable for wilderness designation are, however, managed as "wilderness study areas," effectively removing approximately 28 million acres inappropriately from consideration for resource development. Further, these agencies often dictate extraordinary lease stipulations as conditions of approval for exploration and production. Stipulations are intended to protect resource values in conjunction with proposed projects, such as exploratory wells, yet many conditions required, such as "no surface occupancy," essentially preclude exploration and production from occurring.

Moreover, Congress has refused to authorize exploration on the small section of the Arctic National Wildlife Refuge (ANWR) that was specifically set aside by law for exploration in 1980. DOE's Energy Information Administration estimates that the ANWR coastal plain contains between 5.7 billion and 16 billion barrels of tech-

nically recoverable oil. The coastal plain provides the best prospect in North America for a new giant, Prudhoe Bay-sized oil field.

As a result of the enormous technological advances of recent years, only an estimated 2,000 acres would be affected by ANWR development—out of the 1.5 million-acre coastal plain and the total ANWR area of 19.8 million acres. Moreover, Prudhoe Bay oil operations, located 60 miles to the west of ANWR, have been underway for nearly a quarter century and have produced more than 10 billion barrels of oil during that time. Prudhoe Bay is among the most environmentally sensitive oil operations in the world. For example, the Central Arctic caribou herd at Prudhoe Bay has grown from 5,000 to 27,000 over the last 25 years. The industry's North Slope record provides overwhelming evidence that ANWR coastal plain development would not be harmful to the Arctic ecology and wildlife.

We have heard, repeatedly, the charge that ANWR represents only 6 months (or some finite amount) of U.S. consumption. There are several analyses that put this erroneous charge in perspective.

The United States consumes 20 million barrels of oil a day. Today, no source supplies more than 8.4 percent (Canada's share in 2000) of U.S. consumption. Prudhoe Bay, which was estimated to hold 9.6 billion barrels when discovered, represented only 261 days supply. But, in reality, it has supplied an average of 9 percent, and as much as 12 percent, of our daily consumption for the last 24 years. ANWR reserves may be in the same ballpark.

If all the oil in Prudhoe were delivered at once, we would have consumed it in 9 months. That, of course, is a physical impossibility and distorts the true value of oil discoveries.

Prudhoe production, though representing only 9 percent of consumption, has allowed the U.S. to avoid importation of 1.6 million barrels per day, keeping $289 billion from flowing out of the United States.

And we know that small changes in supply can have dramatic impacts on price. For example, in March 2000, OPEC increased production by 1.7 million barrels per day (2 percent of world supply) and crude oil prices dropped by $10 a barrel. Thus, a permanent increase in world supply because of ANWR is likely to have a significant impact on world crude oil prices. This price impact is important since for every dollar decline in world prices, the U.S. import bill declines by $4 billion per year.

Offshore, the OCS has assumed increasing importance to U.S. energy supply over the past half century. The federal portion of the OCS now supplies 24 percent and 27 percent of the gas produced in the United States. Offshore production promises to play an even more significant role in the future. The Department of Energy forecasts that offshore production will rise to nearly a third of our domestic oil and gas supply within a decade.

Technological revolutions, such as 3-D seismic profiling of promising structures, coupled with astounding computer power and directional drilling techniques which allow numerous reservoirs to be accessed from one drill site have driven down the costs of finding oil and gas. And at the same time these technologies allow development with much less disturbance to the environment. Tremendous advances in our ability to drill and produce in the deep waters of the Gulf have also resulted in vast new reserves being added to our resource base. The Deepwater Royalty Relief Act developed by this Committee, and passed by Congress in 1995, has significantly aided that endeavor. Those in the federal government who are most familiar with our industry have lauded our technological advances.

A 1999 DOE report, *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, stated 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. . . ."

However, there is now accumulating evidence that resource depletion is overtaking the effects of technical advances on the cost structure of OCS development. The volume of reserves added per dollar of capital spent in the OCS has been falling steadily since the early 1990s. Because of increased demand, reserves are being depleted at an ever-increasing rate. Because of more efficient extraction technologies, the decline from new gas wells is now estimated to be as high as 40 percent per year.

This does not suggest the imminent collapse of OCS production, but it does suggest that the drilling and capital expenditures required to replace and augment reserves will become increasingly important. We must increase deepwater develop-

ment, and provide access to areas presently restricted. Currently, presidential moratoria, and annual Interior appropriations bill riders preclude leasing in most of the Eastern Gulf of Mexico, the entire Atlantic and Pacific federal OCS, and portions of offshore Alaska.

Moreover, the "consistency" provisions of the Coastal Zone Management Act (CZMA), under the guise of due process and consultation, have caused serious duplicative and incredibly costly delays to federal OCS leasing and production activities that would have no adverse environmental impacts on states' coastal zones. And regulations issued by the National Oceanic and Atmospheric Administration (NOAA) in the last days of the Clinton Administration appear to add impediments to environmentally compatible energy development in the OCS, contrary to the balancing of competing interests directed by Congress when it enacted the CZMA. Both the summary withdrawal of multiple use government lands without stakeholder consultation under the Antiquities Act, and the endless due process used by opponents to block federal offshore production that does not affect a state's coastal zone are extreme, and must be moderated.

The nation will soon have a great opportunity to augment its reserves. Federal OCS Lease Sale 181 represents a plan for leasing by the Department of the Interior in the Eastern Gulf of Mexico Planning Area. Scheduled since the mid-1990s, Sale 181 is slated to be conducted in December 2001. The sale area is based on comprehensive environmental reviews, and consultations between former Secretary of the Interior Bruce Babbitt and then-Governors Lawton Chiles of Florida and Fob James of Alabama. We are encouraged that Senator Bingaman and the other sponsors of S. 596 have endorsed the lease. We continue to believe, however, that the sale As such it is already a middle-ground agreement and the deletion of 120 blocks, as has been proposed in S. 596, would seriously undermine the spirit of the good-faith negotiations that led to it. More important, it would significantly reduce of the amount of energy—natural gas in particular—that Sale 181 is expected to provide.

Congress in the past several appropriations bills understood the importance of Sale 181 going forward and did not include it in the areas placed off-limits by moratoria. The area available in Sale 181 is estimated by the National Petroleum Council to contain 7.8 trillion cubic feet of natural gas and 1.9 billion barrels of oil. This means that natural gas from the Sale 181 area could satisfy the current electricity needs of Florida's 5.9 million households for the next 13 years. Lastly, the crude oil from the Sale 181 area (most of which is expected to come from the deepwater areas, far removed from the coastline) could fuel 74,000 cars for 20 years.

These resources can be produced cleanly, for advances in technology have made offshore oil and natural gas exploration and production safer than ever. For the 1980-1999 period, 7.4 billion barrels of oil have been produced in the OCS with less than 0.001 percent spilled—a 99.999 percent near perfect record.

We applaud the action taken in the last Congress when it reauthorized the Energy Policy and Conservation Act (EPCA) (Section 604) directing the Departments of the Interior and Energy and the Forest Service to conduct an inventory of the oil and gas resources on federal lands and the restrictions that prevent access to these critical resources. We urge Congress to fully fund this inventory in the FY 2002 appropriations bill so that adequate information will be available on resource availability. This is an important step in bringing about increased development of U.S. oil and gas resources and an important component in any effective national energy policy.

NATURAL GAS

The petroleum industry finds and produces the natural gas, moves it through the nation's pipelines, processes it, and delivers it to the distributors. The attached Chart No. 4 illustrates the basic problem we face on natural gas. The middle line shows how U.S. production has been virtually flat for more than a decade, while demand (the top line) has steadily grown. The bottom line shows how imports have also continued to grow to help meet demand.

If we are to have an effective national energy policy, we must recognize the steadily growing role of natural gas in meeting our energy needs. Natural gas is a clean, safe, efficient and reliable fuel. Consequently, demand from all customer segments is rising, particularly as the fuel of choice for new power plants.

Since natural gas markets are regional, rather than global, 86 percent of the natural gas consumed in the United States is produced domestically. Most of the remainder comes from Canada. Although our domestic gas supplies are adequate for the near-term, significant challenges will have to be overcome to meet the increasing demand. The landmark natural gas study issued over a year ago by the National Petroleum Council—a DOE advisory committee—projected that producers would

have to invest about $658 billion in upstream capital between 1999 and 2015 to meet the growth in gas demand.

The growing demand for natural gas underscore the urgent need for increased access to potentially gas-rich government lands.

However, many government lands with the best prospects for new gas discoveries are off limits to development: 100 percent of resources offshore on both coasts; 56 percent of the eastern Gulf of Mexico resources; and 40 percent of the Rocky Mountain region resources. As Chart 5 shows, 21 trillion cubic feet (Tcf) are estimated to lie in the federal waters beneath the Pacific, 346 Tcf in the Western states, 43 Tcf in the Eastern Gulf of Mexico, and 31 Tcf beneath the Atlantic OCS. Clearly, we cannot increase our reliance on natural gas, while continuing to prevent development of these potentially vast gas resources within our borders.

Often, getting a lease is not the most significant problem for producers. Difficulties in acquiring permits to drill wells on onshore government lands and overly restrictive lease stipulations are responsible for limiting natural gas production. These are restrictions, such as "no surface occupancy" or seasonal stipulations, that go above and beyond the normal environmental stipulations and can prevent economic development of the lease without commensurate environmental benefit.

Almost half of the untapped natural gas on multiple-use government lands in the Rockies is in areas either off limits or restricted by this type of stipulation laid down by one federal agency or another.

This information is important because the facts are often ignored and often distorted by those who do not believe greater access to government is needed by our industry. In recent testimony before the House Commerce Committee's Subcommittee on Energy and Mineral Resources, for instance, we heard material distortions by witnesses for the Natural Resources Defense Council (NRDC) and for the Wilderness Society.

In particular, the NRDC witness, in her testimony and in the study submitted by the Wilderness Society witness for the record, concluded that only a small percentage of BLM lands in five western states is off limits to leasing and development.

Those conclusions gloss over the most significant point: the percentage of government lands available for leasing is a meaningless figure without knowing whether the leases can be developed.

In many instances, lessees cannot obtain the permits needed to develop leases. In others, development is rendered uneconomic by unnecessarily restrictive operating stipulations. An appropriate analogy would be leasing a car without a starter motor or keys. Or renting a house and being allowed to use only the roof. Would a person really have a car if he or she cannot drive it? And what good would it do anyone to rent a house if it can't be lived in? Similarly, a lease that cannot be developed is a lease in name only.

The NRDC and Wilderness Society witnesses surgically selected certain data, and omitted other significant data to attempt to prove their inaccurate assertions. For example, while the numbers presented by the Wilderness Society do show that only about 3.5 percent of the BLM lands in Wyoming, Utah, New Mexico, Montana, and Colorado is strictly off limits to development, oil and gas resources in those states are not distributed uniformly across BLM lands. Specifically, while the Wilderness Society says only 3.5 percent of BLM lands are off-limits, the Wilderness Society identifies another 3.2 percent that are subject to No Surface Occupancy. The NPC study indicates that this 6.7 percent of BLM lands represents 15 percent of the BLM natural gas resources, which are either off-limits or significantly impinged.

More important, however, is the role of non-standard lease stipulations. The Wilderness Society's data show that seasonal and other non-standard stipulations restrict access to an additional 32 percent of BLM lands. However, this impacts access to 47 percent of the natural gas resources estimated to exist on BLM lands in the Rockies. When all of these restricted and off-limit BLM lands are combined they total 38.7 percent, affecting 62 percent of the natural gas resources.

Further, BLM is not the only federal land management agency making such restrictions. These witnesses have omitted the U.S. Forest Service, the Bureau of Indian Affairs and the departments of Defense and Energy in their computation of federal multiple-use lands that are restricted to oil and gas development. In total, the National Petroleum Council estimates that some 137 Tcf of natural gas resources lie beneath Federal land in the Rockies that is either off limits to exploration, or heavily restricted. This is 48 percent of the natural gas on Federal land in the region.

In addition to this total, a recent Department of Energy study concluded that more than 11 trillion cubic feet (Tcf) of natural gas was summarily placed off limits late last year alone by the USFS "Roadless" rule.

But stipulations are not the only impediments to bringing the oil and natural gas to America's consumers. Inadequate agency resources in many BLM offices and required but outdated resource management plans often make it difficult to get drilling permits, seriously delaying viable projects for up to 100 days, or sometimes years. In the Rawlins, Wyoming BLM office, for example, thousands of Applications for Permits to Drill are awaiting action because of manpower shortages. In the Buffalo, Wyoming office, thousands more are not being accepted by BLM because of limitations of the resource management plans (RMP) for the area. This is because the "Reasonable Foreseeable Development" (RFD) figures, estimates of future development, failed to recognize the interest in developing coal bed methane. Updating these RMPs and RFDs takes the BLM two or more years to complete thus preventing any further oil and gas activity in that area until the plans are finished.

With natural gas in short supply, it is essential that industry and government work together to increase production from all areas, including multiple-use government lands. Ultimately, it is the American consumer who is likely to suffer from a failure to address this critical situation.

The NPC study on natural gas referred to earlier also points out that vast reserves of natural gas in the form of coal bed methane (CBM) lie beneath federal lands, especially in Wyoming and Montana. However, BLM's inability to grant permits in a timely manner has greatly hindered CBM development, and may contribute to further shortfalls in necessary future gas production. In some instances, we recognize that individual BLM offices may be understaffed and therefore are simply unable to efficiently process permitting requests. We therefore support increased funding for BLM to adequately address these critical permitting backlogs.

As supply adjusts to greater demand, liquefied natural gas looks to become a more significant source of natural gas. Liquefied natural gas, largely imported from outside North America, requires a complex infrastructure, including specialized terminals and additional pipelines. If this source of supply is to be relied on more heavily, policy-makers will need to ensure that necessary regulatory and permitting decisions are expedited.

ROYALTY-IN-KIND

Royalty-in-kind is another important component for an effective national energy policy. The Department of the Interior, working with the states and other federal agencies, should pursue the most efficient means at its disposal to use the United States' energy resources for the good of the American people. One way to do this is for the Department's Minerals Management Service (MMS) to expand its use of royalty-in-kind (RIK) as its standard method for collecting royalties.

Existing mineral leasing statutes already allow the government to take its royalties for natural gas or oil produced from government lands either in value (cash) or in kind, actual barrels of oil or cubic feet of natural gas. Until now the government has favored taking its royalty in value, even where complex and controversial valuation procedures must be used. However, over the last few years a number of pilot (trial) RIK programs have been conducted with considerable success. A robust RIK program would short-circuit these contentious valuation procedures and provide simplicity, greater certainty, efficiency and transparency in the collection of federal royalties.

RIK results in major cost savings to the government by streamlining the administrative process and avoiding many costly and time-consuming audits, agency appeals and court litigation. With the simplicity and finality it offers, RIK also makes drilling on federal lands more attractive for producers, especially small producers, at a time when the nation needs to encourage stable and adequate sources of domestic energy.

LESSONS LEARNED

We are encouraged about the possibilities for a new era of cooperation between industry, government and consumers to align our nation on a path toward energy stability. However, we cannot be successful at forging a workable energy policy if we do not learn from the mistakes we have made in the past.

Price controls, allocation schemes, limitations on natural gas use, and massive subsidies to synthetic fuels are all measures that were tried at one time or another because it was believed that they were sure-fire answers to our problems. All of them failed. They failed because the key premise on which these programs were based—namely that oil and gas were nearing exhaustion and that government "guidance" was desirable to safely transition to new energy sources—is now recognized as having been clearly wrong and to have resulted in enormously expensive mistakes.

The wrong energy choices made by government intervention in energy markets increase costs, hurt the nation in terms of lost economic growth, stifled innovation, limited consumer choice and slowed progress in achieving other societal objectives.

Over the past two decades, we have, fortunately, come to rely increasingly on markets to sort out technologies and fuel choices—and markets have moved us impressively forward. Technology has led us to find more oil and gas in more places and in larger quantities than was ever dreamed imaginable 50 years ago. It has led to increased use of natural gas in a wide variety of ways.

We can continue to prosper and grow in this new century, but only if government follows a positive and cooperative approach. Government should recognize the vital role that markets play and avoid the intrusiveness that has proven so damaging in the past. It should provide a level playing field on which fuels can compete—and recognize the cost trade-offs that are so essential in a global economy.

A NATIONAL ENERGY POLICY

What is needed from government decision-makers is a serious effort to address these problems and shape a fair and effective national energy policy. That's why we at API welcome the energy policy initiatives now underway in both Congress and the Administration.

A successful national energy policy must be comprehensive in order to be effective. It must seek to ensure enough energy to support economic growth by promoting responsible development of both domestic and foreign resources. It should recognize that sophisticated new technology developed by the oil and natural gas industry greatly reduces adverse impacts on the environment by exploration and production, both onshore and offshore.

A successful national energy policy will recognize that there is no quick fix to our energy problems. It must reflect the reality that we need to increase supplies of all forms of energy to fully support our growing economy. It is important to encourage responsible use of energy and increase supplies of all fuels, including both fossil fuels and alternative fuels.

A successful national energy policy must be flexible to allow companies to adapt to new energy and environmental challenges. It should recognize that our refinery and delivery infrastructure continues to be stretched to its limit, restraining the industry's capability to meet new energy demands. It should remove unreasonable and complex regulations on cleaner energy production and transportation to accommodate growth and the continued high demand for energy—and to meet seasonal or unexpected requirements.

A successful national energy policy must rely primarily on the private sector working through free markets, and it must recognize the value of diversified energy sources. To that end, it should encourage competitive trade practices and international investment.

Finally, a successful national energy policy must create a predictable operating and investment environment for energy suppliers. Government must work to create a more stable regulatory environment so that producers can invest with the confidence that they will be able to get a fair return on their investment.

CONCLUSION

Having said that, we should understand that it took some 25 years to get into today's energy situation—and the problems will not be solved overnight. Moreover, supply cannot be matched to demand without massive capital investment, construction and turnover in equipment and this requires long lead times. In order to ensure that these adjustments are made as soon as possible with the least amount of disruption, we must start making the necessary policy decisions now. So it is absolutely critical that energy be fully represented at the government decision-making table and that the energy impact of environmental and other decisions be fully considered.

After more than two decades of inaction, the American public can no longer afford the luxury of not coming to grips with U.S. energy needs while maintaining a clean environment. We can, as a nation, do both—and we cannot afford to heed those negativists who tell us otherwise. Meeting U.S. energy needs and protecting the environment are both critical to our nation's continued economic growth—and critical to achieving the future prosperity and wellbeing we all seek.

API and its members look forward to working with you in the coming months.

The CHAIRMAN. Thank you very much, Mr. Rubin.

Mr. Neal Stanley.

Mr. STANLEY. Thank you, Mr. Chairman.

The CHAIRMAN. On behalf of the Forest Oil Corporation, please proceed.

**STATEMENT OF NEAL A. STANLEY, VICE PRESIDENT, WESTERN REGION, FOREST OIL CORPORATION, ON BEHALF OF INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES**

Mr. STANLEY. For the record, I did submit a written testimony, but I have some oral testimony also. I am senior vice president of Forest Oil and President of the Independent Petroleum Association of Mountain States, both based in Denver, Colorado. Forest Oil is a producer of oil and gas from the offshore Gulf coast, Louisiana, Oklahoma, Texas, New Mexico, Rocky Mountain States, Canada, and in the Alaskan Cook Inlet. I would like to thank this committee for focusing its attention on the impediments to the development of our domestic oil and natural gas resources.

Policies that either limit or encourage energy development on government land have very real consequences. As such, I imagine we all desire land policies that will provide for human needs, contribute to the sustainability of our nation's economic vitality, and concurrently help secure the health of the land for the benefit of current and future generations.

The United States' economic expansion over the past 15 years has been fueled by low energy prices. Since there was sufficient energy supply during this time, no real attention was paid to the problems that face the oil and gas industry. In 1981, 89 thousand wells were drilled in the United States. This declined to 19 thousand wells in 1999. So there is no wonder that our oil and gas production decreased significantly during this time. With these declines in production and with our expanding economy, it should also be no surprise that we consumed our surplus energy capacity, and prices have dramatically increased as a result.

I believe the oil and gas industry can meet the Nation's growing demand for natural gas, but the price of natural gas will be dependent upon a number of factors, most notably having adequate access to the resources in a timely manner. Policies that promote reasonable access to the Nation's abundant supplies of natural gas will bring gas to market more quickly and also lower the price of this energy. It is important to understand that increased drilling will result in an increased supply of oil and gas. However, this increased supply will be added one well at a time.

Some critics that say that areas that only supply 5, 10 or 15 percent of our oil or gas are not significant enough to pursue. This is erroneous logic. It will require the sum of all of these areas to supply our energy needs.

[Handout.]

Exhibit One in my handout shows a map of the United States that 52 percent of the land in the West is government land.

Exhibit Two shows the estimated percentage of those resources that are subject to severe, if not outright, prohibitions on access. In the Rocky Mountains where abundant supplies of natural gas exist, Federal policies prohibit access to an estimated 137 trillion cubic feet of natural gas. Without access to such areas, the gas in-

dustry will not be able to keep pace with steeper decline rates in the mature basins.

Impediments to gaining that access for natural gas development come in many forms. Recent monument designations, new policies prohibiting road construction, and continuous wilderness reviews prohibit access to some areas. Outdated resource management plans and overly-restricted surface use requirements also prevent access.

Exhibit Three in my handout shows surface use restrictions. A natural starting point for looking at limits on access is with the restrictions and effectively reduced access where oil and gas leasing has already occurred. Please notice in Exhibit Three the length of time associated with each restriction shown in the red bars, and also that the time required to drill a well is 20-30 days.

Companies exploring for natural gas have a very short window to build their wells when all these restrictions are in place. We should be able to obtain a balance between development of the resource and conservation. Look at the common restriction on drilling during winter months to protect the big game winter range. We do support the protection of big game. However, we should seek to strike a balance that will protect game and also allow drilling during the winter months. This effort to find a way to meet both needs has been missing, but it does not have to be.

If a balance between both resources could be found, hundreds of wells could be drilled in the winter months to help meet natural gas demand pressures that we will have each summer. Examples like this point out an important shortfall in land management policy. There has been no clear direction for land managers with respect to energy development on government land.

In conclusion, I would remind the committee that natural gas resources are not uniformly distributed across the landscape. Even so, natural gas development can co-exist with the other values. We do not need to choose between this or that use of public land. Responsible management can allow for this and that use. Responsible management can provide a low-cost, reliable and sustainable energy supply to fuel our economy for many years and concurrently help secure the health of the land for the benefit of current and future generations.

Mr. Chairman, I view the balance between energy supply and its price and access to government land as somewhat of a teeter-totter. If the energy industry is shut out from government land, then the price will be much higher. If we have access to more land, then the price will be much lower. It is really up to the American people and this Congress to establish that balance of the trade-offs of allowing reasonable access to government land with the tangible benefits of securing an adequate supply of natural gas to meet the nation's growing energy needs.

Mr. Chairman, members of the committee, I thank you for hearing me today.

[The prepared statement of Mr. Stanley follows:]

PREPARED STATEMENT OF NEAL A. STANLEY, VICE PRESIDENT, WESTERN REGION, FOREST OIL CORPORATION, ON BEHALF OF THE INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES

Mr. Chairman, members of the committee, I am Neal Stanley, Senior Vice President of Forest Oil Corporation, and President of the Independent Petroleum Association of Mountain States (IPAMS). Both Forest Oil and IPAMS are based in Denver, Colorado. Today, I am testifying on behalf of the Independent Petroleum Association of America (IPAA), and IPAMS. IPAA and IPAMS represent thousands of independent oil and natural gas producers across the nation. Independents drill 85 percent of the wells in the U.S., and produce 40 percent of the oil and two-thirds of the natural gas.

I would like to thank this committee for focusing its attention on the impediments to the development of our domestic oil and natural gas resources. Policies that either limit or encourage energy development on government land have very real consequences. As such, I imagine that we all desire land policies that will provide for human needs, contribute to the sustainability of our nation's economic vitality, and concurrently help secure the health of the land for the benefit of current and future generations.

Despite our best conservation efforts, electricity demand in the United States will continue to increase as a function of our growing population and the role of computers in our new economy. The role of natural gas in meeting this new demand cannot be understated. Ninety-five percent of all the new power plants now scheduled to be built will run on natural gas. Electricity produced from natural gas fired generation will increase from 15 percent to 40 percent by the year 2020. In 1999, the National Petroleum Council forecast natural gas consumption increasing from 22 trillion cubic feet (TCF) this year to 35 trillion cubic feet (TCF) in 2020.

In the United States, the economic expansion over the past fifteen years has been fueled by low energy prices. These low prices have been good for everyone, except for the 400,000 American oil and gas company workers that have lost their jobs. Since 1981, exploration and production employment has decreased from 700,000 to 300,000, a decrease of 57%. Since the oil price collapse of 1986, the domestic oil and gas business has been in a severe depression. In most areas, wells could not be drilled economically due to the low oil and gas prices. Many companies went broke by drilling wells with the hope that higher prices would appear in the near term. In short, the oil and gas industry is a small shadow of its former self.

Since there was sufficient energy supply during the past fifteen years, no attention was paid to the problems that faced the oil and gas industry. Rules and regulations that further restricted the industry were applied with vigor. In 1981, 89,000 wells were drilled in the U.S. This declined to 19,000 wells in 1999. It is no wonder that our oil production decreased from 8.6 million to 5.8 million barrels a day and our gas production decreased from 19.2 to 18.7 trillion cubic feet per year over this time frame. With these declines in production, and with our expanding economy, it should be no surprise that we consumed our surplus energy capacity, and prices have dramatically increased as a result. This is basic Economics 101, supply and demand.

The oil and gas industry can meet the nation's growing demand for natural gas, but the price of natural gas will be dependent upon a number of factors, most notably, having adequate access to the resource in a timely manner. Policies that promote reasonable access to the nation's abundant supplies of natural gas will bring gas to market more quickly and also lower the price of this energy. It is important to understand that increased drilling will result in an increased supply of oil and gas. However, this increased supply will be added one well at a time. Some critics say that areas that only supply five, ten, or fifteen percent of our oil and gas are not significant enough to pursue. This is erroneous logic. It will require the sum of all of these areas to supply our energy needs.

Exhibit #1* is a map showing government lands. The various colors represent the different agencies with surface management responsibility. A map showing the federal government's mineral interest in the western United States would encompass an even larger portion of the West than is depicted on this map. Fifty-two percent of the land in the western United States is managed by federal and state governments.

Exhibit #2 shows the total estimated natural gas resources in the lower 48 states, with the corresponding percentage of those resources that are subject to severe, if not outright, prohibitions on access.

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*The exhibits have been retained in committee files.

Developing the substantial domestic natural gas reserves in offshore areas of the Eastern Gulf of Mexico, Atlantic Ocean, and California is prohibited by moratoria. President Clinton extended these moratoria for another ten years in 1998 saying, "First, it is clear we must save these shores from oil drilling." This is a flawed argument ignoring the state of current technology. It results in these moratoria preventing natural gas development as well as oil. In fact, both the Eastern Gulf and the Atlantic reserves are viewed as primarily gas reserve areas, not oil. Those coasts are not at risk. Too often, these policies seem to be predicated on the events that occurred 30 years ago. Federal moratoria policy needs to be reviewed and new policies need to be based on a sound understanding of today's technology.

Offshore Lease Sale 181 is scheduled for December 2001 and is outside the areas covered by moratoria. The resources contained in this sale area, approximately 7.8 TCF of gas and 1.9 billion barrels of oil, are important to the nation and surrounding coastal states. We strongly recommend the sale stay on schedule. This sale includes much needed gas resources for the Gulf of Mexico to even partially meet this country's natural gas needs.

In the Rocky Mountains, where abundant supplies of natural gas exist, federal policies prohibit access to an estimated 137 trillion cubic feet of natural gas. Long-term sustainable gas production will be achievable only through the development of frontier areas such as the Rockies. Without access to such areas, industry will not be able to keep pace with steeper decline rates in the mature basins.

Impediments to gaining access for natural gas development come in many forms. Recent monument designations, new policies prohibiting road construction, and continuous wilderness reviews prohibit access to some areas. Administrative withdrawals, inaction, and extensive delays work similarly to restrict access. Outdated resource management plans and overly restrictive surface-use requirements also prevent access. The constraints differ in severity, but in each case, these impediments work individually and cumulatively to prevent the development of natural gas.

A natural starting point for looking at limits on access is with the restrictions that effectively reduce access where oil and gas leasing has already occurred. We should be able to obtain a balance between development of the resource and conservation. Take for example a common restriction on drilling during winter months to protect Big Game Winter Range. We support the protection of big game. However, we should seek to strike a balance that will protect game and allow drilling during winter months. This effort to find a way to meet both needs has been missing, but it does not have to be. My personal experience of sitting on many drilling rigs throughout the Rockies over the past 20 years has been that these animals are not the least bit bothered by our activity and we can easily coexist. If a balance between both resources could be found, hundreds of wells could be drilled in the winter months to help meet natural gas demand pressures that we will have each summer.

Examples like this point out an important shortfall in land management policy. There has been no clear direction for land managers with respect to energy development on government land. Accordingly, each land manager assigns a relative value to the development of energy with no sense of how his or her actions contribute to or detract from the nation's energy sustainability. Mixed messages and a lack of accountability have led to a situation where land managers focus entirely on process with no apparent regard for the outcome. If left unattended, this lack of direction will become even more disastrous.

Another example that illustrates the BLM's failure to recognize the urgency to develop natural gas can be seen in a recent wildcat well Forest Oil drilled in southwest Wyoming. In this case, the BLM's interpretation of field rules ended up costing Forest Oil $120,000, and even more when you consider the opportunity costs associated with delays. The well site was six miles from an improved road with an existing two-track road that went directly to the location. The BLM required Forest Oil to design and construct an improved road to the location at a cost of $90,000, even though the well was only going to take 20 days to drill. If drilling proved it to be a dry hole, we would not need to continue to go to that location. Indeed, the well was a dry hole that cost the company $800,000 to drill. After we plugged the well, the BLM required Forest to either maintain the road forever, or reclaim the road to its previous two-track status. It will cost Forest another $30,000 to reclaim the road. The money wasted, $120,000, could have been spent drilling more wells and hopefully supplying more energy.

Natural gas companies rely on federal land managers to process their permit requests in a timely manner. Without the necessary environmental studies, permits, and authorizations, access to drill on federal lands is prohibited. Throughout the gas-rich basins of the Rocky Mountain Region, backlogs for issuing permits to drill and rights-of-way for roads and pipelines continue to grow. Many resource manage-

ment plans are outdated and revisions are being required before any leasing and development can occur.

Staffing is short in many offices and the problem seems to get worse with time. The use of sophisticated mapping tools and other technologies could ameliorate some of these problems but, as with many other issues, addressing agency priorities and goals is a necessary first step.

Exhibit #3 shows the surface use restrictions and seasonal restrictions on a southwestern Wyoming federal lease. Please notice the length of time associated with each restriction and also note the amount of time required to drill a typical 8,000-foot well and a horizontal well. Companies exploring for natural gas have a very short window to drill wells. If the BLM has not processed the permits in time to meet that window of opportunity, the company will have to release the drilling rig they have contracted and wait another year before drilling.

Exhibit #4 demonstrates the time requirements associated with operating on private land and federal land. The table shows the timeframe to get a well permitted and drilled. The difference between developing energy on private land and federal lands is 3 months versus 1-5 years.

To further illustrate the pervasiveness of land access problems throughout the Rocky Mountain Region, the following four examples are provided.

Exhibit #5 is a map of the newly designated Canyons of the Ancients National Monument in southwestern Colorado. Canyons of the Ancients encompasses McElmo Dome, one of the Rocky Mountain region's most significant sources of natural gas used for advanced oil and gas recovery in Colorado, New Mexico and Texas. On the map, of the 183,000 acres within the Monument's boundary, there are nearly 155,000 acres of active federal oil and gas leases, 141,000 acres of which are held by oil and gas production or are included in four federal oil and gas production units.

When the monument was designated, the BLM proposed stringent surface use restrictions on 79,000 acres, including a No Surface Occupancy stipulation. Given the BLM's predilection for restricting access, the Resource Management Plan that will be developed for the monument creates even more uncertainty for producers.

Exhibit #6 is a map of Jack Morrow Hills Resource Area in southwestern Wyoming. The Environmental Impact Statement for the Green River Resource Management Plan, which includes the Jack Morrow Hills area, was started in 1989, with the Record of Decision finally issued eight years later, in October 1997. The decision of whether to lease for oil and gas exploration and development in Jack Morrow Hills area was deferred in the ROD until a Coordinated Activity Plan for the area could be completed, which took another four years. When the Draft EIS for the CAP was issued, the preferred alternative was for "staged leasing," effectively postponing leasing decisions indefinitely. On the map, areas designated as potential Wilderness Study Areas (WSA) are shown in light blue stippling. Note that there are active leases and leases held by production within the new WSAs.

The attached map of the Jack Morrow Hills area shows the BLM-managed mineral estate with active oil and gas leases in yellow. Of the 623,000 acres within the red boundary of the Jack Morrow Hills area, there are 239,000 acres of active federal leases, 36,000 acres that are productive. Also note that within the CAP area, there are 137,890 acres recommended as Wilderness Study Areas.

Exhibit #7 is a map showing the entire state of Utah. Current leases are shown in yellow, a total of 3,567 active federal leases. Also shown on the map are the BLM's 1990 recommendations for three million acres of new Wilderness Study Areas, as well as former Interior Secretary Babbitt's reinventory of an additional three million acres, described in the map's legend as "HR1500 Boundaries". Note that the proposed Wilderness Study Areas include lands that are already leased, making development as difficult as the examples of Jack Morrow Hills and Canyons of the Ancients. Not shown on the Utah map are the nearly 29,000 leases that were previously leased in the past but were not renewed as a direct result of administrative direction from Washington.

Exhibit #8 is a map of the Upper Missouri Breaks National Monument. On January 17, 2001, President Clinton signed a proclamation establishing the Upper Missouri River Breaks National Monument for the primary purpose of protecting the corridor along the Missouri River traveled by Merriwether Lewis and William Clark nearly 200 years ago. The Monument was formed under the authority of Section 2 of the Antiquities Act of June 8, 1906. This Act states that lands reserved shall be "in all cases be confined to the smallest compatible with the proper care and management of the objects to be protected." Although the members of the expedition rarely explored more than two miles away from the river through this region, the new Monument encompasses over 495,000 acres of federal, state and private land and extends, in some instances, more than fifteen miles on either side of the river.

This new Monument is located in the most prolific natural gas producing province in the State of Montana. Within the Monument are thousands of acres of valid private, state and federal oil and gas leases, numerous producing and shut-in wells and several natural gas pipelines. In a recent Bureau of Land Management publication, the promise is made that the Monument designation does not apply to "private or state land, inside the boundary" and that "the designation does not affect valid oil and gas leases." Despite this rhetoric, the reality is that applications for permits to drill within and adjacent to the Monument have sat in limbo, without any action by the Federal regulators for over a year. Development of the natural gas resources on private and state lands within the monument is impossible because pipelines to transport the gas will not be allowed to cross the surrounding federal lands.

These examples are only a few of many examples of the overzealous application of singular surface uses that preclude other resource development. Some even more egregious examples would include 1) the backlog of drilling permits and rights of way applications in northeastern Wyoming, 2) de facto wilderness management of Wyoming's Bridger/Teton National Forest and Montana's Rocky Mountain Front, and 3) excessively stringent applications of NEPA planning documents and subsequent delays in Utah, Colorado, Montana, and the Dakotas.

My final point is that the employment of advanced technology for both land managers and industry must occur if we are to reach our goals. Research and development spending by the oil and gas industry has decreased from $10 billion to $2 billion per year over the past twenty years as the large integrated companies have shrunk in size. Yet we know that past innovations from this R&D, such as horizontal drilling and 3-D and 4-D seismic, have provided significant increases in the recovery of oil and gas. Frontier areas like the Rocky Mountain region will require new and sophisticated technologies to develop a large portion of the unconventional gas resources found in the region. Federal efforts to aid the R&D effort by directing a portion of federal oil and gas royalties to a research fund would be a significant win-win program. Increased R&D spending will increase oil and gas production, resulting in a commensurate increase in federal royalties.

In conclusion, I would remind the committee that natural gas resources are not uniformly distributed across the landscape. Even so, natural gas development can coexist with other values. We do not need to choose between "this or that" use of public land. Responsible management can allow for "this and that" use. Responsible management can provide a low cost, reliable, and sustainable energy supply to fuel our economy for many years and concurrently help secure the health of the land for the benefit of current and future generations.

I view the balance between energy supply, and hence, price and access to government land as a teeter-totter. If the energy industry is shut out from government lands, then the price of energy will obviously be much higher. If we have access to more land where the resource exists, then the price of energy will be much lower. The American people and this Congress must balance the perceived trade-offs of allowing reasonable access to government land with the tangible benefits of securing an adequate supply of natural gas to meet the nation's energy needs.

Mr. Chairman and members of the committee, thank you for the opportunity to appear before you today.

The CHAIRMAN. Thank you, Mr. Stanley. I noted on page seven of your testimony you have this exhibit, and I would like the young lady to hold this up, because I think it represents to some extent the reality. Here is the east coast which you indicate is 100 percent restricted, and that goes from Maine to Florida. And then we have the west coast, which you have 100 percent restricted, which goes from Washington to the end of California—the Mexican border. There is kind of the over-thrust belt that we refer to that has been substantially restricted as a consequence of withdrawals, and then we have this area off Florida that currently is under debate. It is Lease Sale 181 that is discussed. So as we look at what we have done with moratoriums, we have pretty much excluded a significant amount of area that would otherwise have the potential of energy-bearing oil and gas. Is that right?

Mr. STANLEY. Yes, sir.

The CHAIRMAN. And a lot of this has to do with the attitudes associated with the risk of OCS drilling. Is that correct?

Mr. Stanley. Yes.

The CHAIRMAN. This area here—Texas, Louisiana, Alabama, Mississippi—that is where most of our activity is coming from as far as OCS. How do you as a professional manager of oil and gas relate to the fact that it is okay here—or seems to be okay here, and we are out in three thousand feet of water now, and we are selling leases at six thousand feet, when it is not okay here and it is not okay there.

Mr. STANLEY. I do not have a good answer for that. Certainly the oil and gas industry has operated in the Gulf of Mexico for many years, and without very many problems. Forest Oil has been an operator——

The CHAIRMAN. Is it local support? Why should this area have to carry the burden for the United States when this area and this area benefit but do not have to put up with any oil and gas activity?

Mr. STANLEY. I agree.

The CHAIRMAN. I do not know that equity has anything to do with the argument.

Mr. STANLEY. I agree.

The CHAIRMAN. In my State of Alaska, for that matter.

Mr. STANLEY. In my opinion, we need to go after all of the resources that are available. It would help to supply more energy——

The CHAIRMAN. Would it help to reprioritize these areas off either coast and say now we have them all closed, could you reprioritize them and say some have a higher environmental value than others, therefore they should be closed and other areas should be opened? Is that a reasonable approach? I mean, it is going to have to come from somewhere. If it does not come from here, it is going to come from overseas. We are going to import it, right?

Mr. STANLEY. That is correct.

The CHAIRMAN. We are importing 56 percent of oil now, 57, we are going to be up to 60. I mean, I do not know what the American people want to believe, but there is a certain reality to this, is there not? Where is it going to come from? Well, thank you.

Mr. Leahy, you indicated—that is fine, thank you—an issue of CAFE standards and, in your professional opinion, while we have got to conserve more, there is a certain impracticality associated with that being the answer. Would you enlighten us a little bit more? You used some rather startling figures here, and I do not know whether we could all turn our cars in and get 56 or 86 mile per gallon cars. Many people say production is not the answer; it is CAFE standards.

Dr. LEAHY. Basically the numbers I quoted were the technically recoverable volumes of oil and gas. Let me explain what technically recoverable means. Basically, technically recoverable is the amount of oil and gas that can be extracted using current technology—current drilling techniques and so forth. There is obviously an economic piece that influences the volume of oil and gas that is practical, and that changes with the economy. Essentially what we are doing is defining the resource base, and actually we have done some economic analyses to put those numbers in a little better practical context for the decision-makers.

The CHAIRMAN. I am sorry. Mr. Simmons, you were pretty much highlighting CAFE, too.

Mr. SIMMONS. The 80-miles-per-gallon car.

The CHAIRMAN. Go ahead.

Mr. SIMMONS. You know, first of all I did that analysis myself, so I know the number is right. It is actually 49,600 barrels per day.

The CHAIRMAN. Just give us—slow us down again so we pick it up.

Mr. SIMMONS. You take an 80-mile-per-gallon car——

The CHAIRMAN. An 80-mile-per-gallon car. Do we have any of those now?

Mr. SIMMONS. No, we have a prototype that will be out in 2004. It is an imaginary——

The CHAIRMAN. We have got a 56-mile-per-gallon car if you want to buy one. Toyota makes one, Nissan makes one.

Mr. SIMMONS. And what we do is we replace that car with a car that gets an average of 17 miles a gallon, because if you take the vehicle fleet, that is our average today, and the delta is the savings. So a million 80-mile-per-gallon cars is a phenomenal concept, but it does not make a dent, a single dent.

The CHAIRMAN. A million 80-gallon cars would save us how much oil?

Mr. SIMMONS. 50 thousand barrels a day.

The CHAIRMAN. 50 thousand barrels a day, and we consume 19——

Mr. SIMMONS. Well, we are getting up a little over 20 million during the seasonal peaks, so it has absolutely no relevance. It is a great concept.

The CHAIRMAN. Okay, well—50 thousand barrels a day is what you would save if you had one million cars that go to 80. And how many cars do we have in this country? Somebody figured it out.

Mr. SIMMONS. 220 million vehicles.

The CHAIRMAN. 220 million. Well, I do not know if you could stretch the car buyers to that point. Mr. Hayes, you indicated that you—would you hold this up here, please? You indicated that significant portion under your direction of the Naval Petroleum Reserve had been opened for oil and gas leasing. Would you care to indicate the percentage that had been opened?

Mr. HAYES. Yes, I believe that the environmental impact statement was done on 3.9 million acres of the 25 million acres of the National Petroleum Reserve. That was the area that is the closest to Prudhoe Bay.

The CHAIRMAN. This is the area here?

Mr. HAYES. Yes, yes. Well, I am not sure that is correct. That looks like it is offshore or just barely onshore.

The CHAIRMAN. It is onshore. There is nothing out there.

Mr. HAYES. Okay. The area that is opened—now, that may be the area that is currently—there are about six wells in the last 2 years that have been put in. That may be where the wells have been put in but, in fact, 3.9 million acres are open now for leasing under that 1998 Environmental Impact Statement.

The CHAIRMAN. Well, the record will indicate that there were 4.3 million acres that were studied. Would you agree with that?

Mr. HAYES. That sounds right.

The CHAIRMAN. Okay. Good. And only 861,318 acres were actually leased.

Mr. HAYES. So far. We just had the first lease sale in 1999 that netted over 100 million, presumably with prices now at $28 a barrel, there will continue to be more interest.

The CHAIRMAN. Yes, but I do not want to mislead people, and I think there is a certain assumption out there that this area is open for leasing when, in reality, less than 25 percent of the four million acres has been leased and there is only 4.3 million that has been studied. Factually, much of the area that industry asked to be leased was taken out of the proposed lease sale because of environmental objection. So I want the record to note the reality that this area is not all open for oil and gas. Much of this coastline here, as you know, has been excluded because of environmental objections.

The point is 14 percent of Alaska's Arctic shoreline is actually open for exploration. Obviously ANWR is closed. This white area is open here. That happens to be State land. This little spot here which represents 861,000 acres is the only area that has been open for competitive bids that have been leased, and that is all. And then obviously we have got this huge area. This is about 1200 miles from here to here, so I do not want to have any more misunderstandings, particularly from the media, that suggest that only—95 percent of the coastal plain is open. It is not.

Now let me ask you, Mr. Hayes—if you were approached by the Governor of the Virgin Islands, Governor Turnbull, and asked to explain why under your stewardship the Department of the Interior withdrew 12,700 acres of the Virgin Islands National Park and 18,000 acres in the Buck Island National Monument without any consultation to the Governor or the Delegate, Donna Christianson, how would you explain that action? When the Governor comes into this committee and says, Senator, my entire commercial fisheries have been eliminated by this action in the closing days of the Clinton administration with no consultation with me, no consultation with the Delegate. What am I supposed to do? What would you tell him, Mr. Hayes?

Mr. HAYES. Well, I would have to check the record on that. I know that after the——

The CHAIRMAN. That is the record.

Mr. HAYES. Well, after the Grand Escalante issue, a new approach was taken to national monuments because of the concerns about the way that the Grand Escalante Monument was created. In each of the monuments, there were trips to the areas, stakeholder discussions. Senator Burns will remember up in Missouri Breaks there were several meetings.

The CHAIRMAN. We are talking about this area specifically.

Mr. HAYES. Well, I will check the record on this.

The CHAIRMAN. This Governor specifically, this Delegate who was elected and the attitude of your administration, and particularly the Department of the Interior——

Mr. HAYES. I know that Bruce Babbitt went to the Virgin Islands at least three or four times and had discussions on this point.

The CHAIRMAN. They have got great beaches down there.

Mr. HAYES. Well——

The CHAIRMAN. I mean, what did you tell this Governor?

Mr. HAYES. I cannot help you on that one, Chairman.

The CHAIRMAN. Well, you were there.

Mr. HAYES. No, I did not go to any of those meetings.

The CHAIRMAN. Well, I know, but it was under your stewardship. You were in a responsible position.

Mr. HAYES. I would be happy to supplement the record, look into it, and provide the facts as I can reconstruct them.

The CHAIRMAN. Well, I am going to go for a second round. Excuse me.

Senator BINGAMAN. Thank you very much, all of you, for being here to testify. Let me see that chart again that we had of the North Slope. Since we were just up there, it is sort of on my mind. Still thawing out.

My impression, and tell me if I am wrong about this—maybe Mr. Hayes could respond, or any of the rest of you—my impression is that administratively the Department of the Interior now has about 95 percent of the North Slope available to it, which can be made available for lease if it determines to do so. The only part that is off-limits for leasing is this 1002 area over here in the ANWR. Is that correct?

Mr. HAYES. Right.

Senator BINGAMAN. On the coastal plain. Is that right?

Mr. HAYES. That is correct, Senator, and I appreciate the question because I would like to clarify this. The vast majority of the Federal lands there are open and potentially available for leasing. In order to lease, there has to be an Environmental Impact Statement that will be done to evaluate the area to essentially provide the basis for opening it up for leasing, and then there has to be a lease sale, and then production can happen.

What happened on the National Petroleum Reserve in Alaska is Governor Knowles approached the President and asked that this area begin to be opened up because of the downsizing of the Prudhoe Bay field. The administration responded, scoped NEIS, and the chairman's numbers sound right—I think it was about 4.25 million acres which is what industry wanted and the Governor wanted the initial leasing to look at. As a result of the EIS, 85 percent of that 4.25 million was opened up for potential lease sales. Only 15 percent of that approximately four million acres was set aside because of environmental concerns.

Then the first lease sale occurred, and over eight hundred thousand acres already have been leased, but there are still available—and I am sure BLM is willing to schedule if it has not already scheduled—additional lease sales. And if there is industry interest, there can be further Environmental Impact Statements done, and other areas of the National Petroleum Reserve—the balance of the 25 million—can also be potentially opened up.

Senator BINGAMAN. My impression is that there have been leases in the National Petroleum Reserve previously that expired because the drilling did not indicate that those were promising areas with the technology they had, and then all that you described is recent.

Mr. HAYES. Right.

Senator BINGAMAN. It is a new effort to go back in and say, let us lease again, because we now think new technology has per-

suaded us that maybe we can do better with 3D, seismic and all of those kinds of technology. Is that your thought?

Mr. HAYES. That is right. In fact, I think we are going to get some important feedback. The first exploratory wells were just put in the winter before this, and I believe a couple more are coming in this winter. We are going to have the results of six to eight exploratory wells based on the new areas just west of Prudhoe Bay that were opened up.

Senator BINGAMAN. Let me ask Mr. Stanley. You had some interesting testimony where you basically pointed to some of the deficiencies in staffing, as I understand it, in getting some of these permits approved. You cited the backlog in drilling permits and rights-of-way applications in northeastern Wyoming, for example, and indicated that you think we need additional staffing. Is that within BLM land about which you are talking?

Mr. STANLEY. Yes, sir, in the BLM regional offices.

Senator BINGAMAN. Could you elaborate a little bit on that point? Am I understanding your point correctly that there is this backlog there and in other places, particularly in the Rocky Mountain region?

Mr. STANLEY. Yes, sir. The overall permitting process is quite cumbersome and quite slow, which——

Senator BINGAMAN. So that needs to be streamlined.

Mr. STANLEY. Yes, sir, it does.

Senator BINGAMAN. But you also believe that additional staff would help get those permits processed?

Mr. STANLEY. Yes. In the Powder River basin, the coal bed methane activity has been a wonderful happening for increased energy, but it has put a real burden on the existing BLM infrastructure and, frankly, the oil and gas industry to try to ramp up and handle that activity.

Senator BINGAMAN. You also referred to the importance of maintaining research and development funding for increased supply.

Mr. STANLEY. That is correct. Over the last 20 years as the major oil companies have shrunk in size, their research and development programs have also shrunk in size, so I think it would be really a win/win process to take some of the royalty money and fund research and development which should, therefore, create more production and therefore more royalty. So it should be a self-fulfilling type of an endeavor.

Senator BINGAMAN. All right. Let me stop with that, Mr. Chairman.

The CHAIRMAN. Thank you, Senator. I believe Senator Burns is next.

Senator BURNS. I just have a couple of questions. We have more people working for BLM in Montana than ever before in the history of it, and we are still not getting anything done? I think the same thing is happening, not just in—I had a hearing in Montana to explore the possibilities of coal bed methane and it was a very big finding down there and it will be part of the energy mix in that basin, as soon as we figure out how to handle the water. What are we going to do? Are we going to go back in the ground with the water, or are we going to handle it? Right now it does contain a lot of salt, but most of it is potable and can be used.

Mr. Hayes, I want to straighten out one thing. The USGS report in the upper Missouri tells us that gas reserves are higher than you would indicate in your testimony today. Do you take issue with that? With the USGS folks?

Mr. HAYES. No, no. I do not take issue with their report. I was saying that those three monuments, including the one in your State, their reserves when compared against the energy needs of the country are not significant. The USGS did say in their study that those five monuments had moderate to high potential reserves, and the numbers are in the report and they speak for themselves.

Senator BURNS. The thing about it is that in the upper Missouri—and I am pretty familiar with that country—I think Secretary Babbitt flew across that pipeline where it crosses the river three or four times and never could find it. So the way we move our supply and the way we lift supply, and even the way we discover or hunt for it is a lot different now than it ever has been in the history of the business. Even though you say there are inside these monuments there are inholders and leases, and they are going to be allowed to proceed, I would caution you to say that for the simple reason that that has not been the case when these monuments have been established.

In other words, we get some land manager who has no interest in energy production or even grazing for that matter and has for the first time in his whole life a fiefdom, and he is going to prevent this from happening, and they do it. That is what concerns me about the staffing as far as getting out—we had to change the law in order for the BLM to get their work done on our grazing permits, and we finally got that done. I do not know whether they are catching up or not, and I would imagine that the same thing is happening in the oil and gas. But I am concerned that there is a lot of misinformation floating out here, and one sort of contradicts the other.

I can remember going through the years of Gloria Flora. She was in Montana and worked with the Forest Service on the withdrawal of the eastern front, of which we have some production up there now and you cannot find it, but yet in that overthrust belt contains great reserves and should be—if nothing else, like Mr. Simmons says, it should be at least inventoried and we know that it is there, and we have got a pretty good shot.

I wish I had gotten Dr. Bill Ballard from Billings on this panel today, and I know most of you know Bill, and I do not know that there is anybody who is as knowledgeable about the West and oil and gas supplies as Dr. Ballard is, so I am concerned about this information. But I know up there that they are causing a lot of heartburn in our State. I think coal bed methane and our ability to produce gas is very important, and I am not going to say it just for electricity.

Folks, I am going to tell you—fertilizer is going to cost 30-40 percent more this year than it did a year ago, and the urea—in other words, the nitrogen that we take all comes from natural gas. We cannot afford that in agriculture and still be a viable producing industry like we have been in the past. So I am still concerned about

that, and I was very interested in your testimony today. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Thomas.

Senator THOMAS. Thank you. Dr. Leahy, what involvement do you have in the decision-making process with respect to the Department of the Interior and the Energy Department, and so on?

Dr. LEAHY. Basically the U.S. Geological Survey is a scientific and information organization. Our role is to provide the resource estimates.

Senator THOMAS. I understand that, but do you have a part—your information in their decision-making?

Dr. LEAHY. Our information is used by many different groups in terms of their role in decision-making, so I think we are viewed as unbiased provider of information.

Senator THOMAS. I think one of the problems—and I am delighted that Vice President Cheney is on a work group that brings together some of these agencies. We have had Energy up here for all 8 years, and Interior has more to do often with energy than Energy does, and we need to get some coordination so that there is some work there, I think.

Dr. LEAHY. I will say that we are providing information to those groups that you mentioned.

Senator THOMAS. I am urging you to participate in some of the decision-making, as well. Mr. Simmons, you are pretty down on conservation, then, are you not?

Mr. SIMMONS. No, I think conservation is a terrific concept. I think the proponents of the conservation issue, though, are suggesting that it is a solution as opposed to supply, and they literally must have never done any numbers. I am a numbers person, you cannot be in investment banking and not do numbers.

I think that if we had vast energy capacity, it would not really even matter, but I literally think that the conservation argument is equivalent to snake oil sales back in the days before Rockefeller. What is disturbing to me is every time I do some analysis like the refrigerator numbers—first of all, who will create a 50 percent more efficient refrigerator. It is just a dream. But if you did, to save 1 percent of daily energy, or 2.5 percent of electricity is stunning. I would have actually thought it would have been a lot more than that.

Senator THOMAS. Many people would think it would be more than that, but in any event, it seems to me from a political standpoint of getting some of the things done we need to do, conservation has to be something we are for, as well as the environment.

Mr. SIMMONS. Absolutely.

Senator THOMAS. This idea that all you do is production is not going to work in terms of the politics of this issue. You talked about production, which obviously we are for. What about refining and transportation? We can produce all of the electricity or coal in Wyoming that you can handle, but if you cannot get it to where the market is, you did not mention that.

Mr. SIMMONS. Well, in 7 minutes it is hard to—we are out of capacity right across the face of energy. There is almost no data on what transmission capacity is in electricity, for instance. In Houston we added our last transmission lines of any significance in

1983. We are out of refining capacity. Virtually every finished product pipeline in the United States operates at virtually 100 percent all of the time. We must be bumping up against the literal logistics to bring any more foreign imports into the United States, so right across the face of energy we are out of capacity.

Senator THOMAS. We talk a lot about production, but you cannot put oil in your 80-mile-a-gallon car.

Mr. SIMMONS. Absolutely not.

Senator THOMAS. Mr. Hayes, you obviously are sensitive about the last 8 years in which we have not had an energy policy, but don't you think that the increase in production on Federal land has been more a function of the price than it has been on any change that was made in the last administration?

Mr. HAYES. Well, the price increases, as you know, did not really kick in—as late as 1988, oil was still $18 a barrel.

Senator THOMAS. True, but most of the changes you are talking about in production are a result of the price.

Mr. HAYES. Certainly. I agree with your proposition that the market is a huge driver in all of this and is probably the reason why the overall production has declined in the United States pretty steadily since 1972, plus a lot of the fields are mature.

One of the reasons why there have been increases on the Federal side are the incentive side. This committee and the Congress and the President put in place a deep royalty incentive, and there are other incentives that where put in place over the last eight years. Of course, that is an important part of your consideration of an overall energy policy.

Senator THOMAS. It is pretty tough, and I understand your defense of Babbitt, but someone mentioned Jack Morrow Hills. Well, we went through a whole EIS—Secretary Babbitt came out and said, we want you to change your results. Now, you cannot do that.

Mr. Stanley, yours and Mr. Rubin's comments were not consistent with Mr. Hayes'. Would you like to comment on that?

Mr. STANLEY. Well, I think there is some confusion over the accessibility of land. As I stated, many lands have been leased but, in effect, but are almost off-limits because of all the severe restrictions.

Senator THOMAS. Roadless.

Mr. STANLEY. Roadless. Even all the various surface use restrictions, and no surface occupancy. Some of those restrictions make drilling wells uneconomic, so you may have a lease but then you decide it really does not make economic sense to do it because of the severe restrictions. The timing of the restrictions where we only have a small window in the year to drill many leases plays real havoc with the drilling contractors. They cannot hire a crew that only wants to work two months out of the year, and so there is a tremendous run on the drilling contractors in the late summer to drill wells, and then——

Senator THOMAS. We ran into that just recently in western Wyoming. Jonathan Field, isn't it? At any rate, it might be Piney where the contracts—they cannot do it at certain times of the year.

Mr. STANLEY. Right. Exactly.

Senator THOMAS. Mr. Rubin, do you have any reaction to Mr. Hayes' comments?

Mr. RUBIN. Yes. I think it is really critical to advance this inventory of western lands as quickly as we can so that we can sort of end some of the debate and get something on paper that everybody can look at and agree on.

The CHAIRMAN. Can you pull your microphone closer?

Mr. RUBIN. Yes, sir.

Senator THOMAS. Will we be confused about the availability to lease against the practicality of leasing?

Mr. RUBIN. Right. The fact that you have got a lease does not mean that you can actually develop that lease in a lot of cases. Even more subtle problems compared to no surface occupancy or something like that are the difficulties in getting permits. We would be pleased if the BLM could do as good a job of getting permits out as quickly as the States do. We would like to see their performance improve, and whether that takes more resources or a reprioritization of resources—whatever it takes, it is important to do that if we are going to increase gas production.

I understand that at least the initial part of this lands inventory has started, and preliminarily from what I understand they are looking at the Green River basin right now. They are actually finding leasing or resource restrictions significantly greater than what we found in the NPC report, so we are looking forward to seeing more of that information.

Senator THOMAS. We have been working on that for about 4 years, as I recall, or more. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. We have been joined by Senator Craig. Senator Craig is one of the senior members of this committee from the State of Idaho, another Western State with a lot of public land.

Senator CRAIG. Mr. Chairman, a lot of public lands, but we became volcanically too active about 11 million years ago, so we do not have many hydrocarbons left under our structures. Just a little lip of the overthrust over in southeastern Idaho, but it apparently does not hold a great deal of potential.

David, 17 percent of the National Petroleum Reserve in Alaska is in itself valuable, but that is not to suggest that the world is now open to exploration, and I believe that 3.9 million acres that did receive recognition in your tenure represents 17 percent. Is that correct?

Mr. HAYES. That sounds about right, because that was the request of the Governor and the industry in terms of the first bite of analysis to open it up. The assumption was that the industry would prefer to have the access close to the current infrastructure of Prudhoe Bay, and obviously as you move further west, the production costs go up higher. I am sure that Secretary Norton would be happy to, and we would have been happy to, to start an EIS process to open up additional areas in the National Petroleum Reserve. That is really what the reserve is for.

Senator CRAIG. And therefore you would advise her to do so?

Mr. HAYES. She is not asking for my opinion, Senator, any more.

Senator CRAIG. I would have a comment to that, but it would probably be less than honorable.

Mr. HAYES. No, no, I do not feel it is appropriate for me to advise her, but obviously if there is—I do not think there is any question that the National Petroleum Reserve is a very important piece of our energy future, and that if there are potential additional reserves that industry is interested in developing, it certainly should be explored.

Senator CRAIG. Well, we can all debate on what is or is not available. I do not know a great deal about the agencies functioning in oil and gas because it is of direct interest to me, but it is not of direct impact to my State. But I do watch very closely a strategy that was employed over the last eight years that dramatically declined the ability to offer up timber sales.

About an 89 percent decline in timber production on public lands occurred in an 8-year period. One of the ways of doing that is to basically disallow and/or diminish the ability of the on-ground staff to put up, or make available, or to review, and that is exactly what happened. In fact today, as a result of the last 8 years, it is almost impossible for some of my force in Idaho to muster people of any talent that would put up a timber sale, or could, that would have the basic knowledge to do so. So it is one thing to suggest there is a green sale program; it is another thing to suggest that we have the staff to do it.

It was an interesting strategy, but it worked. I am not sure that is true in oil and gas, because I do not know, but I know that Senator Burns is suggesting that in Billings there are, I believe, 557 BLM employees, and yet they are incapable of or less than capable of, or less than timely, in their ability to deal with the applications in a way that is meaningful. So there are a lot of ways of dealing with this, and certainly all of the environmental standards must be met.

In the mid-1980's while we were still active in the overthrust belt, I was serving in the House, and I felt it was important that my colleagues from Eastern States go West and look at the oil production that was going on in the overthrust belt. I had people like the late John Siberling—certainly a devout environmentalist—and others who traveled with us. I wish my colleague from Wyoming was still here, because I will never forget the morning that we lifted off from Jackson Hole, and we all know about Jackson Hole, Wyoming, a beautiful, pristine valley up against the backdrop of the Tetons. And we were flying south of Jackson Hole and slightly west, still in the State of Wyoming, looking for a drill site in which drilling had gone on but nothing had been discovered.

So the drill rig had been pulled, the reclamation had gone forward about 2 years before that, and the road had been obliterated, seeded in, and we overflew the area a couple of times. The pilot and the Federal person could not find the site. So we finally circled a clearing, and as we dropped down, we lost sight of Jackson Hole which was in the distance. We could still see the city, and we landed in a clearing and scared out a cow, a elk and her calf and found the drill site.

My point is simply this: The technology and the ability we have today to recover and reclaim and make safe is so real compared to where we were decades ago—and this was still nearly 2 decades ago, 15 years ago, I would guess—that the tragedy of an unwilling-

ness to look at reality today is that the American consuming public and the economy often times gets put through what they should not have to be put through. I am often times interested when people say, Mr. Chairman, will we develop an energy policy if the Senate cannot support ANWR? And why should ANWR be a part of an overall energy strategy?

Why should any of us as public policy makers debate energy without laying all of our potential energy cards on the table? I think that is what my colleagues were talking about when they talked about areas offshore that are restricted today. That is not to suggest that we would not restrict them in the future, but if we are really going to be honest with the American public, then we ought to lay all of the cards on the table and once again decide based on our ability and technology, and not emotion and not politics, what is or is not doable, what is right or wrong in the current economy, and in the current environmental technology that is available. Hopefully someday we will get there; I would hope that it is not driven by $3 or $4-a-gallon gas, but it may well be in time.

So we have got a job to do, and Mr. Chairman, thank you for your willingness to pursue it in a very direct way. But to be dishonest with the American people at this time, and to suggest to them that they spend ever-increasing amounts of their income for their energy needs in an absence of a responsible and honest dialogue is in fact false policy, and I hope that we can adjust that.

The CHAIRMAN. Thank you very much, Senator Craig.

Mr. Hayes, relative to your comments with regard to what action your administration under your stewardship took—I think we have a few differences of opinion. I would ask you a specific question whether the Department of the Interior—the Department responsible for OCS leasing—supported deep water royalty relief within the Clinton administration initially.

Mr. HAYES. I cannot speak to initially. I know the President signed the bill and supported it. Of course, Senator Johnston is the key to that.

The CHAIRMAN. I was ranking member then and worked with Senator Johnston. The fact is—and perhaps we ought to ask Senator Johnston, but the Department of the Interior fought this issue, and it was the Department of Energy that prevailed.

Mr. HAYES. Yes.

The CHAIRMAN. So, to suggest that it is appropriate that the Department of the Interior take credit for this I think is a bit misleading, and we would be happy to have any comments that Senator Johnston might care to make as to the concentration of efforts to prevail during the Clinton administration. You know, it is kind of interesting between monument designation withdrawals and a last-minute 60 million acre roadless policy, the amount of lands closed to energy exploration and development almost doubles—almost doubles the total OCS acreage leased during the past 8 years.

There were approximately 38 million acres of OCS area land leased, and there were about 65 million acres that were closed in the monuments and roadless on shore. So while you point out with some pride what you accomplished, I do not think you are giving the American people a fair evaluation of what you closed in the process of accomplishing it. Your role in this probably was not of

significance, but nevertheless I think it reflects a reality that clearly the Department of the Interior was opposed to OCS royalty relief, and the Department of Energy was the one that prevailed as a consequence of the good works of Senator Bennett Johnston. If you care to dispute that, please proceed.

Mr. HAYES. Mr. Chairman, it is rare that I would dispute anything you say. I respect you very much, but let me just say, if I can—my statement was that the administration supported the Royalty Relief Act, and the President signed the bill and the Interior Department moved out very quickly and aggressively in implementing it, and the leasing numbers show the result.

If I could comment very briefly on the amount of land designated in national monument status. As I said in my testimony, prior to the designation of national monuments, we obtained oil and gas survey and mineral survey information from the USGS. That information has recently been confirmed in another U.S. report that was done in March of this year by the new administration, and they confirm that less than one million acres of the monument-designated areas have any significant potential for oil and gas, and I have laid that out.

With regard to the roadless rule, I would just like to point out that that is now underway—the analysis of how much potential oil and gas there might be. The Department of Energy study suggests about 11 TCF of natural gas. I would just like to point out that that is less than 1 percent of the total reserves as identified in the National Petroleum Council report.

The CHAIRMAN. Do you recall the figures that were given to this committee in the overthrust area, Rocky Mountain West, that there was probably somewhere in the area of 21 trillion cubic feet of recoverable gas reserves that were eliminated by the roadless withdrawal, and did you have any role in that, or did you have any knowledge of it?

Mr. HAYES. No. My knowledge of this is based on the record. Of course, it was the Forest Service that did that rule. My understanding is that the record includes the study the Department of Energy commissioned which indicates that the potential loss—and this was disputed by the Forest Service—is 11.3 trillion cubic feet of natural gas, which would be less than 1 percent of the potential available gas according to the National Petroleum Council report.

The CHAIRMAN. Well, I think there is some reasonable dispute on that, and obviously that withdrawal had a dramatic affect on the domestic prospects for gas, particularly to discoveries in the overthrust belt. The fact that it was made roadless put it off-limits, and I think it is fair to say that there was very little consideration given from the standpoint of—I do not know. Mr. Rubin, can you comment on that at all?

Mr. RUBIN. Yes. I think that part of what Mr. Hayes is saying makes our case in that it would have been fairly easy to consider the impacts on energy from these decisions, and just to have modified their decisions a little bit, and we could have captured most of the natural gas, for example, that was in the roadless moratoria by just modifying the moratoria a little bit in the Rockies by limiting the moratoria by about 5 percent, and by taking a look at the few monuments that had significant resource potential, and actu-

ally modifying what they did beforehand rather than having to get information after the decisions are made to indicate what the resource potential was.

The CHAIRMAN. I am looking, Mr. Hayes, at the study of Advanced Resources International, and the conclusions. And it says the vast majority of natural gas resources in IRAs—IRAs—are found in the Rocky Mountain region. These resources, 11.3 trillion cubic feet, are mostly contained in the largest nine plays in the Rocky Mountain region.

Implementation of the roadless policy will close to development 9.4 trillion of natural gas, increasing the total estimate by the 1999 NPC study from 29 to 38 trillion cubic feet, a significant 32 percent increase. Now, to me the only way I can read this is that areas of potential oil and gas have been taken out of development by this roadless action, and it was under your watch.

Mr. HAYES. That's correct. Those are the same figures, and just to put that into perspective, if you add those two figures together plus the west coast and the Gulf and the east coast, the offshore resources together, it is about 100 trillion cubic feet of gas that largely because of the offshore moratorium, is unavailable for drilling. And that total is about 7.5 percent of the Natural Petroleum Council's estimate of the reserves. I should mention that the USGS apparently is potentially upping that estimate.

The CHAIRMAN. Well, to a large degree I do not think you can dodge the reality that our energy crisis is due, in some portion, to the idea of a death of thousand cuts. Whether it is what is done in the overthrust belt, what has been done with the moratoriums, what has been done, and done, and done, and yet we are crying for energy. Mr. Leahy, I was hoping that one of you would give us a little information on when we could expect to relieve our dependence on oil for transportation. Well, look at conservation—it is important. We look at alternative energy and it is important. But oil flies the airplanes, the ships, the trains, the automobiles, the trucks. When are we going to get some relief?

Dr. LEAHY. I guess the way I would answer that question, Senator is, as you know, we are dependent on foreign sources for more than or about 50 percent of our consumption.

The CHAIRMAN. And we are just going to import it?

Dr. LEAHY. Well, the point is it will require, I believe, all of the issues in terms of conservation and development that this group has talked about.

The CHAIRMAN. Well, I know what Mr. Simmons just told us of 50 thousand barrels that we could save if we put a million cars in there. Do we have an answer? Are we going to continue to depend on fossil fuels, particularly oil, for transportation in the foreseeable future?

Dr. LEAHY. I do not see our dependence on oil disappearing quickly.

The CHAIRMAN. Well, that is supported. I assume some of you have seen the CSIS study that came out here a short time ago. It said for the next 20 years just not the United States—and I think that is part of our problem, we think of ourselves as a little island, that everything circulates around us—but there are developing countries, and then there is China, and the demand for oil is going

to increase, and we are either going to produce more and relieve our dependence, or we are going to import more in spite of the efforts and the necessity of conservation.

I wish these people that say conservation is the answer would give us a formula for achieving it. Indeed the answer is we can do more, but we use more. We have more airplanes flying, whatever.

Now a couple more questions and I think we can break this up because it has been valuable. I think we have had some conversation about leasing lands, and that does not necessarily make then suitable for exploration and production. Permitting time and development time are significant, and we have had problems in this area where we try and balance legitimate environmental consequences, but is there in your collective opinions—and maybe Mr. Stanley, you are in the oil business—can we take steps, still protect the environment and the legitimate concerns and still expedite the process that you would specifically recommend?

Mr. STANLEY. Yes, sir, I think we can. The footprint is so much smaller today than it ever has been, and drilling gas wells in the Rocky Mountain region where you usually have one gas well per every 160 acres, the size of the drill site is only two to three acres, so it is a very small part of the land that is used to drill a well. And then after we finish drilling, most of that two to three acres is reclaimed, and the resulting producing pad is maybe only a half an acre or a third of an acre, so it is a very small imprint on the land.

The CHAIRMAN. Has government made it easier or more difficult as time has gone on? In other words, you have had experience in this for some time. Is it getting easier, or is it getting tougher?

Mr. STANLEY. It is getting much tougher. An example is I guess I keep talking about the big game winter range, but that is a significant problem. In the old days—5, 10, 15 years ago—we were only precluded from drilling if the animals were actually in the area and then moving in, and then only on part of a lease. More recently, that restriction has been much more widespread, so that stops a lot of wells from being drilled in the winter time.

The CHAIRMAN. Mr. Leahy, the proven reserves of oil for the United States—did you include—I think you used something like 23 or 24 billion barrels of proven reserves?

Dr. LEAHY. Let me go back to my notes. Based on our 1995 assessment for onshore and State waters, our proven reserves were 20 billion barrels.

The CHAIRMAN. 20 billion. And that is onshore?

Dr. LEAHY. And State waters.

The CHAIRMAN. And State waters. Can you differentiate onshore and State waters of your 20 or so?

Dr. LEAHY. We should probably answer that for the record, Senator. I cannot——

The CHAIRMAN. Most of it is onshore?

Dr. LEAHY. Yes. I would say so.

The CHAIRMAN. Did you include any estimate for ANWR in there? In that figure? The ANWR figure being a low of 5.6 and high of 16, maybe a mean of ten?

Dr. LEAHY. Okay, the ANWR figures are basically undiscovered resource base, not proven reserves.

The CHAIRMAN. Right.
Dr. LEAHY. So it would be——
The CHAIRMAN. So you are only using proven reserves?
Dr. LEAHY. Yes.
The CHAIRMAN. Are you using the ANWR figures in your unproven reserves?
Dr. LEAHY. Not in 1995. The 1995 numbers that I quoted did not include the more recent estimates of ANWR that were done in 1998.
The CHAIRMAN. Now would you explain—there were three estimates on ANWR over the last decade.
Dr. LEAHY. Uh-hm.
The CHAIRMAN. And one of them was done in less than a week?
Dr. LEAHY. Yes.
The CHAIRMAN. To accommodate the Department of the Interior at a time when they wanted a different figure. Is that about right?
Dr. LEAHY. That is correct. Well——
The CHAIRMAN. Well, whatever. And can you elaborate for us the different figures that were used and how long it took roughly for each estimate to be developed?
Dr. LEAHY. I can provide some insights but, again, probably not figures. Basically the national assessment was done in 1994. The numbers used in that were based on a 1987, I believe, assessment of ANWR. But clearly in the 1994 assessment, they ranked the Alaska north shore as having high potential, but there was not much known about ANWR at that point in time.
The CHAIRMAN. Well, there has not been any more known about it since then.
Dr. LEAHY. Well, there was geophysical data that was available and was basically used in the 1998 assessment, so we were able——
The CHAIRMAN. Well, you are not——
Dr. LEAHY. There was more geological information than there was——
The CHAIRMAN. Well, there was not any exploration that went on.
Dr. LEAHY. No, no, but there were some geophysical lines that we were able to take a look at, and there were some wells drilled.
The CHAIRMAN. So what did you come up with in 1987 on the 1987 figure which came out in 1994?
Dr. LEAHY. I do not have that—I would have to answer it for the record, but clearly in the 1998 assessment in terms of technically recoverable resources, if we look at the entire assessment area——
The CHAIRMAN. 1002 area is what we are talking about.
Dr. LEAHY. You want the 1002 area?
The CHAIRMAN. Well, that is——
Dr. LEAHY. Well, let me do the entire assessment area. At the 95 percent probability——
The CHAIRMAN. When you say the entire assessment area, are you telling me that consists of all of the million-and-a-half acres?
Dr. LEAHY. It is all of ANWR, yes.
The CHAIRMAN. Okay. So it is all of the 1002 area.
Dr. LEAHY. Well, yes. 1002 was——
The CHAIRMAN. And this was in 1998?

Dr. LEAHY. This is the 1998 number. At the 95 percent probability, 5.7 billion barrels of oil, at the mean 50 percent probability, 10.36, and at the 5 percent probability, about 16 billion barrels of oil.

The CHAIRMAN. Okay, now for the record, if it were 10.36, where would that ranking in size in the standpoint of oil fields found?

Dr. LEAHY. It would be—this is multiple fields, keep in mind.

The CHAIRMAN. I am saying a million-and-a-half were 1002 area, if you say it is 10.36, what would it rank with?

Dr. LEAHY. Well, just to give you some perspective, Saudia Arabia—the giant oil fields——

The CHAIRMAN. I am talking about the United States.

Dr. LEAHY. I believe the east Texas field is about five billion.

The CHAIRMAN. Well, obviously this 10.36 is bigger than five, so it is bigger than the east Texas field. Is it bigger——

Dr. LEAHY. That is one of the larger ones.

The CHAIRMAN. Are you suggesting it is the largest if it is 10.36?

Dr. LEAHY. Yes.

The CHAIRMAN. I have to deduce that unless you come up with something else.

Dr. LEAHY. Keep in mind that the number I quoted you was basically for multiple fields; it is the volume of the undiscovered resource.

The CHAIRMAN. It is in—I know. The issue before the Congress is whether to open the 1002 area, the million-and-a-half acres or not.

Dr. LEAHY. Okay.

The CHAIRMAN. And I assume you have given us a mean of 10.36.

Dr. LEAHY. For the entire assessment area. For the ANWR area which is smaller, as you know——

The CHAIRMAN. Now, just a minute. You just told me the assessment area was a million-and-a-half acres, which is the question here. It is not the 19 million acres that are in ANWR.

Dr. LEAHY. Okay. Let me just quote the 1002 area, which is the smaller area. That would be 7.7 billion barrels of oil at the 50 percent probability. I believe the Prudhoe Bay field is something on the order of 13 billion barrels.

The CHAIRMAN. It was 10 originally; it has produced 12.

Dr. LEAHY. And there are some estimates that there are three left.

The CHAIRMAN. So you are taking in 19 million acres of ANWR in your mean of 10.36? Is that correct?

Dr. LEAHY. Yes, that is for the 19 million.

The CHAIRMAN. So you are picking up roughly 3 million acres outside the 1002 area in your calculation?

Dr. LEAHY. Correct.

The CHAIRMAN. Okay. And what would be the high then for just ANWR?

Dr. LEAHY. 11.8 at the 5 percent probability level.

The CHAIRMAN. So if you took the mean it would be 7.7?

Dr. LEAHY. Correct.

The CHAIRMAN. And if you took the high it would be 11.8. And the largest field in North America is——

Dr. LEAHY. Prudhoe Bay.

The CHAIRMAN [continuing]. Prudhoe Bay, and that was 10 initially, and it has produced 12. So what I am attempting to draw from you—and I am having some difficulty in doing it—even if it were the mean of 7.7, it would be the largest field found in the United States in the last three or four decades?

Dr. LEAHY. It is not a field; it is multiple fields. But certainly the volume of oil——

The CHAIRMAN. It is in the 1002 area, and the only thing Congress can address is whether to open the 1002 area or leave it closed. The question I continually ask is how much oil is there, and obviously we do not know and we have to depend on you and you are telling me that there is a mean of 7.7 and a high of 11.8.

Dr. LEAHY. That is correct. Senator, I think a way to appropriately look at the relative size is that in 1989 in Colombia, the Cuciana Field turned out to be the second largest field discovered in all of the western hemisphere. They thought it was going to be about the size of Prudhoe Bay, and it turned out to be half that size, so I would guess that this area would rank number two.

The CHAIRMAN. Okay, well, it is hard to get a guess out of the professionals, but we have a guess out of the financiers, which are the ones that have to finance this development.

How important is the energy problem to our economy, Mr. Simmons, and relate to the fact that we are now looking at natural gas as our savior.

Mr. SIMMONS. I do not think you can have any form of economy that makes any sense——

The CHAIRMAN. What kind of an economy?

Mr. SIMMONS. Any form of an economy that makes any sense at all without reliable and dependable energy. When Henry Kissinger wrote his last book, when he reflected back on the 1970's, with the benefit of 25 years of hindsight, he described the 1973 oil shock as the second worst threat to the economies of the world since World War II. I think what we are in now is significantly worse than the 1973 oil shock once it plays out.

The CHAIRMAN. Why do you say it is worse now than the 1973 oil shock? We had lines around the block in 1973. The public was outraged.

Mr. SIMMONS. Yes.

The CHAIRMAN. They were pointing their fingers at everybody and government was ducking. Why is it worse now?

Mr. SIMMONS. The 1973 oil shock lasted 65 days. It was consumers panicking, topping off their tanks, and it was strictly related to oil. We had ample supplies of natural gas and electricity. By the time this plays out, I am afraid we will look back and say this was far worse, because it is all three forms of energy at the same time.

The CHAIRMAN. Well, how is this going to play out in your vision? You made a broad statement there that we will look back on this and it could be worse than 1973.

Mr. SIMMONS. When we have hot weather this summer—if we have hot weather this summer—we are going to find the electricity problems in California are going to spread to many other parts of the country. I am afraid that we are not likely to see any supply

response from natural gas, despite the high prices, for quite some period of time.

The CHAIRMAN. No supply response?

Mr. SIMMONS. To natural gas.

The CHAIRMAN. Why do you say that?

Mr. SIMMONS. Because we have basically had a rig count drilling for natural gas that exceeded 600 rigs 16 months ago, and it has now hit a 20 year high, and so far we have had absolutely no supply response to the increased drilling. Canada is a year ahead of us——

The CHAIRMAN. You say that we are drilling more, we are putting more in, but we are using more?

Mr. SIMMONS. We are drilling—we are finding smaller prospects, and the decline curves in almost all the basins of North America are now so high that we created a treadmill that created a need for an exponential amount of wells to be drilled, and we are now just about out of drilling rigs.

The CHAIRMAN. Do you gentlemen agree with this statement that we are going to look back at this time—weather patterns obviously, we are now dependent for our energy policy on the uniqueness of weather patterns—are we going to look back at this time and say it is worse than it was in 1973? Mr. Leahy, do you agree with that?

Dr. LEAHY. I do not know.

The CHAIRMAN. Mr. Hayes?

Mr. HAYES. I do not know.

The CHAIRMAN. Mr. Rubin?

Mr. RUBIN. I think we do have the unique situation in that we do have tight supplies of a number of forms of energy. I am not capable of predicting the future, but I am certainly concerned about what is going to happen over the next several months.

The CHAIRMAN. Mr. Stanley.

Mr. STANLEY. Yes, sir, I agree with Mr. Simmons that we have a shortage of oil, we have a shortage of gas supply, and we have a shortage of electricity, and it is going to take a tremendous effort to increase that supply. We are going as fast as we can trying to drill more wells wherever we can, and as Mr. Simmons said, we are just really holding our production flat. We are not increasing it.

The CHAIRMAN. Well, Mr. Simmons, you predict a very bleak picture. We have got a few people in this room that are students of energy or are associated with energy, and a few that are associated with the environmental community. We have a few press that are left, and we have some television stations, but this message is not getting across to the American people. Why, Mr. Simmons, is it not getting across?

Mr. SIMMONS. I think there is embedded in too many energy economists, and a lot of industry executives, a denial of the fact that we are out of capacity. I think there is some confusion about the difference between being out of energy capacity and people think you are saying that we have run out of energy.

A week from this coming Thursday, the Council of Foreign Relations and the Baker Institute will be releasing an energy White Paper, and there was a lot of debate among the forty or fifty of us in what the energy issues were, but within about 12 hours I was incredibly pleased with the clarity that came out of this group. I

think that basically over the next few months America will be starting to open its eyes more to the problems, but they are very real, and as the months progress, they are not going to get any better. They are just going to continue to get worse.

The CHAIRMAN. You know, I am at a loss to know how to communicate the likelihood of this problem occurring and affecting our economy, our standard of living, our vulnerability from the standpoint of our national security. When I say that, I mean that we import 56 percent. In 1973 we were at 37 percent. We created SPRO. We were concerned enough to do something; we said we would never, ever allow ourselves to be over 50 percent. Now we have lulled ourselves into a complacency; we are at 56, 57. The Department of Energy is saying we are going to be 60. We have seen OPEC develop a discipline that they had not had before where when they want to constrict the supply, they do, and the price goes up as we have seen—it is $22 to $28, floor and ceiling? We still don't get the message.

And as we look at our transportation system where I can see relief potentially if we can develop more natural gas, recognizing that we are now having a transmission problem, and you heard the lady from Louisiana, distinguished Senator Landrieu, say that she feels strongly that before we go off and increase the supply, we better go off increasing delivery, and she is right in that sense. We are constricted by transmission adequacy in both pipeline and electric transmission.

So we are heading for this inevitable clash, and we are not addressing it. They are going to blame government—they are going to blame you and I as to how this could happen, and they are going to blame our new President. We cannot seem to wake anybody up. It is absolutely incredible, but I guess until the squeaky wheel really squeaks or there are gas lines around the block, or there are blackouts and there is no air conditioning in certain parts of the country, they are going to get the message.

If you look at the economy and the threat to the economy, you look to the threat to our national security—we are importing oil from Saddam Hussein. I keep telling you as a general rule, what do we do? We take the oil from him, put it in our airplanes and enforce the no-fly zone. We have flown 234,000 individual sorties over Iraq, endangered our men and women. We have been very lucky.

Sometimes we bomb targets over there. He takes our money, develops a missile capability, delivery capability, and aims it at Israel, and the American people say, oh, gee, he shouldn't do that. Where is it going to end? I do not know. Does anyone want to add anything?

Mr. SIMMONS. I commend you for your speaking out very loudly on this, and I share your frustration at the inability to have people hear. A lot of denial going on.

The CHAIRMAN. For the record, Mr. Hayes, I did a little checking so that we can work off the same song sheet, and with regard to the Naval Petroleum Reserve in Alaska—you can put up that chart while I speak—the record will note that 4.6 million acres are available in the sense of leasing; 2.3 million acres were set aside with the explicit provision of no leasing would occur, and those are pri-

marily in this area right here—on the coastal area because of concern over our fish and wildlife. There is a significant wildlife—particularly bird population—over here. There is not much in this area. Three hundred thousand acres of no surface occupancy, 220,000 acres available, but with strict stipulations. 1.8 million acres available with no restrictions, and 861,000 acres that were ultimately leased.

The factual reality is that only 12 percent were leased, or 861,000 acres. One of the things that a lot of people forget is they see this whole land mass here and assume there is oil on all parts of it, and therefore if this is closed, NPR ought to be able to supplant the idea that it would offset what potentially might be in ANWR.

As Mr. Hayes knows, Husky drilling under a contract with the Federal Government did extensive oil and gas exploration without 3D seismic in the 1960's, and it was not very promising. A geologist will tell you where you look for oil based on rock formations and the likelihood. This is a hot prospect but, nevertheless, I do not want to disclaim the value of NPRA because clearly there is a potential.

One of the interesting things from the standpoint of Alaskans is this used to be called Naval Petroleum Reserve Number Four when we were a territory. This was set aside by Congress with great wisdom back around the turn of the century. Of course, you can have a Naval Petroleum Reserve at the top of the world for our Navy that was sailing around the world at that time on oil, but (a) they didn't know what was there, and (b) they had no capacity to deliver it. Now we still do not know what is there, and we do not have the capacity to deliver it.

I would hope that this hearing had some value in the relationship to communicating to the American people the inevitability of what is going to occur, and I just hope that somehow this message is going to get through, but so far we have not had much luck. Hopefully your contribution is like adding one more weight to the camel, and maybe we are going to have to keep doing this until the camel collapses. I just hope that the American economy and our national security interest is not under the camel when the camel comes down. I wish you well. Thank you.

[Whereupon, at 11:52 p.m., the hearing was recessed, to be reconvened on April 26, 2001.]

[Subsequent to the hearing, the following was received for the record:]

AMERICAN GAS ASSOCIATION,
*Washington, DC, April 4, 2001.*

Hon. FRANK MURKOWSKI,
*Chairman, Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.*

DEAR CHAIRMAN MURKOWSKI: The American Gas Association requests that the attached portions of the Potential Gas Committee's (PGC) biennial report on long-range supplies of natural gas, which was released today, be included in the record of the Senate Energy Committee's hearings on domestic oil and natural gas resources, which was held on Tuesday, April 3rd, 2001.

The PGC's report shows that the U.S. natural gas resource base is estimated to be even larger than previously thought, but that the size of the resource base is immaterial unless the nation can access supplies and can build the infrastructure needed to deliver it. The committee's report showed 1,258 trillion cubic feet (Tcf) in

total natural gas resources in the United States at the end of 2000. That is the equivalent of a 63-year supply of natural gas at current rates of production.

The size of the resource base actually increased since the committee's last report in 1998, even though, since that time, 38 Tcf of natural gas have been drawn down. During the past 10 years the PGC has increased its estimate of the U.S. natural gas resource base with each successive report. This year's increase is attributable to 4 percent growth in traditional reserves and 10 percent growth in coal bed methane resources.

The Potential Gas Committee consists of more than 170 volunteer members from the natural gas industry, government agencies and academic institutions. It functions independently, but with the guidance and technical assistance of the Potential Gas Agency of the Colorado School of Mines. The committee receives financial support from AGA, the Gas Technology Institute and other companies, organizations and individuals.

Thank you for your consideration of this matter.

Sincerely,

RICHARD D. SHELBY,
*Executive Vice President,*
*Public Affairs.*

Attachments:

Overview of Potential Gas Supply in the United States and Limitations on Access to Public Lands have been retained in committee files.

# U.S. ENERGY TRENDS

**THURSDAY, APRIL 26, 2001**

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
*Washington, DC.*

The committee met, pursuant to notice, at 9:38 a.m., in room SD–366, Dirksen Senate Office Building, Hon. Frank Murkowski, chairman, presiding.

## OPENING STATEMENT OF HON. FRANK H. MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, ladies and gentlemen. I would urge the witnesses to come together with us. And I wish you all a good morning. Let me introduce the one panel that Senator Bingaman, through our collective staff efforts, has extended invitations to, and we appreciate your attendance.

Mr. Gary Heminger, executive vice president, Supply, Transportation and Market, Marathon Ashland Petroleum, Findlay, Ohio. Our next witness is Mr. Thomas Robinson. Mr. Robinson is the CEO of Robinson Oil Company, San Jose, California. Good morning.

I went to Bellarmine and Santa Clara. So I know something about your prune orchards, or at least the prune orchards you use to have. And I understand you are going to testify on behalf of the Society of Independent Gasoline Marketers and National Convenience Stores. You do not sell cigarettes to minors, is that right?

Mr. ROBINSON. Absolutely not.

The CHAIRMAN. And Mr. Daniel Greenbaum, president of the Health Effects Institute, Cambridge, Maryland. That is a rather interesting title, "health effects." I have a pollen problem. So if you can address that in your testimony, provide some relief, it would be most appreciated.

[Laughter.]

The CHAIRMAN. And it will take some pressure off the Senate physician.

[Laughter.]

The CHAIRMAN. Mr. Don Daigle, director of Americas Refining, ExxonMobil Refining and Supply Company, Fairfax, Virginia, joined by Mr. Craig Moyer, executive director of the Western Independent Refiners Association, Los Angeles, California.

Good morning, gentlemen.

Today is a hearing, which is a part of a series of hearings which Senator Bingaman and I have agreed to. And for those of you who were not present yesterday, Senator Smith on the Commerce Com-

mittee, Senator Wyden, both of whom are on this committee, held a rather interesting hearing on why gasoline prices were so high on the west coast. I think Senator Boxer showed a picture of one of the stations in San Francisco with prices up to, what was it, $2.35, which is rather startling.

I happened to mention on the side that if they got up to $3, would she support opening up ANWR. And she ducked that issues. But nevertheless, it was a good opportunity.

[Laughter.]

The CHAIRMAN. In any event, out of that hearing there was a good deal of finger pointing. But there was some substantive discussions on the reality of supply and demand. And the demand has increased, and the supply has shortened as a consequence of some of the things that hopefully you will bring about today.

We talked about reformulating gasoline, the duplications in various areas of the country and the cost associated with transporting and refining and batching. We talked about the tax issues relative to various States.

We talked about the lack of refining facilities, which I think to some extent came about publicly as a consequence of the previous administration when they called down 30 million barrels from SPR and found that, as we took that 30 million barrels and sent it to the refiners, we found we did not have any excess capacity. So really all we did with that was offset what we are importing and did not get any net new supply.

I hope some of you will be able to amplify that, because I am not sure the media and the public really understand the severity of the issue with regard to the adequacy of our refining capacity in this country.

We also touched a little bit about not in my backyard. The entire east coast offshore of the United States is off limits to OCS drilling. The entire west coast, with the exception of Alaska, is off limits. So the question is: Where is this magic going to come from?

We are going to look at fuel specifications infrastructure and their impacts on the energy supply and the price. I hope we will get a better understanding that gasoline is no longer just gasoline, as a result of the State, local and Federal regulations. I am told there are now 34 different types of gasoline. I am surprised that the standard car can take them all.

But nevertheless, we have this situation. And the legitimate question is: Is this all necessary? Is there some average witches brew that could be concocted that would lessen the amount of reformulated gasolines we have? For example, fuel made for consumption in Oregon is not suitable for California. I know in Chicago, they have to use a different fuel than they use in Springfield, Illinois.

The EIA reports that one Eastern U.S. pipeline operator handles 38 different grades of gasoline, 7 grades of kerosene, 16 grades of home heating and diesel fuel, and 1 grade of trans-mix. Maybe that is—well, we will not ask what that is. But in any event, I think it is startling to recognize the complexities that have occurred over an extended period of time and the rationale behind those.

Refiners do not have the flexibility to move supplies around the country to respond to local or regional shortages. We have the issue

of MTBE on one hand and then the throwing it out and going to Iowa for ethanol, which makes Senator Grassley very happy.

Now refining capacity we have talked a little bit about. But the last significant refinery of any consequence, with the exception of one that was built in my State, which is not as big as the marathon refinery in Louisiana, which was built in 1976, was the refinery that Williams Brothers has in Fairbanks, but it is a smaller refinery. So it is not in the same class.

In any event, we have not built any refineries for a long time. Between 1990 and 1999 refining capacity actually increased in the United States from 15 million barrels to 16 million barrels a day, but during the same time that consumption went from 17 to almost 20. As a result, in 1990, U.S. refineries could supply 94 percent of our needs, and in 1999 it is about 84 percent.

Now over the next 8 years, I am told the situation, unless we do something about it, is obviously going to get worse. The refining industry will be asked to comply with over, I gather, dozens of new regulatory programs that will impact both the cost to the consumer and the supply of fuels to the motoring public.

Some of the regulatory programs directly impact manufactured fuels, while others require new standards for operation of refineries. As a consequence, refiners around the country, already unable to keep up with the demand for product, are being asked to make significant investments to supply seasonal product for specific markets. And the cost of this is added to the complexities and supply restrictions and is passed on to the consumer.

Now we have not had the input from the administration yet on their task force report. And so we are looking forward, because we understand that some of the things we will be discussing today will be addressed by the administration and what they are for and what they are basically opposed to.

I want to thank my colleague, Senator Bingaman, for the concern he shares in this hearing. I know there has been concern about the state of our fuel delivery and our refining system for a long time. We have watched the impacts on the Nation's energy supplies, as Federal laws were passed and implementation by administrations of both parties, in ways that obviously added to the burden of American taxpayers.

But if the United States is to have an energy policy that gives the American people some degree of certainty, the least the American public should expect from its leaders. And I think it is time to look at the impacts of all our decisions that have been made on our fuel delivery system and determine where the priorities are. So I look forward to hearing more from our witnesses today.

Senator Bingaman.

**STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO**

Senator BINGAMAN. Well, Mr. Chairman, thank you very much for scheduling the hearing. And I also believe it is very timely and very important. And when we scheduled it, we did not realize how timely it would be, at least as far as the news is concerned. But there are a combination of factors that I think have a part in creating this tight inflexible market we are in.

[Chart.]

Senator BINGAMAN. I have a few charts I wanted to just briefly go through here. The first of them shows the problem we have talked before, and that is the escalating consumption of petroleum by gas, by light duty passenger vehicles. Of course, this is led by the growth in the sports utility vehicles, which the EIA projects to increase over two million barrels a day within the next ten years. So that chart, I think, is one we have shown before here. And I think it reminds us of a lot of where the problem is.

[Chart.]

Senator BINGAMAN. A second chart relates to the number of different fuel specifications that need to be produced and distributed around the country. I think this is an instructive chart that just shows at least part of the problem that we have to try to deal with and legislation that I hope we can move through this committee here in the next month or so.

[Chart.]

Senator BINGAMAN. A third deals with the difficulty of siting new facilities, whether—I guess we do not have a chart on that. But we do have a chart that shows the different regions, called the PADDs. That is a—it is interesting that we still use that phrase, "petroleum administration for defense districts." The map identifies the different PADDs that we have in the country.

[Chart.]

Senator BINGAMAN. The other chart shows how reliant some regions are on other regions for their refined products. I think this chart here makes the case pretty dramatically that the Gulf Coast region is providing by far the largest portion of our refining product. And that, of course, creates the need to transport those fuels hundreds of miles. That increases the opportunity for something to go wrong somewhere in the system.

If we cannot produce enough gasoline, then we need to obviously rely on greater imports. It is my understanding that, given the number of different fuel formulations in this country, it is very difficult for us to import gasoline from anyplace but Europe.

Another complication, which you mentioned, Mr. Chairman, is the concern about MTBE as an oxygenate, as required for reformulated gasoline. California has banned MTBE beginning in 2003. Other States are seeking to do the same because of concerns about groundwater contamination. I appreciate Dr. Greenbaum being here to give us his views as to the science related to that issue.

In the energy bill that I introduced with many of the members as cosponsors here, we did propose streamlining the number of fuel specifications around the country. And I hope we can hear from the witnesses as to their views on that proposal and whether it is appropriate or needs to be changed.

We also proposed increasing fuel efficiency for passenger vehicles. I have serious concerns that without action to deal with that demand growth, that soon we are going to see even higher and more volatile gasoline prices. The public does expect us to take some action to prevent that from happening. I am sure the industry would also like to see that prevented.

And I look forward to hearing the testimony from the witnesses on these very important issues.

The CHAIRMAN. Thank you, Senator Bingaman.

I think Senator Dorgan—were you next? I am sorry. Senator Thomas.

**STATEMENT OF HON. CRAIG THOMAS, U.S. SENATOR FROM WYOMING**

Senator THOMAS. Thank you, Mr. Chairman. I appreciate the hearing. I am going to have to leave. We are having one on the assistant secretary in Foreign Relations. So I have a statement that I will submit.

But I just, I guess, wanted to say that we have talked a lot about the problems. We have spent a lot of time trying to identify what the problems are, and I think we know those pretty well. I think it is time we found some solutions. And we are going to have to do it in a short time. We are going to be really pressed this summer; we already are.

We see the gas prices going up. It has an impact, not only on tourism and all those things. But I just had some contractors in my office. You can imagine the impact on contractors.

As a matter of fact, the State is beginning to change their contracts a little to reflect the prices. There is an electric shortage. We know that that is going to happen. What are we going to do in the short time? Those are hard questions. And I think most of us have a pretty good grasp on what we want to do over time, more production, more drilling, more movement, transmission grid, all those things. That is not going to happen right away.

So when people start banging on our doors more than they are now and on yours, what are we going to do in the short time? Heating fuel, very high. We have a lot of impacts. And, of course, as I said, the impact on the economy may be more severe than interest rates have been.

So I think we really—and I hope that you all will today. What are your solutions? What are we going to do? Let us not talk all about the problem, but let us start talking about some of the solutions. Talk about the high prices, what is the high profit that is being reported on the big companies? How does that relate? What can we do on that?

So that is pretty tough stuff. I understand. And I am a big supporter of energy and energy production. But I can tell you, we have talked enough about the problems. We need to spend a little time on the solutions. So as someone said, my reaction is, a little less talk and a little more action.

Thank you, sir.

The CHAIRMAN. Thank you very much, Senator Thomas.

Senator Dorgan.

**STATEMENT OF HON. BYRON L. DORGAN, U.S. SENATOR FROM NORTH DAKOTA**

Senator DORGAN. Mr. Chairman, thank you very much.

I think we are all for less talk and more action. The question is: What action? And I must say that I think our energy policy, to the extent we have one, is a colossal mess in this country. I think all of us understand that.

This hearing is on the issue of fuel specifications and infrastructure constraints and so on. You know, it is interesting. We come here now short of breath about this problem, and we should be. But, you know, we were pretty apathetic when oil went to $10 a barrel and people stopped looking for oil and natural gas.

You know, we probably ought to understand in the future, when oil goes to $10 a barrel, well, it might feel good in the short run, but is it going to mean you are going to dry up the funds and the incentive to search for oil and natural gas?

We sat around and yawned while people started buying gas hogs that looked like armored cars in this country. And, you know, the fact is that has a profound impact. People have a right to do that, but that has a profound impact on consumption.

Mr. Bingaman put up the transportation chart up there, or the usage chart, that showed transportation on the top line growing rather substantially. It has a significant impact. And we have largely sat on our hands in this country and in this Congress while the largest oil companies in the world decided that they wanted to fall in love and get merged and get together and pervert the marketplace. And if anybody does not think that the larger and larger enterprises are not perverting the marketplace, I say just take a look behind the headlines and see what is happening.

On a related energy issue, I might note, yesterday I received some information about the California situation. Admittedly this is electricity, but it relates back to natural gas. Californians paid $7 billion for power in 1999, $28 billion in the year 2000, and it is estimated to run as high as $70 billion in 2001. Let me say that again. In 2 years $7 billion to $70 billion. Somewhere behind these figures is something called grand theft. And as we evaluate what kind of a policy and strategy we should develop, we ought to understand where that comes from as well.

But we need to do a lot of things. We need to do a lot of things right in order to address these issues. The absolute number of refineries in this country has declined. We have expanded capacity to existing refineries and facilities to help them meet growing demand. And one of the questions is: What kind of expansion can be expected with existing refineries?

The import of refined products has been relatively flat. We have the flexibility to import more refined product or not. The array of fuel specifications, as the chairman and the ranking member have described, has reduced the flexibility in these markets. I think that is a serious problem and one that we have to address.

Are there alternative fuels that we could use as well to address some of these issues? There are a whole series of things that we need to deal with with respect to these energy issues. And I think someone mentioned the issue of price gouging and profits and so on. We ought to take a look at that as well in a significant way.

Mr. Chairman, you and Senator Bingaman have done a great job in trying to put together a series of hearings on all of these issues. And I appreciate it. I am on the appropriations subcommittee that is holding a hearing at 10 o'clock. And I am the ranking member and have to be there. I regret I cannot be at this entire hearing, but I want to thank you for these hearings and am happy to play a role in them.

The CHAIRMAN. Thank you, Senator Dorgan.
Senator Craig.

**STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR FROM IDAHO**

Senator CRAIG. Well, Mr. Chairman, I, too, join with you in obviously having tremendous interest about this hearing. I thought it was fascinating yesterday morning. I was listening to Matt Lauer interview our new President. And the question of $3 gas in California this summer came up, recognizing that it is already over $2 for premium. And the immediate response of Matt Lauer was open up the Strategic Petroleum Reserve. And the President tried to suggest to him that that was not the problem, that it was much more involved, much more in detail.

And I think we are going to hear from some of our witnesses today that that is absolutely the case. America will want a very quick, short remedy to a problem that has been building now, in part by some of our own doing, for a good long while. And the question is: Can we move quickly to get out of what we have seen as a kind of balkanization of the gas markets and do a variety of things?

I am pleased that Thomas Robinson is back with us. I am reading his testimony. I see that in 1996 he sat before this very committee and suggested exactly what would happen, if we did not respond, and it has happened. And somehow we have not been willing to recognize the impact of our decisions or our failure to make decisions on the impacts of those.

The ITCs looked at price gouging in California and would suggest that that is not the case. While those tremendous run-ups in energy costs were going on out in California, the Federal Energy Regulatory Commission under the last administration failed to respond. We have a new Chairman. He is responding. And we are going to have to determine whether we can give them the just and reasonable language within the wholesale deregulation law to move in phase three and possibly phase two without deterring investment into a market that dramatically needs investment and new supplies.

There is a great deal out there to be dealt with. But in the short run, turning on the spigot of the SPR is not the answer. Recognizing that we have had a deteriorating infrastructure and a rapidly increasing demand, or at least a modified infrastructure, is a part of what we ought to be about. And I think that is what we are going to hear from our witnesses today.

Thank you.

The CHAIRMAN. Thank you very much, Senator Craig.

Senator Hagel.

Senator HAGEL. No statement.

The CHAIRMAN. Obviously you are anxious to hear the witnesses.

Senator HAGEL. Let us get at it.

The CHAIRMAN. All right. We will move over Senator Bayh, who has left us briefly. So we are down to Senator Schumer, followed by Senator Landrieu. And we would appreciate brevity, if it is possible.

Senator LANDRIEU. Down to us?

Senator SCHUMER. We do not think it was down to us.
Senator LANDRIEU. It is just including us.
Senator SCHUMER. It is over to us.
The CHAIRMAN. To the left of me.
[Laughter.]
Senator SCHUMER. Anyway, thank you, Mr. Chairman. I appreciate it. I will be brief.
The CHAIRMAN. Good.

**STATEMENT OF HON. CHARLES E. SCHUMER, U.S. SENATOR FROM NEW YORK**

Senator SCHUMER. This is a very important hearing. And it is important for a whole lot of reasons. It is important in the short term because, for the second summer in a row, Americans are going to face the prospect of paying record high prices for gasoline at the pump.

We have called a whole bunch of experts. Very few think it is going to be less than $2 a gallon for high test. That is 20 cents higher than last year. And then each winter home heating oil is higher than it was the year before, as well. So these are very, very serious, serious problem.

And, frankly, Washington has been deadlocked for the last several years on the energy crisis. Republicans talk about drilling and increasing supply. Democrats talk about conservation. We talk past each other, and nothing much is done. And it is about time that we came together. Each of us is going to have to give some. Democrats are going to have to be willing to increase supplies in ways that they were not before, environmentally friendly, if you will, but still more supply.

Republicans are going to have to be talking more about conservation than before. Because in my judgment we are on the edge of a crisis. We are not there yet, but if we twiddle our thumbs a little longer, it will be upon us. And then we will have to do all sorts of things that nobody wants to do.

So I just hope that this hearing, which talks about our gasoline markets, is not the end-all and be-all, important as it is. We have a serious problem that affects every faction and every part of the energy equation, whether it be oil products, natural gas, or electricity. And until we come up with some kind of policy that both deals with supply and demand, we are not going to succeed.

And I have a feeling each side would be willing to move a little in the other direction, if they thought the other side was moving a little in their direction. And that will be the job of this committee, in my judgment, under your leadership, Mr. Chairman, over the next several years.

Thank you.
The CHAIRMAN. Thank you very much, Senator.
Senator Landrieu, good morning.

**STATEMENT OF HON. MARY L. LANDRIEU, U.S. SENATOR FROM LOUISIANA**

Senator LANDRIEU. Good morning. And thank you, Mr. Chairman and our ranking member, for calling this important hearing. And

I would like unanimous consent to submit my written remarks for the record.

The CHAIRMAN. Without objection.

Senator LANDRIEU. And just to add a brief comment, to agree actually, with Senator Schumer, a new member of our committee, but one that is well-versed in this area, that we are going to have to really compromise and be more vigorous in our compromise, both sides moving to the middle, so that we can increase production, increase exploration, increase refining capacity, and transporting the fuel and the energy from one part of the country to the next, as well as on the conservation side.

But I would, as I do regularly, just note what a contribution that the gulf coast is making overall, and that we need help and support and reinvestment in the gulf coast region of this Nation, so that we can continue to produce oil, to produce gas, minimize the environmental footprint, do it in a way that conserves, also, but how the contribution in this chart, which will be part of the hearing this morning, shows how much moves from the gulf coast area, primarily from Louisiana and Texas, to supply the east coast and to the Midwest.

So I thank the panel for being here and just would hope that we would continue to be sensitive how important it is to reinvest some of these tax dollars from the oil and gas industry back to the gulf coast area to help us with our environmental challenges that are presented, as well as environmental infrastructure necessary to supply this Nation in this way.

Thank you, Mr. Chairman.

[The prepared statement of Senator Landrieu follows:]

PREPARED STATEMENT OF HON. MARY L. LANDRIEU, U.S. SENATOR FROM LOUISIANA

Today's hearing on the present and future state of our country's motor fuel market provides an excellent forum for us to focus some much needed attention on the crucial role infrastructure plays and will continue to play in energy policy. Without pipelines and refineries we are simply unable to distribute necessary energy to consumers.

Most, if not all, of us are anticipating high and volatile gas prices at pumps across the country this summer. Not only does the evidence before us support this less than promising outlook for the short term but it also extends to the long term. The Energy Information Association expects demand for transportation fuel in the United States to increase by almost 1.5% a year through 2020. To keep pace with this growth our refineries will have to increase their production. However, while the number of refineries in the U.S. has fallen sharply from 320 in 1980 to 150 in 2001, the ones that remain are operating at almost full capacity.

This balance between supply and demand is fragile at best. The probability of even the slightest problem causing supply shortages and a sharp increase in price is too real to ignore any longer. It is unacceptable for us to expect this system to continue to operate at a level where there is no room for error. We are placing too much strain on too few refineries. Without increased refinery capacity through new construction or expansion of existing capacity, problems seem unavoidable. In fact, in a recent report, the Federal Trade Commission predicted price spikes for consumers unless refining capacity is increased substantially. I am hopeful that today's hearing will stress this point but also provide other options.

I also look forward to examining the other equally important component of the process, distribution. Three of the country's top ten gasoline consuming states are in the Midwest. The Midwest imports 25% of its total demand from the Gulf Coast. While the Gulf Coast refining centers handle half of the total barrels processed in the U.S. today, there are only two pipeline systems in place to move the product from the South to the Midwest. This is a tremendous amount of pressure on Gulf Coast refining to meet demand in the Midwest. What happens if one or both of these

systems experiences problems? We must take the appropriate steps to ensure that adequate infrastructure is in place in order to guarantee the delivery of fuels to wherever they are needed. Siting new pipelines can and should be efficient yet provide whatever information is necessary so that proper consideration is given to any potential environmental implications as well as the interests of the community.

The CHAIRMAN. Thank you very much.

Before we bring on our witnesses, I would encourage people who are interested in energy conservation go down on The Mall at Seventh and Madison. There is a home built there, 3,000 square feet, by an outfit called Solar Strategies. And the interesting part of this home is it is constructed in such a way as to produce the energy is consumes.

Now that is done through solar panels and storage and batteries and so forth, but it is a relatively interesting advancement in technology. And it also has a capability, through the switch gear, that at a time when the home is not consuming energy through the utilization of the various washer, dryer and so forth appliances, it has a switch gear capability to kick back, if you will, onto the power source that comes into the house, so it can be a net contributor to energy. It is rather interesting. It is going to be down there for the balance of this week. It is on the mall at Seventh and Madison.

I was caught by Senator Bingaman's reference to the larger vehicles, the Suburbans and so forth. And it reminds me of something that I picked up along the way. It says to the effect that sometimes public policy has to reach a point of high comedy or satire before this Nation can regain any sense of respective to make intelligent decisions.

The national energy issue has reached that point, perhaps, because last week the comedian Dennis Miller commented that "every other vehicle in this country is a Lincoln Navigator. And on that Lincoln Navigator's bumper is an Earth First sticker."

[Laughter.]

The CHAIRMAN. So I do not know whether you can blame our new President George W. Bush for not being able to let you have it both ways.

With that profound observation, I would encourage our witnesses to come up with a solution.

Please, Mr. Heminger.

**STATEMENT OF GARY HEMINGER, EXECUTIVE VICE PRESIDENT, SUPPLY, TRANSPORTATION AND MARKETING, MARATHON ASHLAND PETROLEUM**

Mr. HEMINGER. Good morning, Mr. Chairman and members of the committee.

My name is Gary Heminger. I am the executive vice president of Supply, Transportation and Marketing for Marathon Ashland Petroleum, which we refer to as MAP. MAP was formed in 1998 by combining the refining, marketing and transportation assets of Marathon Oil Company and Ashland, Inc., to make the Nation's fifth largest refiner.

We sell our products at all marketing levels through our Marathon and Speedway stores, as well as to other retailers and spot markets mainly in the Midwest. We are also the Nation's largest blender of ethanol in motor fuel.

First, I would like to thank the committee for scheduling today's hearing. Often we speak of energy issues. There is a tendency to think only in terms of the upstream part of the petroleum business. I am very pleased to have this opportunity to present an overview of key aspects of the so-called downstream part of our business.

We believe that these factors must be taken into account in any discussion of national energy issues. We believe that we can best serve the Nation's need for fuel delivery with minimal interruption or inconvenience to the consumer by improving and expanding our existing supply and distribution network. This system is called upon to work flawlessly each day and every day, despite ever changing market conditions.

The key point I would like to make today is that current U.S. supply and demand is at a delicate balance. And any type of disruption can cause local supply shortages and resulting price spikes. EPA's recent tier two gasoline and highway diesel regulations are a perfect example of rules that we believe will increase the likelihood and duration of these supply disruptions and move the entire U.S. gasoline and diesel markets into the mode that California has experienced during the last four years, one of volatility and high prices.

What the entire refining marketing and transportation industry needs instead is a regulatory approach that will lead to investment certainty, a fair and responsive permitting system, and market sensitivity on the part of government agencies.

Every day more than 60 million barrels of crude oil are produced and shipped around the world with approximately 8 million barrels landing in the United States, which depends on imports for nearly 60 percent of crude oil needs. At 18 miles an hour, the trip from the Persian Gulf takes 45 days. That is only the first step of a very long journey.

Pipelines transport crude oil to refineries, refineries manufacture gasoline, diesel and other products, and the liquid refined products then move to market over more than 70,000 miles of pipeline. All in all, it takes between 1½ and 2 months of detailed planning and adjustments to put the end product where it needs to be when the consumers pull into our service stations to fill their tanks.

Because today's available crude is high in sulfur and heavy in gravity, the ever-increasing requirements for cleaner fuels force us to make very large capital investments just to stay in business. It is important to understand that the Midwest, where my company is centered, is chronically short of product. This area imports as much as 1 million barrels a day or 25 percent of its total demand from the gulf coast.

Twenty-five Midwest refineries have been idled during the last 20 years, the most recent closing, Premcor's Blue Island refinery in Illinois.

The CHAIRMAN. Would you tell us why?

Mr. HEMINGER. Most of them were smaller refineries that cannot hurdle the investment, the new EPA investment, for new fuels and lower sulfur diesel, lower sulfur gasoline.

Senator BINGAMAN. Could I also ask a question there? Has the actual output of refiners in your region decreased during that same time, or has the output increased?

Mr. HEMINGER. Other refineries, the larger refineries, some of those have increased.

Senator BINGAMAN. Overall has it increased or decreased?

Mr. HEMINGER. Overall it would have decreased marginally.

Senator BINGAMAN. In your region.

Mr. HEMINGER. In what I call PAD 2.

Senator BINGAMAN. Right. Thank you.

Mr. HEMINGER. Getting product from the gulf coast to needy Midwest markets in the spring and summer is an obvious priority. Yet there are only two major pipeline systems handling this south to north traffic today. If one of these lines is shut down during this critical time of the year for damage repair, as was the case with Explorer pipeline last year, the disruption is likely to be critical.

Even after the disruption, when the line is again fully operational, the replacement volumes will only move to market at about four miles per hour. And there is no pipeline capacity or excess refining capacity to make up for that last volume.

Ethanol shipments by pipeline is not possible because of contamination problems resulting from alcohol's affinity for bonding with water. Ethanol, therefore, is blended mainly in areas close to corn stills, most of which are in the Midwest. Where RFG areas are far from the corn belt, ethanol transportation costs increased significantly.

Within the pipeline industry, products move in batches. That is, we operate somewhat like freight train. A batch of unleaded gasoline may be followed by diesel and then maybe jet fuel and back to gasoline. Because some products may contained elevated sulfur levels, the ultra-low sulfur fuel requirements will likely be difficult to meet due to product contamination.

Our company is planning two important projects. One is the construction of a products pipeline from our Catlettsburg, Kentucky refinery into the Columbus, Ohio market. And the other is the conversion of a natural gas pipeline to liquid products use. This project, dubbed Centennial Pipeline, will add another vital link between the Midwest and gulf coast refining centers.

Major investment will be required to upgrade and enhance our Nation's supply and distribution system. We want to provide clean, cost-effective fuels for our customers. And we are willing to do our part. But in order to make the necessary investment, we need an improved regulatory climate. We need an end to unreasonable permitting delays and final rules that are unambiguous. Regulations must also provide adequate lead time and an appropriate phase-in period, as well as sufficient time to recover the investments required.

Finally, the Government should refrain from interference in the marketplace. Our industry has traditionally opposed mandates, such as the requirement for oxygenates in RFG, because such requirements only add inefficiencies to an already complex system designed to supply America's fuels needs.

I appreciate the opportunity to appear before you today, and I look forward to answering any further questions. Thank you.

[The prepared statement of Mr. Heminger follows:]

PREPARED STATEMENT OF GARY HEMINGER, EXECUTIVE VICE PRESIDENT, SUPPLY, TRANSPORTATION AND MARKETING, MARATHON ASHLAND PETROLEUM

Good morning. My name is Gary Heminger. I am the Executive Vice President of Supply, Transportation & Marketing for Marathon Ashland Petroleum LLC.

*MAP Statistics*

My company, which we refer to as MAP, was formed in 1998 by the combination of the refining, marketing and transportation assets of Marathon Oil Company and Ashland Inc. Marathon Ashland Petroleum is the nation's fifth largest refiner. We operate seven petroleum refineries in the U.S. with a combined throughput capacity of 935,000 barrels of oil a day. In addition we operate 93 marketing terminals in the Midwest and Southeast U.S. which distribute gasoline, diesel and asphalt, and we operate over 5,400 retail outlets in 20 states. We are also the nation's largest blender of ethanol in motor fuel.

*The Need to Improve Transportation Systems*

I appreciate the opportunity to discuss motor fuel market conditions and logistical challenges with you. It is our view that we can best serve the nation's need for fuel delivery—with minimal interruption or inconvenience to the consumer—by improving and expanding our existing supply and distribution network. The supply and distribution system is called upon to work flawlessly, each day, every day, though the context of market conditions changes constantly. The key point that you should take away from my testimony is that current U.S. supply/demand is at a delicate balance, and any type of major disruption can cause local supply shortages with their resultant price spikes.

EPA's recent Tier 2 gasoline and highway diesel regulations, plus their non-road diesel rule under development, will increase the likelihood and duration of these supply disruptions and move the entire U.S. gasoline and diesel markets into the mode that California has experienced during the last four years—one of volatility and high prices.

What MAP and the whole refining, marketing and transportation industry need to minimize these potential disruptions is: Regulatory Certainty, a Fair and Responsive Permitting System, and Market Sensitivity on the part of government agencies. I will elaborate on these later in my testimony.

*Major Tanker Movements Around the World*

Every day more than 60 million barrels of crude oil are produced and shipped around the world, with approximately eight million barrels landing in the U.S., which depends on imports for nearly 60 percent of its crude oil needs. At 18 miles an hour, the trip from the Persian Gulf takes 45 days.

*Value Chain*

Pipelines transport crude oil to refineries, a process that takes ten days on average. Refineries then manufacture gasoline, diesel, asphalt, petrochemicals and other products.

*Refined Products*

The refining process takes roughly five days on average. During this time, for example, federally mandated reformulated gasoline (RFG) goes through up to ten processing steps at temperatures and pressures as high as 1000 degrees and 2000 pounds per square inch.

*U.S. Products Pipeline & Barge System*

The liquid refined products, such as gasoline and diesel, move to market over more than 70,000 miles of pipeline, accounting for approximately two trillion barrel miles of product movement at roughly four miles per hour . . . that's right, four miles per hour. Products also move along the nation's inland waterways. This step alone, including the hauling by transport truck to service stations, adds 10 to 15 days to the entire process.

*Time From Oil Well to Gas Pump*

This means that about 1½ to 2½ months of detailed planning and adjustments are required so that our customers have the fuel to fill their vehicles when they pull into our service stations.

As a major petroleum refiner, Marathon Ashland refines nearly one million barrels of crude oil per day, including a significant portion from the national oil companies of Saudi Arabia, Kuwait and Mexico. With the available crude being higher in sulfur and heavier in gravity, the ever-increasing requirements for cleaner and

cleaner fuels force refiners to make very large capital investments just to stay in business.

We buy additional intermediate feedstocks so that our refined product yield increases to about 1 million barrels per day. We also buy products from other refiners so that our total products-for-sale equals 1.25 million barrels per day, or 19 billion gallons annually. We sell our products at all marketing levels; through our Marathon brand and Speedway brand stores, as well as to other retailers and spot markets.

*Midwest Material Balance*

Please note that the Midwest—which includes three of the nation's top ten gasoline consuming states—is chronically short of product. The Midwest imports as much as 1 million barrels a day or 25 percent of its total demand from the Gulf Coast. This volume will increase as fuel needs in the Midwest return to historic norms: 2% growth or 280,000 new barrels per day.

*Midwest Refineries Idled*

Twenty-five Midwest refineries have been idled during the last 20 years—the most recent closing—Premcor's Blue Island refinery in Illinois—came in February of this year. These smaller plants could not perform in an environment of increasingly costly regulation. Gulf Coast refineries fared better. America's Gulf Coast refining center now handles one out of two barrels processed in the U.S., thanks to the area's economies of scale, lower labor costs and access to crude oil.

*Teppco, Explorer Proration Days*

Getting product from the Gulf Coast to needy Midwest markets in the spring and summer is an obvious priority. Yet there are only two major pipeline systems handling this south to north traffic today. They are full during the nine months of the year that surround the peak summer gasoline demand, and routinely turn down nominations for additional shipments. If one of these lines is shutdown during this critical time of the year for damage repair, as was the case with Explorer last year, the disruption is likely to be critical. Even after the disruption, when the line is again fully operational, the replacement volumes will only move to market at about four miles per hour, and there is no pipeline capacity or excess refining capacity to make up for the lost volume.

*The Inland Waterway*

Movement on the inland waterway is similarly constrained. The waterway system includes 25,000 miles of navigable rivers and canals, but only 12,000 miles are commercially and actively maintained. Despite technological innovations, system utilization is restricted due to weather, outmoded locks, dams, low bridges, and waterway deposits. Over 50 percent of the locks and dams created by the Corps of Engineers are over 50 years old. Many built in the 20's and 30's are at the end of their design lives. In fact, 8 of 20 locks and dams on the Ohio River are scheduled for repair.

Because Corps of Engineers funding for lock and dam maintenance and dredging operations has been cut for 2001, it is doubtful the Ohio River maintenance program can be completed in a timely fashion. We believe it is imperative to "catch up" and increase investment in waterway infrastructure because this mode of transportation moves commodities valued at $33 billion to the Midwest's Ohio River basin, $3.3 billion in petroleum alone.

*No Ethanol Movements With Pipeline Sign*

Ethanol movements by barge are limited by waterway, weather, and infrastructure problems. In addition to physical infrastructure problems, chemistry can frustrate our operations. Ethanol shipment by pipeline is impossible because of contamination problems resulting from alcohol's affinity for bonding with water. Water is present in all pipelines. Without low cost pipeline movement, ethanol proves expensive to transport, and it is blended mainly in areas close to corn stills, a majority of which are in the Midwest. Where reformulated gasoline markets are far from the corn belt, ethanol trucking costs increase significantly.

*Cumulative Regulatory Impacts on Refineries, 2000-2008*

Regulatory restrictions ranging from oxygenate requirements in RFG to urban air toxics requirements have imposed additional burdens on our business in terms of cost and infrastructure. Of immediate concern are EPA's requirements for dramatically lowering the sulfur content in gasoline—30 ppm by 2006 for highway diesel—15 ppm in the same timeframe, while off-highway diesel regulations are still under development. To date, only the refinery process has been studied. Just as important is the transportation process. Within the pipeline industry, products move in

batches; that is, we operate somewhat like a freight train. A batch of unleaded gasoline is followed by diesel fuel and then maybe jet fuel and back to gasoline. Because some products may contain elevated sulfur levels, there is a high probability the ultra low-sulfur fuel requirements will be difficult to meet, due to product contamination in pipeline or tankage.

We are in the process of evaluating what additional investments will be needed for our pipeline and terminal systems to avoid contaminating these ultra clean fuels as they move through a distribution system not designed to maintain this low level of sulfur.

*High Consequence Area Testing*

At the same time that we are dealing with pipeline investment related to new fuels, we are required to establish new and more frequent testing programs for environmental risks associated with pipelines moving through what the Office of Pipeline Safety calls High Consequence Areas. What worries some of us in the industry is whether there are enough resources available to test, interpret, and analyze the data generated by the line tests. By implementing a date certain timetable, rather than phasing in the testing, regulators have assured a "gold rush" for scarce and expensive testing equipment. Costs will skyrocket and deadlines will be missed.

*Cardinal and Centennial Projects*

Our company is planning two projects that will address some of the problems I have reviewed with you this morning. One is a products pipeline from our large Catlettsburg Kentucky Refinery into the Columbus, Ohio area—the fastest growing fuels market in the state. The second is the conversion of a natural gas pipeline to liquid products use, a project—dubbed Centennial Pipeline—that will add another vital link between the Midwest and the Gulf Coast refining centers. We are grateful for government assistance on both projects—we particularly appreciate being commended for site surveys and environmental care in the case of Cardinal and the rapid approval for abandonment that is allowing us to move forward with the conversion of the Centennial Pipeline to refined products use.

*How Can the Government Help?*

As I stated earlier, the current supply/demand equation in the U.S. is balanced on a knife's-edge. Any type of disruption can push this delicate balance off center, and price spikes may result. What can the government do to minimize these problems and help us to continue to meet the needs of our customers?

Major investment will be required to upgrade and enhance our nation's supply and distribution system. Companies like Marathon Ashland want to provide clean, cost effective fuels and are willing to do our part, but in order to make the hundreds of millions of dollars of investment, we need:

1. Regulatory Certainty
2. Fair and Responsive Permitting
3. Market Sensitivity

By regulatory certainty we mean that rules should be unambiguous and not subject to revision simply to serve a new regulatory agenda. For example, our Cardinal Pipeline project was stymied while parties argued over whether the term "petroleum" included gasoline. A similar ambiguity significantly affects expenditures involving control of refinery fuel gas, a term that customarily has been used to indicate natural gas burned for fuel, but which is now being interpreted to mean vapors combusted for any purpose on refinery grounds.

By fair and responsive permitting, we mean there must be an end to unreasonable delays. For example, we currently face a potential air quality permit application period of one and a half years to install a new gasoline loading rack at one of our refineries. This type of delay is clearly unreasonable.

By market sensitivity we mean new regulations must provide adequate lead time and an appropriate phase-in period, as well as sufficient time to recover the investments required. Market sensitivity would also encourage examining regulatory effects on an entire system—refining and distribution—rather than only one portion of one process component, as was the case in regulating highway diesel formulations.

Finally, market sensitivity means discouraging any interventions, such as fuel subsidies, that frustrate free market dynamics. Mandates and subsidies only add inefficiencies to the process of supplying America's fuel. Renewable and alternative fuels need to be economically competitive. It is appropriate for the federal government to support research into these fuels, but it is inappropriate for the government to intervene in the marketplace. This intervention places government in the position of picking market winners and losers. Not only does this repress industry investment in the most efficient technologies, but history has shown that governments do

not do a particularly good job in picking the best technologies because politics rather than technology tend to drive the process.

The current MTBE situation is a prime example of this problem. MTBE is added to RFG because of a politically driven RFG oxygen mandate. Now with public concern over MTBE in groundwater, the U.S. Congress appears to be unable to provide a simple, direct resolution of the problem. Every time a bill proposing a solution to the MTBE issue emerges, a myriad of alternative fuels, renewable fuels, and new fuel specification requirements get added. These provisions do not resolve the MTBE situation, they compound the original problem.

I appreciate the opportunity to appear before this committee and I look forward to answering any questions the committee may have either now or at a later date.

The CHAIRMAN. Thank you very much, Mr. Heminger.

Mr. Robinson, please proceed.

We have a time light on here. And you notice Mr. Heminger stayed within the limits. And we would encourage the rest of you to do the same thing.

Mr. ROBINSON. I will try to be quick.

**STATEMENT OF THOMAS L. ROBINSON, CHIEF EXECUTIVE OFFICER, ROBINSON OIL CORPORATION**

Mr. ROBINSON. Good morning, Mr. Chairman and members of the committee. Mr. Chairman, I was not a Bell, but I am a graduate of Santa Clara.

My name is Tom Robinson. I am CEO of Robinson Oil of San Jose, California. Our company owns and operates 28 Rotten Robbie retail gasoline outlets located in the San Francisco Bay area of California.

I appear before this committee today as a representative of the National Association of Convenience Stores, NACS, and the Society of Independent Gasoline Marketers of America, SIGMA. Collectively NACS and SIGMA members sell more than 65 percent of the gasoline and diesel fuel purchased by American consumers each year. The companies I represent today are different from the other witnesses. For all practical purposes, we are a surrogate for the Nation's gasoline and diesel fuel consumers.

My company is not involved in the exploration or production of oil, nor does it refine oil. Instead, we are an independent marketer. If independent marketers of motor fuels, like my company, are unable to secure adequate supply, then we cease to be a competent force in the marketplace. And if independent marketers cease to be an effective, competitive force in the marketplace, then consumers lose as retail gasoline and diesel fuel prices rise to unnecessary high levels in response to the supply shortage.

NACS and SIGMA have two primary messages for this committee today. First, we must collectively and aggressively address the motor fuels supply problems that are facing this Nation. Otherwise the fuel price spikes we have witnessed for the past decade in California and for the past 2 years in other parts of the Nation will become worse and more frequent. Our failure to act has, is, and increasingly will cost consumers more at the pump.

Second, the debate over the future of the Nation's energy policy need not be confrontational. Our Nation can have both a clean environment and affordable, plentiful supplies of gasoline and diesel fuel.

However, in order to achieve these twin goals, all sides of the current debate, industry, government, consumers and environ-

mentalists, must approach this debate in the spirit of cooperation, compromise, but not confrontation. This includes a reasonable attitude and an understanding of the tradeoffs.

These are not new points for the associations I represent or for me. In fact, I have had the opportunity to present these points to Congress in the past. Five years ago, I was invited to appear before this committee in the wake of the gasoline price increases in the spring of 1996. At that time, I stated, "The Federal and State governments regulate the gasoline refining and marketing industry with little or no thought given to costs, distribution difficulties, or market efficiencies. Congress must acknowledge that future EPA and State actions, if the present course is followed, will lead to further market disruptions and higher gasoline prices at the pump."

My prediction in 1996 was pretty accurate. It is my personal hope that the renewed attention to the need of a national energy policy will produce the results NACS and SIGMA have been calling for for years. The challenge facing this committee and your colleagues in Congress today is straightforward.

We must preserve current and future improvements in air quality while at the same time maintaining and expanding supplies of motor fuels. Otherwise our Nation's consumer will pay an exorbitant price when supply shortages occur and retail prices at the pump spike, as they have done repeatedly over the past few years. As a Californian, I have become only too familiar with this routine.

It should not surprise policy makers that after tens of billions of dollars in environmental compliance costs borne by refiners and marketers, after the complete fragmentation of the motor fuels distribution system, and after the politically motivated diverse gasoline formulations adopted by various States that there is a price to pay, a price that ultimately must be paid by consumers of gasoline and diesel fuel.

As long as the motor fuels refining and distribution systems works perfectly, supply and demand stay roughly in balance and retail prices remain relatively stable. However, if a pipeline or refinery goes down, overseas crude oil production is reduced, the weather disrupts smooth product deliveries, or a new regulatory curve ball is thrown at the motor fuels refining and marketing industries, we do not have the flexibility to react and counterbalance these forces.

The public policy solution to the current motor fuels supply crisis will not be simple, but it must be addressed. NACS and SIGMA submit that the solution is not a rollback of environmental protections. That proposal is a non-starter and should be discarded. Alternatively, NACS and SIGMA encourage Congress to consider restoring fungibility to the Nation's distribution system and an effective plan to assist our Nation's domestic refining industry to meet the challenges posed by ever more stringent environmental mandates. This will increase gasoline and diesel fuel supplies and keep retail prices down.

NACS and SIGMA do not have a specific legislative proposal to put forward at this time. Instead we offer the following principles, which we are convinced must be part of any legislative initiative. One, greater fungibility in motor fuels and a stop to the balkani-

zation of our Nation's gasoline and diesel fuel markets. I cannot overemphasize the importance of this point.

Two, fuel requirements that recognize the limitations and the strengths of the motor fuel distribution system in the United States. Three, reasonable implementation plans for new environmental initiatives. Four, fuels programs that set performance goals, rather than specific formulas or mandates. And five, it must be economically feasible to upgrade the Nation's refining capacity to make these clean fuels.

NACS and SIGMA commend Chairman Murkowski and Senator Bingaman and their colleagues for introducing comprehensive national energy policy legislation that includes many of the legislative principles outlined above. Such legislation, however, needs to give increased attention to the downstream portion of our Nation's petroleum supply and distribution industry. Without such attention, a national energy policy will not succeed.

We look forward to working with this committee and other in Congress. We certainly offer assistance to this committee. Thank you for allowing me to present this testimony.

[The prepared statement of Mr. Robinson follows:]

PREPARED STATEMENT OF THOMAS L. ROBINSON, CHIEF EXECUTIVE OFFICER, ROBINSON OIL CORPORATION

Good morning, Mr. Chairman and members of the committee. My name is Tom Robinson. I am Chief Executive Officer of Robinson Oil Corporation of San Jose, California. Our company owns and operates 28 "Rotten Robbie" retail gasoline outlets located in the San Francisco Bay Area of California.

I appear before this committee today as a representative of the National Association of Convenience Stores ("NACS") and the Society of Independent Gasoline Marketers of America ("SIGMA"). NACS represents an industry of more than 120,000 retail outlets, 75 percent of which sell motor fuels. In 1999, convenience stores sold more than 117 billion gallons of motor fuels, which accounts for more than 60 percent of American consumption.

SIGMA is an association of approximately 260 motor fuels marketers operating in all 50 states. Together, SIGMA members supply over 28,000 motor fuel outlets and sell over 48 billion gallons of gasoline and diesel fuel annually—or approximately 30 percent of all motor fuels sold in the nation last year.

Collectively, NACS and SIGMA members sell more than 65 percent of the gasoline and diesel fuel purchased by American consumers each year.

I appreciate the invitation to appear at this hearing to present testimony on our nation's energy policy and the role that diverse gasoline and diesel fuel specifications have on motor fuel supplies and prices. The companies I represent today are different from all of the other witnesses at today's hearing. For all practical purposes, we are a surrogate for the nation's gasoline and diesel fuel consumers. Our primary mission is to secure adequate supplies of gasoline to sell to consumers at a competitive price. My company is not involved in exploring for oil or in the production of oil. Nor does it refine oil. Instead, we are an independent gasoline marketer. If independent marketers of motor fuels, like my company, are unable to secure this adequate supply, then we cease to be a competitive force in the marketplace. And if independent marketers cease to be an effective competitive force in the marketplace, then consumers lose as retail gasoline and diesel fuel prices rise to unnecessarily high levels in response to the supply shortage.

NACS and SIGMA have two primary messages for this committee today. First, we must collectively and aggressively address the motor fuels supply programs that are facing this nation. Otherwise, the fuel price spikes we have witnessed for the past decade in California and for the past two years in other parts of the nation will become worse and more frequent. Our failure to act has, is, and increasingly will, cost consumers more at the pump.

Second, the debate over the future of our nation's energy policy need not be confrontational. Our nation can have both a clean environment and affordable, plentiful supplies of gasoline and diesel fuel. However, in order to achieve these twin goals, all sides of the current debate—industry, government, consumers, and envi-

ronmentalists—must approach this debate in a spirit of cooperation, not confrontation. This includes a reasonable attitude and an understanding of the trade-offs.

These are not new points for either the associations I represent or for me. As a California marketer I personally have witnessed these events happening over and over again. In fact, I have had the opportunity to present these points to Congress in the past. Five years ago, I was invited to appear before this committee in the wake of gasoline price increases in the Spring of 1996. At that time, I stated: "The federal and state governments regulate the gasoline refining and marketing industry with little or no thought given to costs, distribution difficulties, or market efficiencies. Congress must acknowledge that future EPA and state actions, if the present course is followed, will lead to further market disruptions and higher gasoline prices at the pump." [1]

My prediction in 1996 could not have been more accurate. Unfortunately, our warnings were ignored in 1996 and continue to be ignored today. However, it is my personal hope that the renewed attention to the need for a national energy policy will produce the results NACS and SIGMA have been calling for over the years.

The challenge facing this committee and your colleagues in Congress today is straightforward. We must preserve current and future improvements in air quality while at the same time maintaining and expanding supplies of motor fuels. Otherwise, our nation's consumers will pay an exorbitant price when supply shortages occur and retail prices at the pump spike, as they have done repeatedly over the past few years. As a Californian, I have become only too familiar with this routine.

The prices facing consumers during these spikes will not be limited to the additional expense of producing the new cleaner fuels. Rather, they will be multiples of this amount when, in times of short supply, the market drives prices far above the additional cost of manufacture.

I firmly believe that our nation is facing a serious energy situation in the motor fuels refining and marketing industry. Dozens of petroleum refineries have closed over the past two decades and new environmental protection mandates, such as low sulfur gasoline and diesel fuel, are likely to exacerbate this trend. Operating inventories of diesel fuel and gasoline are at historically low levels and the nation's refineries are operating at or near maximum capacity. Gasoline and diesel fuel demand is increasing by between one and two percent each year, and yet the number of refineries operating to meet this ever increasing demand is decreasing. In 1990, there were essentially six different types of gasoline being sold nationwide. Now, there are more than 25 different gasoline formulations, all being transported and distributed through the nation's motor fuel infrastructure. The pressure of overlapping federal, state and local regulations has crippled what was previously one of the most efficient commodity distribution systems in the world—the United States' fungible grade motor fuels distribution system.

As the saying goes, there is no free lunch. It should not surprise policy makers that after tens of billions of dollars in environmental compliance costs borne by refiners and marketers, after the complete fragmentation of the motor fuels distribution system, and after the politically-motivated diverse gasoline formulations adopted by various states, there is a price to pay. A price that ultimately must be paid by consumers of gasoline and diesel fuel. As long as the motor fuels refining and distribution system works perfectly, supply and demand stay roughly in balance and retail prices remain relatively stable. However, if a pipeline or refinery goes down, overseas crude oil production is reduced, the weather disrupts smooth product deliveries, or a new regulatory curve ball is thrown at the motor fuels refining and marketing industries, we do not have the flexibility to react and counterbalance these forces.

If there is one point that I really want to emphasize it is the point of "no free lunch". Our country can have clean and environmentally friendly fuels and it can have plentiful supplies—there will be a cost and it will be borne by the consumer (that is a given)—our job is to make the lunch, if not free, at least as inexpensive as possible.

Californians have become somewhat accustomed to motor fuels price volatility over the past five years because California is, in fact, the laboratory for the fuels programs that EPA currently is imposing on the rest of the country. When a refinery in California goes down, or a pipeline breaks, the impact on prices is almost immediate. In California, gasoline prices can increase by 40 cents per gallon within two to three weeks. When prices get high enough to attract supply from other markets, then eventually the supply shortage is alleviated and prices start to fall.

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[1] Testimony of Thomas L. Robinson before the Senate Committee on Energy and Natural Resources, May 9, 1996.

This is the reason I am appearing before you today. The motor fuels supply problems we have witnessed in California over the past decade are now being visited on the rest of the nation. If we do not act, independent motor fuels marketers (about whom I am very concerned), and gasoline consumers (about whom we all should be very concerned), will suffer in the near future.

The public policy solution to the current motor fuels supply crisis will not be simple, but it must be addressed. NACS and SIGMA posit that the solution is not the rollback of environmental protections. That proposal is a non-starter and should be discarded. Alternatively, NACS and SIGMA encourage Congress to consider restoring fungibility to the nation's distribution system and an effective plan to assist our nation's domestic refining industry to meet the challenges posed by ever more stringent environmental mandates. This will increase gasoline and diesel fuel supplies and keep retail prices down.

We must collectively arrive at a public policy that assures that our nation's refineries, both large and small, stay in business, expand to meet increases in demand, and produce clean, affordable motor fuels. But this policy cannot be achieved without enlightened government policies and programs. The capital expenditures that refineries must make over the next six years in order to meet new environmental mandates are huge. And many refineries, particularly small, regional refineries, will be unable to justify those expenditures and will cease operation—further straining motor fuels supplies. Already, this year, Premcor announced that it would close its Blue Island refinery rather than undertake the upgrades necessary to make low sulfur gasoline and diesel fuel. Other refineries, owned by both large and small companies, will follow suit in the next few years.

NACS and SIGMA urge Congress to work to streamline the permitting process for refinery upgrades and to assist these refineries in making these upgrades. This assistance will be particularly important to small- and medium-size "regional" refineries. Environmental upgrade costs fall more heavily on these smaller refineries because they do not enjoy the economies of scale that some larger refineries possess to make these upgrades. In many cases, these smaller refineries represent the "marginal" gallon of gasoline and diesel fuel in many marketplaces—the gallon that is the difference between adequate supplies and supply shortages.

Motor fuels marketers and refiners are not always on good terms. We compete daily in the marketplace for customers and market share. So it may seem odd to have motor fuels marketers recommend to Congress that assistance must be given to our nation's domestic refining industry. However, without adequate and diverse sources of gasoline and diesel fuel supply, independent marketers cannot exist. Thus, the solution we are proposing to Congress is the only way our segment of the marketing industry can survive and can continue to provide consumers—your constituents—with the most affordable, clean gasoline and diesel fuel in the world.

NACS and SIGMA do not have a specific legislative proposal to put forward at this time. Instead, we offer the following principles which we are convinced must be a part of any legislative initiative: (1) greater fungibility in motor fuels and a stop to the balkanization of our nation's gasoline and diesel fuel markets (I cannot over-emphasize the importance of this point); (2) fuel requirements that recognize the limitations and strengths of the motor fuel distribution system in the United States; (3) reasonable implementation plans for new environmental initiatives; (4) fuels programs that set performance goals, rather than specific formulas; and (5) it must be economically feasible to upgrade the nation's refining capacity to make these clean fuels.

NACS and SIGMA commend Chairman Murkowski and Senator Bingaman and their colleagues for introducing comprehensive national energy policy legislation that includes many of the legislative principles outlined above. Such legislation, however, needs to give increased attention to the "downstream" portion of our nation's petroleum supply and distribution industry. Without such attention, a national energy policy will not succeed. It will be irrelevant that domestic crude oil production increases by 50 percent if our nation does not have the refining capacity to convert that additional crude into gasoline and diesel fuel or if our nation's motor fuel distribution system, already stressed to the breaking point, cannot handle additional volumes of finished products.

We look forward to working with this committee and others in Congress to explore legislative options in the months ahead. We certainly offer our assistance to this committee in this exploration.

As a final note, NACS and SIGMA encourage this committee to embrace long-term solutions to our nation's current motor fuels supply crisis. While it may be tempting or politically expedient to seek a quick, short-term solution to this crisis, such quick fixes are only rarely effective. Our current situation stems from over two decades of decline in the motor fuels manufacturing and distribution industries. The

twin goals of ample gasoline and diesel fuel supplies and affordable retail motor fuels prices will not be reached in 2001, but rather over a period of years. Just as the damage did not happen overnight, the cure will not happen overnight.

The debate over our nation's energy policy is just starting. But the crisis has been on the horizon for some time. We can either discuss potential solutions collectively now, or we can wait until the next price spike, and the outraged response of consumers. We encourage all parties to this debate to adopt fresh approaches to the problems our nation is facing. Both the environment and our nation's motor fuel consumers can be the winners in this debate, but only if all sides agree with the premise that environmental protection and affordable energy are not inherently contradictory goals. NACS and SIGMA assert that these goals need not be irreconcilable.

Thank you for inviting me to present this testimony. I would be pleased to answer any questions my testimony may have raised.

The CHAIRMAN. Thank you very much, Mr. Robinson.

Our next speaker, Mr. Greenbaum.

**STATEMENT OF DANIEL S. GREENBAUM, PRESIDENT, HEALTH EFFECTS INSTITUTE, CAMBRIDGE, MA**

Mr. GREENBAUM. Thank you, Mr. Chairman. I am pleased to have the chance to appear before you today.

I will say, Mr. Chairman, that I cannot guarantee that I can find you a total solution for the pollen problem, but I wish I could, because I, too, am a sufferer. Although if we had to do without springtime, it may be a little harder.

The CHAIRMAN. Well, you know, we have spring in Alaska, and we do not have pollen.

[Laughter.]

Mr. GREENBAUM. Well, I do not think you would like us all to move up there either.

The CHAIRMAN. No, that is for sure.

Mr. GREENBAUM. I speak today both as the president of the Health Effects Institute, which is an independent scientific institute funded jointly and equally by government and industry, to provide impartial health effects science on air pollution, and also as the chair of the Blue Ribbon Panel on Oxygenates in Gasoline, with which you may be familiar. The panel consisted of experts in air and water quality, as well as representatives of the oil, ethanol and MTBE industry, and the environmental community, and presented our report in 1999.

I am here today to speak of both the good news from the last decade about fuel specifications and clear air and about the opportunities and challenges that lie ahead. First the good news.

The Clean Air Act Amendments of 1990 passed by Congress and signed into law by President Bush required the introduction of new, cleaner burning fuels, reformulated gasoline, in all areas of the country facing serious ozone problems. That fuel containing by law at least two percent by weight of oxygenates was introduced in 1995 and resulted in a clear and measurable air quality benefit.

Among other pollutants that were reduced, levels of benzene in ambient air, a known human carcinogen, were reduced almost immediately by 39 percent. At the same time, because in that case of adequate lead time for refineries to plan for and implement these fuels, they were introduced in some of the largest markets in the United States with relatively little or no impact on cost or supply of fuel.

Looking ahead, we have the opportunity to continue this good news. Tier two RFG, also envisioned in the Clear Air Act and being implemented in this decade, has the potential, when coupled with continued improvement in motor vehicle emissions technology, to provide air quality and public health benefits well into this century.

Also, although these fuels needed oxygenates to replace octane when RFG was first introduced in the 1990's, the Blue Ribbon Panel found that today's refinery technology has been improved to enable the production of these clean fuels in a variety of ways, with oxygenates, such as ethers and ethanol, but also without oxygenates altogether. This offers the opportunity to take a much more market-based approach to providing clean fuels, continuing the strong clean air performance standards, but giving the market much more flexibility to choose, based on efficiency and cost, the best way to ensure a low-cost abundant fuel supply.

This good news, however, does not come without its challenges. First and foremost, there is the challenge of MTBE. Although MTBE has shown itself to be a cost-effective and clean fuel burning component with relatively low potential for health effects, its relatively rapid transport through groundwater and its distinctive odor and taste have caused a number of drinking water wells to be shut down.

As a result, the Blue Ribbon Panel recommended strongly a substantial reduction in its use. A number of States, including California, Connecticut and New York, have gone further and legislated bans on its use to take effect in 2003 and 2004.

Second, this pressure to reduce use of MTBE, which makes up 11 percent by volume of RFG, comes at a time when consumer demand for fuels has grown, when supplies are tight, when refiners, as we have already heard, are beginning to gear up to produce even cleaner burning fuel for tier two. The Blue Ribbon Panel clearly saw the opportunity for a portion of MTBE demand to be met by increased use of ethanol.

But it was concerned that at this stage in clean fuel development, when refiners need maximum flexibility and a range of alternative ways to make clean fuels, it was neither appropriate nor necessary to maintain the strict oxygenate content rules of the 1990 Clean Air Act Amendments. Thus, the panel recommended that the clean air performance requirements of RFG be maintained and continued, but that the oxygenate mandate be removed.

In conclusion, where do these opportunities and challenges leave us today? We have two paths we can follow for clean fuels, to continue clean-burning fuels with legislatively mandated fuel additive requirements and risk potential market dislocations and increases in price or to keep the strong clean air performance requirements for these fuels but to free the market to make them in the most cost-effective way possible with a minimum of specific fuel additive requirements.

In the view of the Blue Ribbon Panel, this market-driven path is clearly preferable. It will result in continued clean air benefits, but also in a substantial increase in the use of ethanol but without risking the higher prices and market shortages that could result from continued fuel additive mandates. With this path, we have

the chance to see clean air improvements and stable fuel markets well into the 21st century.

Thank you for the opportunity.

The CHAIRMAN. Thank you very much, Mr. Greenbaum.

Mr. Daigle.

**STATEMENT OF D.H. DAIGLE, DIRECTOR OF AMERICAS REFINING, EXXONMOBIL REFINING AND SUPPLY COMPANY**

Mr. DAIGLE. Chairman Murkowski, members of the committee, I am Don Daigle, director of Americas Refining in the ExxonMobil Refining and Supply Company. In the interest of your time, I will summarize my remarks and ask that my written testimony be submitted for the record.

My expertise is in the refining and supply of petroleum products. I also chaired the group that prepared the National Petroleum Council's June 2000 report on U.S. refining. Much of my testimony today is underpinned by the council's conclusions.

Due to antitrust and competitive concerns, please understand that I cannot discuss company-specifics regarding inventory, supplies, pricing, and plans for operations and investments.

ExxonMobile believes that it is critically important to develop a national energy policy which will allow us to continue to supply quality products to consumers. The committee's interest in this aspect of energy policy, along with that of the new administration, is most welcomed and encouraging. There are important decisions to be made in the relatively near term, which will significantly affect industry's ability to meet future consumer demands.

To set the stage briefly, refining is economically risky and volatile and not one of the more profitable segments of the petroleum business. Industry downstream financial returns have historically run about 5 percent, just a little more than a 3-month T-bill. Even so, industry has expanded domestic capacity to meet growing demand.

The key energy policy question is: How to ensure that the refining industry is allowed to continue expanding capacity. The National Petroleum Council identified a number of obstacles that the industry skill and technology may not be able to overcome without changes in policy. While I want to focus on these policy solutions in this summary, it is vitally important to understand just how serious the current situation is.

To summarize the key National Petroleum Council findings, the changes mandated in gasoline and diesel quality, coupled with the potential for removing MTBE from gasoline, will be very expensive, perhaps beyond the bounds of affordability for some refiners. These requirements will make the U.S. supply and logistics system much more rigid.

The new source review enforcement initiative launched several years ago by the Environmental Protection Agency poses very significant further challenges. The industry will have a very hard time implementing all these changes in a compressed time frame. The refining system is tight, creating a very real risk of increased supply disruptions and price volatility.

I would like to discuss how we see resolving these challenges beginning with new source review, or NSR for short. My written tes-

timony covers in some detail the very serious problems we face under this program. To address these concerns, we urge this committee and the new administration to take a fresh look at the EPA's entire NSR enforcement program. Specifically, we recommend that new source review enforcement activities be suspended until there has been a thorough review of the program and its implications.

We encourage this committee and the administration to examine the implications for consistency with a balanced energy policy. Guidelines should be established to assure that EPA's application and enforcement of its new source review requirements are compatible with that policy.

Finally, clear new source review regulations, consistent with responsible implementation of the statutory framework, should be developed through an open administrative process.

The second difficult legacy policy is the Federal oxygen mandate. New scientific data and technological advancements obviate the earlier environmental basis for mandating oxygenates in gasoline. While the environmental objective is laudable, this out-dated mandate is vulcanizing fuel supplies and hamstringing our ability to provide gasoline to the motoring public.

Congress can be a part of the solution. We support repeal of the oxygen mandate or, at a minimum, an amendment that grants governors authority to waive this mandate on a regional basis. In the meantime, Congress should encourage the EPA to grant State requests for waivers. Granting California's request is a good place to start.

A third area that warrants a fresh look is the EPA's recent ultra low sulfur diesel rule promulgated late last year. We accept the need to provide lower sulfur fuel to enable new cleaner vehicle technology. However, only brand new diesel vehicles will need this ultra low sulfur fuel. There is virtually no environmental benefit in requiring it for the existing fleet, as the rule now does.

Coupled with other fuel changes, such as low sulfur gasoline in 2004, the refining industry's resources will be stretched to the limit. A mandate to manufacture large volumes, especially diesel, ahead of the time that it is needed is likely to cause significant diesel supply disruptions.

We recommend that the low sulfur diesel rule be adjusted to phase in volumes on a time frame that is much more consistent with the actual vehicle needs. This will provide the same environmental benefits as the current rule while decreasing the risk of diesel fuel shortages.

In conclusion, we look forward to working with this committee and with the administration to develop a cohesive energy policy based on free markets and open competition. Improving the environment is an important goal, but basic reliability and availability of fuel supplies and consumer costs are equally so.

Energy and environmental objectives can be addressed, but they must be considered together. A good scientific base, clear-headed cost benefit analysis, and consistent and responsible application of rules are also key. Change should proceed at a pace that allows investments to be made in an orderly manner, so as not to threaten

the supply of fuels to U.S. consumers. We look forward to working with the committee towards these ends.

I will be happy to take questions from the committee.

The CHAIRMAN. Thank you, Mr. Daigle.

[The prepared statement of Mr. Daigle follows:]

PREPARED STATEMENT OF D.H. DAIGLE, DIRECTOR OF AMERICAS REFINING, EXXONMOBIL REFINING AND SUPPLY COMPANY

INTRODUCTION

Chairman Murkowski and members of the committee, I am Don Daigle, Director of Americas Refining in ExxonMobil Refining & Supply Company. The divisions and affiliated companies of ExxonMobil operate or market products in the United States and nearly 200 other countries. Our principal business is energy, involving exploration, production, refining, transportation and sale of petroleum products.

My area of expertise is in the refining and supply of petroleum products. I also was Chair of the Coordinating Subcommittee for preparing the National Petroleum Council's (NPC) June 2000 report on U.S. Refining. Much of my testimony today is underpinned by the conclusions reached by the NPC. I welcome the opportunity to outline some of the important proactive steps which can and should be taken to ensure a reliable supply of petroleum products for American consumers.

Due to antitrust and competitive concerns, I hope you will understand that I'll not be able to discuss company specifics regarding inventory, supplies, pricing, and plans for operations and investment. Within the bounds of that caveat, however, I'll be as responsive as possible to the committee's questions.

We believe that it is critically important to develop a national energy policy which will allow the industry to continue to refine quality products and distribute them efficiently to consumers. The committee's interest in this aspect of energy policy, along with that of the new Administration, is most welcome and encouraging. There are important decisions to be made in the relatively near term which will significantly affect industry's ability to meet future consumer demand.

For at least the next several decades, and likely beyond, fossil fuels, particularly oil and gas, will be required to meet the vast majority of our U.S. energy needs. The refining business has a critical role to play in meeting that demand, both now and in the future.

To set the background, it should be recognized that refining is an economically risky and volatile venture. Historically, it has not been one of the more profitable areas of our business. In fact, industry downstream financial returns have averaged about 5% over the last 2 decades—just a little more than a 3-month T-bill. This reality is reflected in the fact that during the 1990s, the number of operating U.S. refineries decreased from 194 to 155. Many of those which shut down were too small to be economically viable. Notwithstanding this trend, however, total U.S. refining capacity increased through expansions and efficiencies at existing refineries. Industry has been able to meet growing consumer demand with essentially no change in refined product imports.

A key question for this committee is how to ensure that the refining industry can continue this trend. As we see it now, there are a number of obstacles which the industry's skill and technology may not be able to overcome without changes in policy. Refineries are currently running at essentially maximum capacity to meet the increased demand. Building new domestic refineries is unlikely to be a practical option given siting and permitting issues and fundamental economics of the business. As a result, we will need to took to capacity expansions at existing refining locations to meet the bulk of our future demand growth. At the same time as the industry is challenged to add capacity, there are a number of competing environmental regulations that push us in a different direction—adding cost and complexity to our plants without capacity benefits, and sometimes, with a capacity debit. As capable as our industry is from a technical perspective, we cannot always serve both of these masters simultaneously.

At the request of former Energy Secretary Richardson, the NPC assessed the impact of proposed and potential government policies and actions on refinery operations and petroleum product supply over the 1999 to 2005 time frame. The NPC assessment, entitled "U.S. Petroleum Refining—Assuring the Adequacy and Affordabiliiy of Cleaner Fuel," is a blunt call to action. Let me paraphrase its key findings. The changes we face in gasoline and diesel quality coupled with the potential for MTBE removal from gasoline will be very expensive, and significantly stretch capital resources, potentially beyond the bounds of affordability for some re-

finers. They will also make our supply and logistics system more rigid. The New Source Review (NSR) enforcement initiative launched several years ago by the Environmental Protection Agency poses further permitting and investment obstacles to necessary capacity expansion. The industry faces very significant challenges in implementing all these changes in the time frame which current regulations require. The tightness of the system creates a very real risk of increased supply disruptions and price volatility.

The main refining and supply areas which we believe need attention from this committee and the administration are: the reinterpretation of the NSR regulations; elimination of the oxygenate mandate contained in the 1990 Clean Air Act Amendments as part of an overall MTBE removal strategy; and phasing in the volume requirements for the new ultra low sulfur diesel regulations. I will comment on each of these in order.

NEW SOURCE REVIEW

The New Source Review program was originally intended to improve air quality through a permit review of new sources and major modifications to existing facilities. Over time, however, the NSR program has evolved from a 20-page rule into 4,000 pages of confusing, often contradictory and continually changing "interpretative guidance."

Several years ago, EPA began an aggressive initiative attempting to enforce retroactively new and more stringent interpretations of NSR requirements. In a stroke, it has attempted to undo years of Federal and state agency and industry interpretation and understanding and created conflicts with existing regulations, past actions, and state permitting decisions. This enforcement initiative occurred after EPA largely abandoned efforts to change NSR regulations through the normal rulemaking process.

Under EPA's reinterpretation, the number of projects that would require intrusive, costly and time consuming NSR review and permitting would increase substantially. Left to stand this will significantly increase the cost and difficulty of implementing improvements at refineries, and result in a significant permitting backlog for both state and federal officials. A company's ability to make even the most minor changes to improve refining capacity, energy efficiency and environmental performance can be compromised.

These legacy NSR enforcement actions were premised heavily on what we believe are erroneous reinterpretations of two elements of its permitting requirements. First, EPA asserted that numerous previously permitted projects resulted in "potential" emission increases when in reality they had no effect on actual emissions or were followed by emission decreases. In fact, overall, refinery emissions have actually decreased while production of fuel products increased. Second, that routine maintenance, repair and replacement at refineries—activities that were previously exempt from NSR—are now required to obtain permits. Such a strategy of "regulation by enforcement" puts industry in a difficult position. If unchecked, it will require refineries to seek permits for many more activities including many with little or no environmental benefit. This activity would divert resources that could have been used to expand and improve existing refinery capacity.

We believe this committee and the new administration should take a fresh look at the entire NSR enforcement program. Without revision to this program, the refining industry (and others) faces the threat of penalties and additional unnecessary investments for emission reductions above and beyond those currently required by regulation. A similar enforcement initiative imposed on the power generation sector has the potential to affect the ability of the electric utility industry to meet electricity requirements.

We offer the following recommendations as a means to prevent NSR enforcement policies from interfering without tangible benefit to industry's ability to meet our energy and fuel supply needs:

First, we recommend that NSR enforcement activities be suspended until such time as there has been a thorough review of both the program itself and its implications.

Second, we encourage this committee, and others involved in establishing new directions for national energy policy, to factor the implications of NSR interpretations into the policy making equation. Guidelines should be established to assure that EPA's application and enforcement of its NSR requirements are compatible with the nation's energy and fuel supply policy. Attention from the White House Office of Energy Policy, and from the Secretary of Energy will also be helpful. Finally, clear NSR regulations should be developed through an open administrative process, which are consistent with responsible implementation of the statutory NSR framework.

FEDERAL OXYGENATE MANDATE

Another legacy of past policy making that poses hurdles for the refining industry is the federal oxygenate mandate. The Clean Air Act Amendments of 1990 required the use of oxygenates in reformulated gasoline for nine areas of the nation with the most severe air quality problems. While the intention is laudable, this requirement is outmoded, fails to deliver promised benefits, and exacerbates the risk that supply issues will affect consumers.

EPA's own MTBE "Blue Ribbon" Panel concluded that the current Clean Air Act's mandate "to require oxygenates in RFG must be removed in order to provide flexibility to blend adequate fuel supplies in a cost-effective manner while quickly reducing usage of MTBE and maintaining air quality benefits." Additionally, new scientific data that became available after the 1990 Clean Air Act amendments demonstrate that oxygenates are not needed to provide the requisite environmental benefits of reformulated gasoline. Further, technological advancements in newer vehicles obviate any earlier justification for mandating oxygenates in RFG in order to address environmental concerns.

The oxygenate mandate is causing further balkanization of fuel supplies and is hindering the supply system and refineries' ability to get product to markets where and when needed. For example, Alabama and Georgia have chosen to require a unique fuel within their borders rather than adopt reformulated gasoline (RFG) and the costs and issues associated with oxygenates such as MTBE. As another example, Maine has opted out of the RFG program, choosing instead to require a lower volatility fuel. New Hampshire is requesting the same. Chicago and Milwaukee have their own brand of unique fuels because ethanol is the oxygenate used in those areas.

The solution? First, Congress should repeal the oxygenate mandate or, at a minimum, amend the law to grant authority to governors to waive the oxygenate mandate on a regional basis. In the meantime, Congress should encourage the EPA to grant state waivers from the oxygenate mandate. Granting California's request is a good place to start.

We are aware that some of the committee members are concerned about the continued market for ethanol. We expect that even without mandates there will likely continue to be additional opportunities for ethanol use as long as it is economically viable.

ULTRA LOW SULFUR DIESEL RULE

Another area which we believe deserves a fresh look is the ultra low sulfur diesel (ULSD) rule promulgated late last year. We accept the need to provide new lower sulfur fuel to enable new cleaner vehicle technology, but believe the regulations should recognize that only new diesel vehicles will need this ultra low sulfur fuel. There is little environmental benefit in requiring it for the existing fleet as the regulation now does. Coupled with the requirement to produce lower sulfur gasoline in 2004 and the need to address the oxygenate issue, the refining industry's resources will be stretched to the limit in order to manufacture large volumes of a fuel that will benefit only a few vehicles initially. In fact, there is reason for concern that there will not be sufficient on-road diesel to meet demand.

We are concerned that a supply disruption could result that would be more serious than the one that occurred in 1993 during the introduction of new California diesel fuel. We recommend that the ULSD rule be phased in with volumes more consistent with actual new vehicle needs, specifically, refiners would produce ULSD beginning June 1, 2006, in volumes needed to meet new on-road vehicle and retail availability requirements. Production volumes would increase as vehicle turnover occurs and market demands increase. Additionally, refiners would produce current low sulfur diesel (LSD; current 500 ppm sulfur cap highway diesel) to meet older on-road vehicle diesel demands. As ULSD demands grow, production would increase and LSD production would decline.

The advantages of implementing these recommendations are numerous.

(1) Essentially the same vehicle emission benefits and timing as the final EPA highway diesel rule would be maintained; (2) the potential for diesel fuel supply disruptions is reduced; (3) greater refinery energy efficiency and lower refinery $CO_2$ emissions are achieved by avoiding overproduction of ULSD in the early demand years; (4) by avoiding overproduction, ULSD is cost effectively provided to consumers who own new vehicles that benefit from the new fuel; (5) this approach stages investment and spreads out permitting, financing, investment, engineering and construction activity for refinery modifications, freeing critical resources to help implement other key fuel requirements; and (6) it provides an opportunity for further technological development to reduce the ultimate cost of sulfur removal.

CONCLUSION

ExxonMobil encourages members of this committee to help clarify where we, as a nation, are going in the energy policy area and what is needed to get there. We look for ways to work with you and other branches of government to develop a cohesive energy policy. In our view, that policy needs to be based on free markets and open competition if it is to be effective. It should also take an integrated approach to energy and environmental regulation. We urge you to ensure that industry is given the flexibility to provide new fuels that will support new engine emission control technology in the most cost-effective and environmentally sound manner. New pipelines and refinery upgrades needed to meet growing product demands and more stringent specifications, as well as new electricity generating capacity, will all be benefited by improvements in the regulatory review process.

In conclusion, I'd like to reiterate a core belief at ExxonMobil: in all the energy sectors, the market must be allowed to work. Improving the environment is a fundamentally important goal, but so are basic reliability and availability of fuel supplies, at reasonable costs to the consumers. All these objectives can be addressed, but they must be considered together. We believe that policy making must be based on sound science coupled with rigorous cost-benefit analysis and we urge that it proceed at a pace that allows investments to be made in an orderly manner. We look forward to working with you toward those ends.

I will be happy to answer any questions the committee may have.

The CHAIRMAN. Mr. Moyer, please proceed.

**STATEMENT OF CRAIG MOYER, EXECUTIVE DIRECTOR, WESTERN INDEPENDENT REFINERS ASSOCIATION**

Mr. MOYER. Thank you. Yes, I am Craig Moyer. I am the executive director of the Western Independent Refiners Association, WIRA. I want to thank this committee for the opportunity to speak this morning, but more importantly for your leadership in developing a national energy policy.

WIRA represents small business refiners, which are defined as small businesses pursuant to the Small Business Administration, fewer than 1,500 employees, and less than 155,000 barrels per day total capacity. WIRA members produce a full slate of petroleum products, including everything from gasoline, diesel, jet fuel to asphalt, lube oil and specialty petroleum products.

From the ground to the pump, there are three phases of the process: Exploration and production, refining, and marketing. members of WIRA are involved only in refining crude oil into products. No members of WIRA drills for oil or operates service stations.

WIRA is also part of a larger group of small business refiners that produce diesel fuel throughout the United States. Among the constituents of Senators on this panel include PetroStar in Alaska represented by Senator Murkowski; Calcasieu Refining, Placid Refining in Louisiana represented by Senator Landrieu; Countrymark, a farm cooperative in Indiana represented by Senator Bayh; Frontier in Wyoming, a refinery both in the State of Wyoming represented by Senator Thomas; Golden Bear, Kern Oil, Paramount, San Joaquin Refining represented by Senator Feinstein of California; and U.S. Oil and Refining in Washington represented by Senator Cantwell; Montana Refining represented by Senator Burns; and of course, Navajo Refining in New Mexico represented by Senator Domenici and Senator Bingaman.

I would like to make three brief points today. First, small refiners are important, both regionally and nationally. Two, EPA's low sulfur diesel regulations poses a challenge to the continuing viability of small business refiners. And three, Congress should act to

mitigate the potentially harmful effect that this regulation is going to have on small business refiners and, as a result, the effects on the Nation's refining capacity.

Individually, small business refiners may be a small part of the market, but cumulatively their impact is substantial and historically and decidedly pro-competitive. Small business refiners are also very important to the regions they are in. For example, just in California, small business refiners represent 100 percent of California's grade 80-aviation fuel, aliphatic solvents, and JP-4 jet fuel. Small refiners also manufacture 100 percent of the asphalt that is produced in southern California and most of the off-road diesel fuel. Half of the diesel fuel produced in the San Joaquin Valley, California's farm belt, is refined by small business refiners.

I am from California. But if we are reviewing the statistics from other States, such as Wyoming or Louisiana, I believe other similar references could be made to the regional and product manufacturing importance of these small business refiners.

Your former colleague, the Secretary of Energy Spencer Abraham, recently commented that the number of American refineries has been cut in half since 1980. Many of these were small businesses unable to meet the challenges of poor refining margins and expensive regulations. Meanwhile, as noted in your opening comments, Mr. Chairman, not one refinery has been built in the United States in over 25 years except for your plant in Alaska.

Small business refiners cumulatively account for a substantial part of the Nation's refining capacity; for example, 5 to 6 percent of the U.S. supply of on-road diesel fuel and 20 percent of the military jet fuel supplied to our bases. Experience confirms that when small business refiners leave the market, prices go up and consumers suffer.

I would like to turn, then, to the ultra low sulfur diesel fuel regulation quickly. You are familiar with the rule. It requires 15 parts per million sulfur limit for most on-road diesel beginning in June 2006. Some of the associations of large refiners are appealing this regulation in court. WIRA has not joined that effort. Instead our members are making good faith efforts to comply with the regulation.

In the final rule, EPA stated that, and I quote, "small business refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program."

However, EPA made no provision to assist small business refiners in financing the mandated capital expenditures. The Energy Information Agency forecasts a 6.5-percent increase in diesel demand, while other studies almost universally anticipate that that rule will result in a decline in diesel production nationally.

Meanwhile, ongoing challenges face the industry, as discussed by others on this panel and by the members of this committee. Existing refineries are operating at capacity resulting in more frequent unplanned shutdowns. And every small refiner forced from the marketplace increases our vulnerability.

Given the foregoing, we must agree with now-Secretary Abraham that we have a refining industry strained to capacity, leaving us dangerously vulnerable to regional supply disruptions and price

spikes. The new EPA regulation adds one more financial and regulatory burden on an already at-capacity industry.

Small business refiners want to be a part of the solution. Without assistance to make the capital investment, however, small refiners may be forced to shut down. EPA has estimated that small business refiners will incur on average capital costs of $14 million per facility to meet the new diesel regulations.

For some facilities, that cost will be substantially more. And some small business refiners are considering going out of business rather than expend the capital necessary to comply this and other regulations.

Unmitigated, the new regulations will make it even less likely that new refineries will ever be built. Therefore, it is important to seek methods to reimburse small business refiners for their costs in meeting these new government-imposed mandates, which endanger their long-term economic viability.

On behalf of the Western Independent Refiners Association and the rest of the small business refiners in the United States, I ask that this committee, while considering legislation to implement a national energy policy, work with small business refiners to find some way to mitigate the disproportionate impact this regulation will have on them. Senator Murkowski's bill, S. 389, includes provisions providing tax relief for petroleum refiners. A similar incentive for compliance with this regulation would be an appropriate method to help offset the hardship this regulation will place on small business refiners.

I thank you for your attention this morning. I look forward to discussing this matter with you all further.

[The prepared statement of Mr. Moyer follows:]

PREPARED STATEMENT OF CRAIG MOYER, EXECUTIVE DIRECTOR, WESTERN INDEPENDENT REFINERS ASSOCIATION

On behalf of the Western Independent Refiners Association (WIRA), in my capacity as Executive Director for WIRA, I am pleased to have the opportunity to testify before this committee and to provide this statement for the record addressing national energy policy with respect to fuel specifications and their infrastructure constraints.

BACKGROUND ON WIRA

WIRA is a trade association of small and independent refineries on the West Coast. At this time, ten small independent refineries continue to operate on the West Coast, nine in California and one in Tacoma, Washington. In California, these refineries are located in each of the three refining areas within California. One is located in the San Francisco Bay area. One is located in the Bakersfield area of the Southern San Joaquin Valley and the remaining facilities operate in the Los Angeles Basin. Small independent refineries employ thousands of people and each company pays millions of dollars in taxes, even after excluding income taxes. WIRA members produce a full slate of petroleum products including gasoline, diesel fuel, jet fuel, asphalt, lube oil and specialty petroleum products.

While I am here on behalf of WIRA, we are also part of a larger ad hoc committee representing small refiners throughout United States. There are small refiners located from as far North as PetroStar Inc. in Alaska and Holly Corporation in Great Falls, Montana to Placid Refining Co. in Port Allen, Louisiana. Other small refiners included are American Refining Inc. in Pennsylvania, Gary-Williams Energy Corp. in Oklahoma, and Navajo Refining in New Mexico. (See attachment A for a complete list of small refiners in the United States.)

SUMMARY OF ISSUE

Small and independent refiners (refiners with fewer than 1,500 employees and less than 155,000 barrels per day total capacity) have long been recognized as an important competitive force in the refining sector. Individually, each small refiner represents a relatively small share of the petroleum product marketplace. Cumulatively, however, their impact is substantial. In some regions, small refiners represent 50 percent or more of the market for certain products. Their pricing competition pressures the larger integrated companies to lower prices to the consuming public. Without that competitive pressure, consumers will pay more. Small refiners also are key suppliers to the Department of Defense and other niche markets such as diesel fuel, asphalt and jet fuel. Loss of supply in these products will not easily be filled by the major refineries.

Under new Environmental Protection Agency (EPA) regulations, coming into effect in 2006, refiners must meet a stringent new standard of 15 parts per million sulfur limit for most on-road diesel volume. EPA estimates that small business refiners will incur average capital costs of $14 million per facility to meet the new diesel regulations. Our projections indicate that the initial cost to meet these new standards will be approximately $300 million for the whole industry. Regarding these standards, EPA stated that: "small business refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program."

U.S. consumer demand for diesel fuel, as forecast by the Energy Information Administration, is expected to grow by 6.5 percent between now and 2007. It is important to seek methods to ensure small business refiners are able to meet these new government imposed mandates, which endanger their long-term economic viability. Some 25 U.S. refineries have shut down over the last decade and virtually no new refinery has been built in the United States for over 20 years.

NEW FUEL SPECIFICATION REGULATIONS

On January 18, 2001, the EPA published new regulations, which create new standards for levels of sulfur in highway diesel fuel beginning in June, 2006. Under the new regulations, refiners must meet a stringent new standard of 15 parts per million sulfur limit for most on-road diesel volume ("Ultra Low Sulfur Diesel Fuel"). Small refiners produce about four percent of the Nation's diesel fuel and in some regions produce over half of the diesel fuel. In the final rule, EPA stated regarding the diesel sulfur standards "that small business refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program." In the final rule, EPA agreed with the final Small Business Administration report regarding the diesel sulfur standards "that small business refiners would likely experience a significant and disproportionate financial hardship in reaching the objectives of our diesel fuel sulfur program." However, EPA has made no provision to assist small business refiners in financing the mandated capital expenditures.

The new regulations also will make it even less likely that new refineries will ever be built. With the exception of one small topping facility in Alaska, no new refinery has been built in the United States for almost 20 years. Existing facilities are operating at full sustainable capacity. Operational demands imposed by the new regulations will result in a reduction of on-road diesel production. At the same time, U.S. consumer demand for diesel fuel, as forecast by the Energy Information Administration, is expected to grow by 6.5 percent between now and 2007. If small business refiners are eliminated from diesel production, supply shortages will become even more likely. Therefore, it is important to seek methods to reimburse small business refiners for their costs in meeting these new government imposed mandates, which endanger their long-term economic viability.

EPA estimates that small business refiners will incur average capital costs of $14 million per facility to meet the new diesel regulations. For some facilities, the cost will be substantially more.

In addition, costs to produce low-sulfur diesel fuel and to comply with other regulations will add significantly to capital requirements in approximately the same time frame. Such capital investments are significantly beyond the financial capability of facilities operated by small business refiners, whose total investment is dwarfed by these requirements. On top of the initial required capital expenditures, the related increases in operating costs could equal or exceed the refineries' historical annual profits, and thus, imperil the viability of these important U.S. businesses.

While WIRA does not oppose the regulation, and is fully committed to compliance, we believe that national energy policy should take into account the importance of

the small refiners and should include proposals for mitigating the impact of this regulation. Without such provisions, some small business refiners will shut down and all will struggle to meet the mandated expenditures. Such a policy ignores the important role of the small business refiner in the U.S. energy market. The result of such a policy will have serious consequences for our country.

NATIONAL ENERGY POLICY: THE PRO-COMPETITIVE ROLE OF THE SMALL REFINERS

Small and independent refiners have long been recognized as an important competitive force in the refining sector. Individually, each small refiner represents a relatively small share of the petroleum product marketplace. Cumulatively, however, their impact is substantial. Their pricing competition pressures the larger integrated companies to lower prices to the consuming public. Without that competition pressure, consumers will pay more. For example, in early 1991, Amoco shut down a 40,000 barrels per day refinery in Casper, Wyoming, and gasoline prices jumped almost 10 cents per gallon. In California, the Attorney General concluded that after five small refiners shut down because they could not manufacture California's cleaner burning gasoline, the loss of competition cost consumers hundreds of millions of dollars. Through experience, we know that when small refiners leave the marketplace, prices go up and consumers suffer.

Congress and many agencies, including the Environmental Protection Agency ("EPA") and the California Air Resources Board ("CARB"), have long recognized the importance of the independent refining sector to maintaining a competitive market for petroleum products. For example, after EPA promulgated rules limiting the sulfur content of diesel fuel to 500 parts per million effective October 1, 1993, Congress recognized the implications of this rule on small diesel refiners and authorized the issuance of acid rain credits to small diesel refiners pursuant to Section 410 (h) of the 1990 Clear Air Act amendments. Because of the important pro-competitive impact of small refiners, CARB, an agency that has promulgated perhaps the most stringent fuels regulations in the country, has provided separate treatment for small refiners in virtually every fuels regulation it has passed since 1988. In its two most recent fuels rule makings, EPA has authorized separate treatment for small business refiners, as well. Even the South Coast Air Quality Management District, an agency leading the nation and perhaps the world, in stringent air quality regulations, authorized separate treatment for small refiners in its recently promulgated Rule 431.1 regulating diesel fuel.

In addition to maintaining competition, small and independent refiners often supply other petroleum products not otherwise available in certain areas. For example, small refiners manufacture 100 percent of California's grade 80-aviation fuel, aliphatic solvents, and JP-4 jet fuel. Small refiners also manufacture 100 percent of the asphalt produced in southern California and much of the off-road diesel fuel. Half of the diesel fuel produced in the San Joaquin Valley, California's farm belt, is refined by small refiners.

Small business refiners also fill a critical national security function. For example, in 1998 and 1999, small business refiners provided almost 20 percent of the jet fuel used by U.S. military bases. This adds up to almost 500 million gallons of jet fuel supplied each year under defense contracts between the government and small business refiners.

CHALLENGES FACING THE INDUSTRY

Today, approximately 124 refineries are operating in this country. About 25 percent are small, independent refiners. Small business refiners are primarily owned by U.S. citizens including privately held businesses and one farmer cooperative.

As Secretary of Energy Spencer Abraham noted in recent comments to the United States Chamber of Commerce, the number of American refineries has been cut in half since 1980. Many of these were small business refiners unable to meet the challenges of poor refining margins and expensive regulations. Meanwhile, no new refinery has been built in the United States in over 25 years and regulatory requirements limit the ability of existing refineries to expand capacity. Government regulations require the production of more than 15 types of gasoline. Existing refineries are operating at capacity resulting in more frequent unplanned shutdowns. Every small refiner forced from the marketplace increases our vulnerability. Given the foregoing, one must agree with Secretary Abraham that we "have a refining industry strained to capacity, leaving us dangerously vulnerable to regional supply disruptions and price spikes."

Additional challenges facing small refiners include the following:

- Small refiners are large users of electricity and natural gas. The remarkably high prices of these inputs are affecting the small refiners.

- The phase out of MTBE as an oxygenate has led to increased costs as replacements are found.
- Access to crude oil is not reliable, as the larger companies are not consistently willing to supply small refiners.
- Wastewater treatment controls and stationary source controls have become increasingly stringent, thus raising costs for small refiners.

CONCLUSION: U.S. GOVERNMENT ENERGY POLICY SHOULD RECOGNIZE AND TAKE STEPS TO MITIGATE THE IMPACT OF NEW FUEL SPECIFICATIONS

New fuel specifications will adversely impact the financial viability of small refiners producing diesel fuel. Because of the importance of these refiners to the competitive structure of the fuel market, Congress should consider mitigation, including tax measures, for this important segment of the energy market.

ATTACHMENT A

| Co. No. | Parent company | Ref. No. | Refinery | Refinery location | Refinery capacity crude bpd | Parent Co. capacity crude bpd |
|---|---|---|---|---|---|---|
| 1 | Age Refining Inc. | 1 | Age Refining Inc. | San Antonio, TX | 5,000 | 5,000 |
| 2 | American Refining Inc. | 2 | American Refining Inc. | Bradford, PA | 10,000 | 10,000 |
| 3 | Countrymark Co.operative, Inc. | 3 | Countrymark Co.operative, Inc. | Mt. Vernon, IN | 22,000 | 22,000 |
| 4 | Cross Oil & Refining | 4 | Cross Oil & Refining | Smackover, AR | 6,000 | 6,000 |
| 5 | Foreland Inc. | 5 | Foreland Corp. | Eagle Springs, NV | 5,000 | 5,000 |
| 6 | Frontier Oil Corp. | 6 | Frontier Refining & Marketing Co. | Cheyenne, WY | 41,000 | 151,000 |
| 6 | Frontier Oil Corp. | 7 | Frontier Refining & Marketing Co. | El Dorado, KS | 110,000 | |
| 7 | Gary-Williams Energy Corp. | 8 | Wynnewood Refining Co. | Wynnewood, OK | 50,000 | 50,000 |
| 8 | Golden Bear Oil Specialties | 9 | Golden Bear Oil Specialties | Bakersfield, CA | 12,500 | 12,500 |
| 9 | Holly Corp. | 10 | Montana Refining Co. | Great Falls, MT | 7,000 | 69,000 |
| 9 | Holly Corp. | 11 | Navajo Refining Co. | Artesia, NM | 62,000 | |
| 10 | Kern Oil & Refining Co. | 12 | Kern Oil & Refining Co. | Bakersfield, CA | 25,000 | 25,000 |
| 11 | Paramount Petroleum | 13 | Paramount Petroleum Corp. | Paramount, CA | 43,000 | 43,000 |
| 12 | PetroStar Inc. | 14 | PetroStar Inc. (Topping only) | North Pole, AK | 15,000 | 57,000 |
| 12 | PetroStar Inc. | 15 | PetroStar Inc. (Topping only) | Valdez, AK | 42,000 | |
| 13 | Placid Refining Co. | 16 | Placid Refining Co. | Port Allen, LA | 48,000 | 48,000 |
| 14 | San Joaquin Refining Co. | 16 | San Joaquin Refining Co. | Bakersfield, CA | 24,300 | 24,300 |
| 15 | Somerset Refining, Inc. | 18 | Somerset Refining Co. | Somerset, KY | 5,500 | 5,500 |
| 16 | U.S. Oil & Refining Co. | 19 | U.S. Oil & Refining Co. | Tacoma, WA | 46,000 | 46,000 |
| 17 | Transworld Oil USA | 20 | Calcasieu Refining Co. | Lake Charles, LA | 22,000 | 22,000 |
| 18 | Wyoming Refining Co. | 21 | Wyoming Refining Co. | Newcastle, WY | 12,500 | 12,500 |
| | | | | | 613,800 | |

The CHAIRMAN. Thank you very much. I appreciate the testimony collectively.

Let me focus on Dr. Daniel Greenbaum. And it is my understanding that your blue ribbon panel on oxygenates on gasoline recommended doing away with the additive requirement to comply with EPA. Is that basically correct?

Mr. GREENBAUM. That is correct, that you could——

The CHAIRMAN. That is a pretty profound statement. Okay. And I hope we take note of it, a recommendation to do away with the additive requirement. Now many of our current gasoline balkanization, so to speak, problems appear to be directly related to that requirement. Is that not correct?

Mr. GREENBAUM. I am not an expert in the refining industry, but that is a significant component of that.

The CHAIRMAN. All right. Now is this a case, in your opinion, of Congress writing fuel standards?

Mr. GREENBAUM. Well, it certainly——

The CHAIRMAN. The EPA has to adhere to the law? What in the hell does Congress know about writing fuel standards? I do not know anything about it. I can tell you a little bit about banking.

Mr. GREENBAUM. I am assuming that was not a question.

The CHAIRMAN. I do not know. Maybe Senator Nickles can tell us something about our qualifications to write fuel standards.

Senator BINGAMAN. Mr. Chairman, I thought we all voted for that Clean Air Act.

The CHAIRMAN. Well, did we know what we were voting for?

Senator BINGAMAN. I am not sure.

The CHAIRMAN. I am not either. Now there may be some folks out there that will take issue with your rather profound statement, but I certainly admire your willingness to evaluate this based on your background and expertise and your blue ribbon panel on oxygenates that suggests that this is not necessary. And we look at EPA with forked tongue and say, how could they do this, when they are enforcing a law that we passed.

And I would suggest, if you feel strongly enough, you blame the Congress.

Mr. GREENBAUM. We recommend to Congress that Congress take action, because only Congress can address the issue. I think it is fair to say that in the very early stages of the RFG program, the oxygenates were a relatively quickly available way to move to get the clean fuels. What we found, though, is that the refining industry responded and was able, and is definitely able today, to make clean fuels with far less reliance on the oxygenates. And we argue strongly that, therefore, the mandate was counterproductive at this point, particularly in light of the problems with MTBE.

The CHAIRMAN. If the science supports removing the oxygenate standard, then why has it not been done? America, in your opinion, could enjoy cleaner fuels at less price. So are you waiting for Congress in its wisdom to do it for you?

Mr. GREENBAUM. I think Congress has to do it because of the—because this is a mandate that was put into the law very specifically. And I think it is an interesting lesson in actually when the mandates get that specific, how had it is to then be flexible in the face of changing technology, changing market conditions. And that

is why the panel really thought that performance standards—and several of us have spoken to this—were the way to go.

The CHAIRMAN. Well, we have committees, committee jurisdiction. This case, I assume, was the Environment and Public Works Committee on the Senate side and the Commerce Committee on the House side. And the professional staff or experts or whomever put this together, and now we are hearing it is unnecessary and adds additional price to the consumer, and that the industry can meet requirements, ultimately "cleaner fuel" at less price, if we do away with this.

Is that—do the witnesses generally agree with that statement?

Mr. DAIGLE. Senator, may I comment on that?

The CHAIRMAN. Please.

Mr. DAIGLE. We firmly support removal of the oxygen mandate. New scientific data, technological advancements clearly indicate that clean fuels can be made, maintaining all the benefits of the Clean Air Act, without the use of oxygen mandates. Imposing a mandate reducing flexibility on the part of the refiners and, as a result of that, ultimately decreases flexibility in the system and increases cost.

The oxygen mandate is clearly one of the major causes of the balkanization in the various regional fuel supplies, fuel requirements, that was shown on one of the charts earlier.

I think if the oxygen mandate were removed, a lot of the areas that have selected these regional specifications, because they do not want to deal with the potential problems associated with the oxygen mandates, then could very much move back to the RFG standard and get rid of a number of these specific standards that are causing a lot of the rigidity in the system and reducing the flexibility in the system, to move supplies around to where there are regional shortages for every reason.

The CHAIRMAN. And do you generally agree with that statement?

Mr. MOYER. Senator Murkowski, could I add to this? Expanding—I not only agree with that, I would expand upon it, that as one of these oxygenates, MTBE, is looked at as a bad actor now in California, as you all know.

The CHAIRMAN. It supposedly gets in the water table. I do not know.

Mr. MOYER. It moves very quickly and gets into the water and moves much faster than gasoline.

The CHAIRMAN. Right.

Mr. MOYER. The elimination of MTBE exacerbates the problems associated with the oxygenate mandate.

Mr. DAIGLE. I would add to that that clearly Congress has a role in setting the specifications that are required to balance between environmental demands and supply demands. But Congress should——

The CHAIRMAN. Yes, but when Congress begins to write specifics relative to fuel standards, you know, I question Congress's collective wisdom. It is torn between environmental concerns that may have some validity or not. And what I am getting at here is, is there general agreement with this statement that has been made relative to the recommendations that doing away with the additive

requirements, because it really—there is a simpler and better way to achieve the objective of enjoying cleaner fuels.

Mr. ROBINSON. Absolutely.

The CHAIRMAN. All right. Now, would you gentlemen be willing to draft collectively some legislation in a draft form to submit to this committee that would propose how you bring about this change and still have the reasonable safeguards? And I do not want to go down a million rabbit trails here.

But you know your business, and we do not. But we would be willing to take this, review it, and see if we can address in reality what you have suggested here, which is clearly a relief from duplicity, clearly offers more simplicity to achieve a better standard, which is what you are telling me you can do. Would you be willing to do that?

Mr. DAIGLE. I think we clearly would be willing to do it. And I think there are activities underway along those regards with organizations, such as API and NPRA.

The CHAIRMAN. Okay.

Senator NICKLES. Would the Senator yield to this——

The CHAIRMAN. Yes. Just one more question, though.

We are going to get some of this from the administration's task force. But how long is it going to take you to submit something to the committee?

Mr. DAIGLE. I would think something could be submitted in a very short period of time.

Mr. ROBINSON. Mr. Chairman, I think it is much, much easier. Basically you maintain all your performance standards. No one is complaining about a performance standard whatsoever. You just delete the oxygenate mandate. That is your legislation. That is all it is.

The CHAIRMAN. All right. What I want you to do is submit this and give us the counter argument that is going to come up as a consequence of deleting the oxygenate mandate.

Senator NICKLES. I was going to say, I think that is the—that was my suggestion. We just go back and eliminate the additive mandate language, the challenge being that I see—and maybe I am incorrect—is that the ethanol crowd will come unglued.

[Laughter.]

Senator NICKLES. That would be more political than—that argument will not be based purely on economics. It would be—that would be our challenge. But clearly, MTBE has not proven to be effective. The mandate was a mistake. It was in the bill. Some of us opposed us back in 1990, thinking we should not be doing that. You might remember the terminology, government gas, when we were involved in writing this legislation. And a lot of us were opposed to the mandate.

Anyway, it was put in. And it was put in—correct me, if I am wrong. And this is stretching my memory—but it was put in coupled with ethanol as one solution. And the ethanol lobby is very strong, and it has a lot of votes in the Congress. And that is our real challenge. I do not think the challenge is going to be on removing the mandate, except for the fact that it pulls ethanol.

The CHAIRMAN. Well, misery loves company, Senator Nickles. And I would like to have something from this collective group, be-

cause I think it represents a balance, if you will, and a point of view that should be considered. And clearly, there is potential relief for consumers, achieving the same objective. My time is——

Senator NICKLES. Tell Grassley you are thinking about this.

The CHAIRMAN. No, I am not going to tell him, either.

[Laughter.]

Mr. GREENBAUM. Mr. Chairman, if I might just add something to Senator Nickles's comments. One of the things we found in the blue ribbon panel was that removing the oxygenate mandate does not mean less use of ethanol. It undoubtedly, if you keep the performance standards, it undoubtedly means you will see increased use of ethanol.

The CHAIRMAN. That would be good news for Senator Grassley.

Mr. GREENBAUM. Right. And I think the question, because in fact the mandate has largely been met by MTBE, ethanol is a relatively clean additive. It has some limitations, as we have heard today. But you would see increased use of it. And I think everybody would agree on that. I think the question is how much and do you need a guarantee. I think the panel felt you did not. In fact, it was better to have a mix of solutions, not just rely on ethanol.

But the data was there to suggest that you would see an increase in ethanol under any circumstance.

Senator NICKLES. Help me a little bit, because I thought we were saying we wanted to eliminate the additive mandate, which would also eliminate the mandate—well, it is either going to be supplied by MTBE or ethanol, by and large.

Mr. GREENBAUM. Right. What we said, and what I think everybody here has said, is that there are RFG specifications, which are performance based. You need to have a certain level of clean emissions from the fuel. They do not tell you how to mix it or what has to be in it. Those should stay in place.

What should be moved was the mandate, which only said you had to use oxygenates to get to that. If you do that and you keep those standards, you will still need to have something to make sure the fuel is clean. You will have to have lower benzene, so you will need a source of octane to replace it. You need some other things, and ethanol is one of the sources for that.

So you will still have use of that, and you will see at least the same level and undoubtedly an increase in the use of ethanol.

Senator NICKLES. Your statement is very helpful in the success of this endeavor.

The CHAIRMAN. Mr. Heminger, you are a large blender of ethanol. Would you care to comment relative to the concern that has been expressed on the politics associated with ethanol?

Mr. HEMINGER. Yes, Mr. Chairman. We are the Nation's largest blender of ethanol. I would provide caution, though, to this discussion. In order to take MTBE out and bring ethanol in as a replacement, we are talking about 1.6 billion gallons in volume to replace. We believe just ethanol alone, that is about a 4-year minimum project. So I provide caution. We cannot snap our fingers and correct that today. It is going to take at least four years to be able to have the ethanol plants to supply that.

But beyond that, the problems, as I had in my testimony, of transporting ethanol, you cannot ethanol refined products with eth-

anol through the pipeline system. It just does not work because of the affinity ethanol has for water. So we have to look beyond just ethanol corrects the problem. We have to look at how we transport, how we get the product eventually to market. It is a partial solution, but there are many other things we have to consider as well.

Mr. DAIGLE. Mr. Chairman, may I clarify something?

What we are suggesting is not the replacement of one mandate with another mandate. We are not asking to remove MTBE and then mandate to meet an oxygenate level of ethanol. We are asking to remove the mandate, put the performance specs out there, leave them in place as they are now, and then allow the industry to use its skill and its know-how to come up with the optimum blend and the optimum set of components to meet the gasoline supply.

And I think what is being suggested is that if that is done, there will be a continued use for ethanol, particularly where it is economically attractive to use ethanol. And it may well grow above and beyond the current level. But we are not asking, clearly, to remove MTBE and replace with ethanol. I think——

The CHAIRMAN. I appreciate your clarification of that. And my time is up. But before I quit, I want to know which one of you is going to volunteer to coordinate the effort of the five panelists to get something to us.

[Laughter.]

Mr. DAIGLE. Why do I not take that on, Senator, working with appropriate industry groups to get that done?

The CHAIRMAN. All right. And what I also want you to address here is the concern that Mr. Moyer raised, where he indicated that the smaller refiners are working to try and comply with the mandate to reduce from, what, 500 to 15.

Mr. MOYER. Exactly.

The CHAIRMAN. But I am concerned about the ability of the small refiners to be able to bite financially that bullet, because we have seen the small refiners close down because the economics just would not address significant changes to meet various new requirements. Now it is one thing to be committed to try and achieve it. I do not want to see you folks going out of business.

Now Exxon and the rest of them with their larger refineries can afford the retrofit. So I would like you to—you know, it is fine to pursue something, but if you do not achieve it, you go out of business.

Mr. MOYER. That is exactly right, Senator. And indeed, in California one of the reasons that, according to the attorney general's task force, we have such volatility is the loss of five small and independent refiners that were not able to achieve the California RFG specification.

The CHAIRMAN. Well, you tell me what you are going to have to have to stay alive.

Senator Bingaman.

Mr. DAIGLE. Mr. Chairman, with all due respect, there are two different issues. One is the oxygen mandate, and we will get you what you have asked for on the oxygen mandate.

A completely different issue is the low sulfur diesel rule and what is the appropriate response on the part of the EPA, on the part of the industry to that.

Mr. MOYER. I will be happy to take the lead on——

The CHAIRMAN. That is fair enough. Okay. And remember, what we are looking at is, we recognize that the bigger oil companies, the bigger refineries, can do it. But we do not want to drive you folks out of business. And if the technology is there and achievable, that is one thing. If it is not or it is simply unavailable to the standpoint of your financial capacity, then what do you suggest?

Senator Bingaman.

Senator BINGAMAN. Well, thank you very much. I want to just underscore the point that Senator Nickles made. As I recall, this oxygenate mandate is in the law because the ethanol industry wanted it in the law. And as you pointed out, several of us opposed adding it as a mandate.

I believe the Environment and Public Works Committee this last year proposed an additional mandate for the use of ethanol. I think that came out of that committee. So I think there is a strong level of support here in the Senate for maintaining some mandate. I think clearly I agree with the policy of eliminating the mandate and keeping the standards, and I hope we can do that.

We have a provision in the bill that we introduced, S. 597. It is section 306 of that bill, which is entitled streamlining fuel specifications not later than 9 months after the date of enactment. The administrator of EPA and the Secretary of Energy shall join the report to Congress on the technical and economic feasibility of developing national or regional vehicle fuel specifications for the contiguous United States that would enhance flexibility in the distribution of fuels, reduce price volatility and costs to consumers, and meet local, regional and national air quality standards.

Have any of you had a chance to look at that? Would you have a comment as to whether this kind of a provision is adequate or something different should be done on this problem of fuel specifications? We are anxious to get input from any of you as to how to address this problem in a constructive way.

Mr. DAIGLE. Senator, if I may comment?

Senator BINGAMAN. Yes, please.

Mr. DAIGLE. In our view, it is really not practical to have one single national fuel. Different areas of the country have different needs, particularly from a volatility requirement standard, to assure proper operation of vehicles. What refiners really need is the flexibility of producing the needed fuels. So any fuels requirements that get put in place need to recognize the physical realities of the fuel supply system, the distribution system, and the current refining capacity.

So mandates, quotes, rigid specifications, I think, are really not the way to go. The industry needs to know what specifications are required and then have the latitude and the flexibility to go out and use its know-how and its capability and its technology to provide that fuel in the most economic fashion.

There are areas of the countries that need cleaner burning fuels because of particular problems with overall levels of contaminants in the air in those areas. There are other areas of the country that really do not need those. To the extent we pick one single fuel supply and impose that nationwide, there will be a number of areas

in the Nation that will be incurring a lot higher fuel costs with really no net economic benefit.

Senator BINGAMAN. Well, I can certainly understand that, and I agree with it. What about the idea, though, of having regional vehicle fuel specifications? Does that make sense to you or not?

Mr. HEMINGER. Senator, if I can answer that? I agree with what Mr. Daigle said. And if you go to a regional mandate, the regional, looking at the west coast, you would have carb gasoline. Looking at the Midwest, RFG in Chicago is the most stringent. So if we were to use that fuel for the balance of the Midwest, that is the most difficult, however, the most stringent gasoline to make.

In doing so, you are going to take volume out of the system, when volume is required. And also doing that, you are going to put further difficult reasons on the infrastructure or requiring additional infrastructure to be able to design and make this fuel. And again, it is just for a region.

We do not believe that it is right today to change to where we have possibly three, four, six, who knows how many different regional fuel components. The system has been designed today to make these individual fuels. The system is getting much better at being efficient in transporting those fuels. But we do not believe it is right to mandate, to go to the strictest sense for a given region.

Senator BINGAMAN. So my understanding is that both of you then take the view that we should do nothing at the Federal level to deal with the problem that is reflected in this map over here.

Mr. HEMINGER. That is not what——

Mr. DAIGLE. That is really not what I am saying, Senator.

Senator BINGAMAN. What are you saying that we should do? I guess that is my question.

Mr. DAIGLE. What I am saying is a lot of the balkanization and a lot of the regional specs now are the result of the oxygen mandate.

Senator BINGAMAN. So if we eliminate that——

Mr. DAIGLE. If the oxygen mandate is removed, I think you will see the removal of a lot of the impediments that caused areas to go to regional and specific fuel supplies and move back toward RFG in the areas where the cleaner burning fuel is needed and the——

Senator BINGAMAN. So you say if we eliminate that oxygenate mandate, that will solve the problem to the extent that we ought to solve the problem.

Mr. DAIGLE. That is my view, Senator. It will——

Senator BINGAMAN. And is that your view, too, Mr. Heminger?

Mr. HEMINGER. Yes, sir. It will start to solve part of the problem.

Senator BINGAMAN. Mr. Robinson, did you agree with that?

Mr. ROBINSON. Not entirely. I would probably take a little bit more aggressive position on that, in the sense that I think what this is saying is, look at the technical and economic feasibility of developing national or regional fuel specifications. I do not know at this point whether it really makes sense to go to a national specification.

I certainly think that we need to move away from making more and more different specifications. I think moving in the direction of less specifications is going to make a significant—will significantly assist the distribution system.

You know, whether we move all the way to a single or not, that is a pretty large step. But we have continued to make it more difficult. We need to start shrinking it back the other direction, at least.

Senator BINGAMAN. So you think just eliminating the oxygenate requirement or mandate does not necessarily get us where we need to go.

Mr. ROBINSON. Probably not, although that would be a huge, very, very important first step.

Senator BINGAMAN. Okay.

Mr. DAIGLE. I think, Senator, one thing to keep in mind is moving to one size fits all around the Nation on fuel specs, or regional even, again, that is putting in arbitrary regulations, arbitrary requirements, not necessarily required by a given region, and has the potential to create supply problems, supply reduction, and more cost to the consumer.

Senator BINGAMAN. Well, what I was trying to deal with is, some of your testimony talks about the problems and the increased cost that has resulted from balkanization. And it seemed to me that one way—maybe I am not defining that word the way you folks are. But I thought that the way to deal with that is to go to more uniformity and less balkanization.

Yes.

Mr. MOYER. Senator Bingaman, could I address this? First of all, I think we all agree that the elimination of the oxygenate mandate would be a good thing. But the question is, do we go further than that? Let me—there is a bit of a tension here.

On the one hand—and we can take California as an example. On the one hand, all of California has California reformulated gasoline, even though clearly in the high Sierras, which has some of the pristine air in the country, do not really need that fuel. Yet the State of California chose to have one fuel to make it easier to distribute that fuel throughout the State.

However, that also has eliminated, because we went to that lowest common denominator fuel, eliminated the ability of some folks to be able to actually supply that. That is the small refiners, for example, that went out of business, that cold not make that change to get to that lowest common denominator.

And I believe that is the point being emphasized by Mr. Daigle, that if you go to that lowest common denominator, that will reduce the supply. It will certainly improve distribution, but it will reduce the amount of supply. And that is the tension that I was mentioning.

Mr. HEMINGER. Senator, along the same lines, if you look at Chicago being the strictest, the additional cost to make the RFG for Chicago, if that was a regional fuel, we do not believe the consumer needs to pay in southern Illinois, in southern Indiana, midwest Ohio, that they need that strict fuel blend. So to have——

Senator BINGAMAN. But you are assuming that if we went to a regional specification, it would be the most stringent. It would be Chicago's.

Mr. HEMINGER. That is what we are assuming, if the same regulations are going to apply for emissions today. Now if we are going

to change those, then you could come off of the strict compliance of Chicago. So you are right, that is the assumption we are making.

Senator BINGAMAN. All right. I think it is you and me here, Chuck. Why do you not go ahead with any questions you have?

Senator SCHUMER. Thank you, Mr. Chairman. And I appreciated the testimony of all the witnesses. As I have mentioned, I think we are on the precipice of a very large energy crisis, gasoline, home heating oil, gas for heating your home, electricity. And I have also said that Democrats talk about conservation, decreased demand; Republicans talk about new exploration, increased supply. The twain never meet, and nothing gets done.

So your testimony is good, is one aspect of that, the gasoline market. We are going to have all sorts of problems down the road, if we do nothing. But I am delighted that we talked about this subject.

Now, I would like—my first question is for Mr. Greenbaum, because we in New York are very concerned about the oxygenate issue. And you made reference to the problems brought about by the use of MTBE. In fact, my State, New York, is seeking to phase out MTBE by 2004. But the $64,000 question is: What can the Northeast put in gasoline to replace MTBE? Ethanol is not economically feasible. What is?

And if you are faced with the choice of knocking out MTBE and putting nothing in its place or keeping it, what do you do? Not easy questions that we are all grappling with.

Mr. GREENBAUM. I entirely understand that. And the blue ribbon panel saw that in New York, in a number of States. And California is also wrestling with that, as well. I think that there are—we spent a fair amount of time a few minutes ago talking about one solution to that.

And that is, if one could remove the oxygenate mandate, keep the standards, the specifications, for the clean fuels, the performance standards, that would not only allow places like New York to continue to have the clean fuels and avoid the MTBE, but it would, on that map, for example, allow Maine to come back into the RFG program and not require a separate little fuel in Maine and another one in some of these other areas. So it would have that dual advantage.

I think short of that, the other route that is available——

Senator SCHUMER. What is the major problem with doing that?

Mr. GREENBAUM. Well, I think—it would appear to all of us that the major problem with doing that is that, thus far, Congress, which would need to remove the oxygenate mandate, has not done it, largely because the ethanol industry would be concerned that it would somehow lose market or would—it would prefer to have more sale.

Senator SCHUMER. Even if we did it—now, I do not know. Maybe this is not possible. But what if we did it just in areas where ethanol, you know, in the Northeast, where ethanol is not around. So they would not have a disadvantage, they would just forego a potential advantage, which is not going to happen.

Mr. GREENBAUM. Well, the second alternative, which I think Mr. Daigle also mentioned, is the one that California is pursuing, which

is to seek a waiver from the EPA of the oxygenate mandate in its area, because of the need to deal with this problem.

And that is—as long as that is done consistently in whatever area does it—I mean, I would guess that my colleagues on the panel would be concerned if only New York got a waiver, and Connecticut and New Jersey did not get a waiver, because then they would have yet another sort of funny color on that map.

Senator SCHUMER. Right.

Mr. GREENBAUM. But that is the other mechanism. I know the regional—for example, in your region, that the Northeast States for coordinated air use management is attempting to come up with that kind of proposal as a fallback, because I think everybody understands that if we are going to get MTBE out of the fuel supply, there has to be a way to come up with a reasonable, consistent, uniform fuel supply to replace it.

Senator SCHUMER. If we did your preferred choice, would it make either the supply less or the cost greater?

Mr. GREENBAUM. Well, the others on the panel could speak to it, but I think our experience was that as long as you give time for people to make the adjustments, and particularly in that case, it would certainly not increase cost. And it might have the potential, because it would not require the additive, to decrease it.

Senator SCHUMER. Does everyone agree with that? Mr. Daigle?

Mr. DAIGLE. Yes, if I may comment. I think if the oxygen mandate is removed, quality specs stay the same as they are now, there will be incentives in certain areas of the country to continue to use ethanol and possibly increase ethanol use. The key is going to be the distance from the supply to the needed source.

So I think removing the oxygen mandate will not necessarily reduce ethanol use, could potentially increase ethanol use. And it will unshackle the rest of the industry to use its capability and its know-how to blend fuels in an optimum manner. To the extent you remove those arbitrary restrictions, directly that reduces the cost, directly it increases the supply.

So if you do not tell the industry what spec to make, but do not tell the industry the recipe, allow the industry to use its know-how to come up with the optimum recipe and keep the cost down——

Senator SCHUMER. Would the ethanol industry agree with your analysis?

[Laughter.]

Mr. DAIGLE. I do not know what the ethanol industry would agree to. Up to now, they seem to have seen it a different way, Senator.

Senator SCHUMER. All right. Does anyone else have anything to say about that question that I asked, in terms of whether this would increase cost, decrease supply?

Mr. MOYER. Nothing really. But——

Senator SCHUMER. Go ahead.

Mr. MOYER. I guess I would—no one here on this panel, I do not think, would have the right to speak for the ethanol industry. But I can speak for our members in California that will continue to—that would use some ethanol, even if there were no such mandate. And in fact, I believe that that flexibility—performance-based specs

is clearly the way to go. Why should government demonstrate how to do the fuel?

Senator SCHUMER. Yes, sir.

Mr. ROBINSON. Senator, in California we will have MTBE—the ban will go into effect in less than 2 years. At that point, we will effectively have a mandate for ethanol, effectively a monopoly. It will not be a $64,000 question.

Mr. MOYER. Agree.

Senator SCHUMER. You agree with that. Okay.

My next—just another question. We talked a little bit about the—well, we talked about gasoline inventories being lower than they were a year ago. And it was reported in yesterday's *New York Times* that some refiners have been slow to convert from a focus on heating oil production to gasoline production in order to maximum profits created by rising prices.

Do you agree with this analysis? And what is the best way to make refineries more sensitive to decreasing supply conditions that might get dangerous? Mr. Heminger?

Mr. HEMINGER. Yes. If you look back at the year 2000, as we were coming off of the summer problems of lower gasoline inventories, the industry was called upon for excess heating oil going into the winter because of the serious concern of the Northeast, the lack of heating oil availability in the Upper Midwest.

The industry responded and made large amounts of heating oil throughout the winter and, in fact, early into February and March. When you are running at a full slate, or as much as you can, of heating oil and then you turn to a full slate of gasoline, you are going to have an imbalance in the system. What we have seen, then, is that due to last summer's and winter's requirements of the industry to make the given products, is that maintenance and large repair orders—we call them turnarounds—within the refineries were delayed in order to be able to make the fuels that were required.

Here in the January/February time frame, it appears that about three times more plants were down for heavy maintenance and turnaround because they delayed from last year. We are seeing those plants come on—and in fact, the run time capacity that the industry forecasts has come back to where we are running again today at full capacity. But we did have in the first part of the year, plants just had to take the turnarounds to be prepared to make gasoline for the coming——

Senator SCHUMER. You think they all did it as quickly as they possibly could.

Mr. HEMINGER. Yes, Senator.

Senator SCHUMER. There was not a view of, well, let us wait a little bit and the price will get higher and all of that.

Mr. HEMINGER. No. In fact, if you go back and look at the January/February time frame, generally when you are starting to turn to gasolines, we call those the collar months in the business, collar meaning outside of the main transportation months. The refiners had every incentive to make every gallon of gasoline they could at that time.

Senator SCHUMER. Everyone agree with that?

Mr. DAIGLE. Very much so, Senator. I guess the other point I would make is, number one, our customers are every bit as important to us as your constituents are to you. Refining is a very capital-intensive industry. About the worst thing a refiner can do from a profitability standpoint is hold his equipment off the line or run his equipment spare.

So I think you will see refineries typically motivated to run all out and make the product that is in demand at the time. That is the way you get the maximum utilization of your capital, and that is the way the industry always operates.

Senator SCHUMER. All right. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Schumer. I know that we all share in the responsibility to address this with action, as opposed to extended words. They are awfully cheap around here. And we have heard some witnesses say that we are on the verge of a crisis. I would differ with that. I think the crisis is here.

And, you know, we can talk a lot about what we can do before the crisis occurs. But if you believe the crisis is here, you are already too late. And with what Senator Boxer showed us yesterday relative to gasoline prices in San Francisco at $2.35 a gallon—this was a poster that she had, so it was obviously accurate—suggests that reality is here.

I am going to look forward to receiving collectively from your group your specific recommendations relative to our ability to achieve the objective, which is obviously cleaner air as a consequence of your specific recommendations on oxygenates and additives and what the industry can do. But I think it points out a terrible inconsistency when government committees set fuel standards and do not really understand the implications.

And here we have clear evidence of what has been the result. And while we can blame EPA, EPA is only enforcing the law. So I think that if anything has come out of this hearing, it has been that specific realization.

And I want to thank you particularly, Mr. Greenbaum, for your willingness to come before this committee with a specific recommendation, based on your blue ribbon committee that has evaluated this for an extended period of time.

One last question, gentlemen. I am a businessman, and I want to make some money. And I look at the refining industry and say, gee, there has not been a new refinery built in 25 years. Now you are small—Mr. Craig Moyer, you are familiar with the difficulties of the small refiner. Mr. Daigle, representing Exxon, you are—obviously, capital is not necessarily a problem for Exxon, if Exxon wants to build a new refinery. Why do you not build a new refinery?

Mr. DAIGLE. Several reasons, Senator. As I mentioned earlier——

The CHAIRMAN. Well, just give me a couple of good ones.

[Laughter.]

Mr. DAIGLE. Okay. Two real good ones is permitting and siting.

The CHAIRMAN. Okay. Permitting. The Nation obviously needs more refining capacity, as evidenced by previous administration's SPR, when they went out and took 30 million barrels and said, let us refine it so we can increase supply of heating oil. And then we

found out that the refiners did not have the capacity. And we simply replaced what we were importing.

Mr. DAIGLE. Senator, if I could get back, permitting and siting is one problem. Another problem——

The CHAIRMAN. Okay. But tell us permitting. Okay. Why can you not get a permit? The need is there.

Mr. DAIGLE. The ability to be able to get the permit from the Environmental Protection Agency——

The CHAIRMAN. What do they require you to do that is unreasonable or uneconomic?

Mr. DAIGLE. You need to link permitting and siting along with the overall basic economics of the refining industry. In the United States over the last 10 years, the U.S. industry has earned around 5 percent return on capital employed.

The CHAIRMAN. Five percent?

Mr. DAIGLE. About 5 percent return on capital employed. So I think the way to go in expanding refining capacity is not necessarily grassroots refining. The industry over the last 10 years has basically increased capacity by expanding at existing sites. Efficiency improvements, incremental capacity improvements, there is still the potential to do a lot of that.

Getting back to my testimony, though, a very real impediment to that is the current initiative by the EPA on new source review enforcement, where they are going in and retroactively reinterpreting a bunch of regulations, putting a new spin on it, looking at what the industry has done over the past 20 years, and now, with the new interpretations, concluding that those refineries or those expansions were not permitted correctly and threatening large penalties and fines and very much undermining the industry's capability to continue to have this ongoing capacity expansion at existing locations.

So I think that is a very significant problem that needs to be addressed.

The CHAIRMAN. So, sir, what you are telling me is there is simply no economic incentive for investment to go into a refinery with the requirements currently for siting, as well as EPA requirements.

Mr. DAIGLE. Grassroots refineries definitely are not attractive in the United States at this time frame. However, there is the potential to continue to expand, as the industry has been expanding. The impediment now is the new initiative by the EPA. And unless that is addressed, as I recommended in my testimony, I think that will seriously undermine the industry's ability to continue to bring on stream that incremental capacity to allow the capacity to meet the demand.

The CHAIRMAN. So we are right back with supply and demand. And as a consequence, the demand is going to be there, but the supply is going to be tight, simply because you can do better with a passbook savings account than invest in a refinery. You can get 5 percent almost on a CD, at least.

Anyway, Mr. Heminger?

Mr. HEMINGER. We recognize the same permit problems that Mr. Daigle is talking about. And it even goes into a number of the pipeline of industries, in being able to get permits to lay new pipelines, to convert pipelines. It is very time consuming, very long lead

times. And many times, you just walk away from the project because there are roadblocks that stop you from getting it accomplished.

Now, you know, Congress has a way about kicking big oil. And I guess there is some difference of opinion on where they kick them. But in any event, the reality suggests that you are not making any money in the refining business, you are making a little better than a return on investment.

On the other hand, when oil was selling for $10 a barrel, a lot of production was below your basic costs. But you had to produce. So theoretically, your profits were less.

Recent reports from several of the major oil companies indicate near record profits as the price of oil has risen dramatically. Some of that is supply. Obviously, we are dependent 56 percent on imports. So we have seen OPEC explain an extraordinary discipline on supply. And when the supply is tight, the price goes up.

But in this current market with a tight supply, where, Mr. Daigle, are the major profits coming from? They are not coming from the refining. Yet, you know, the American public is confronted with refined product, and they pay an increasing price for refined product. So if you are not making it in the refineries, where are you making it?

Mr. DAIGLE. Well, Senator, from an Exxon Corporation standpoint, a very large portion of Exxon Corporation's profits, as reported in our earnings statements, comes from overseas operations. A very large portion of that——

The CHAIRMAN. So that is the efficiencies you get from having oil overseas and producing it and transferring it over to the United States and refining it. So it is really on the fields that you have found, the development that you have made.

Mr. DAIGLE. Yes. Earnings and returns typically are very much higher in the up-frame portion of the business. That is not to say that we are not in the down-frame portion of the business long range. As I mentioned in my testimony, returns for the industry have been in the 5-percent league. But if you look at the last decades, you will see that the refining industry has incrementally brought on capacity needed to meet demand.

Demand has increased over the last 20 years. Imports have not increased. So demand has been met by refinery capacity. The industry has been doing that, even at the low returns. The industry will continue to meet its customers' needs, if impediments that are being put in place are removed and the industry is allowed to continue to operate.

I keep getting back to this new source review. That is very significant. And again in my written testimony, I have specific recommendations for the committee to consider there. They are retroactively reinterpreting regulations, applying those to the industry, causing very long delays in permits.

And they have the potential to do that even more in the future, and also causing significant increases in investments to bring on capacity and trying to require the industry to reduce emissions by having to install equipment that is not required by the regulations. And that is going to be a big impediment on the industry's ability to continue to bring on the——

The CHAIRMAN. Many of my colleagues are not here, but several of them, I think, have some misconception on justifiable return on investment that efficient companies that apply Americans deploy in their operations. I think your explanation that if you are lucky enough to own an oil field over in Saudi Arabia and you are producing and selling at $10 a barrel and then the price goes up to $28 a barrel, you are going to start making some money.

Are you not entitled to that? Certainly you are.

Mr. DAIGLE. Certainly.

The CHAIRMAN. Who sets the price of oil? It is not set by an Exxon or a BP. It is set by world market. And that world market is not controlled by the United States. It is controlled by Saudi Arabia and several of the OPEC nations that have put together something that we could not do in the United States, because antitrust laws prohibit it.

They put together a cartel. So the producing nations have got us. As long as they hold their discipline and hold the supply, they are going to dictate the price. Is that not generally correct?

Mr. DAIGLE. I think that is generally correct, Senator.

The CHAIRMAN. And we are exposed to that. So, you know, this business of kicking big oil for making a return or having higher profits for a period of time is directly related to the reality that they made investments on oil production.

And somebody else controls the supply. And the price is relative, obviously, to the demand and the discipline of who—I mean, it is like the old golden rule. What was it? He who has the gold rules, as far as oil is concerned, it is OPEC.

So I hope some of my colleagues can understand that. And some of the press people have a little problem with that as well.

But in any event, I am going to give you one more opportunity to conclude. If you do not have anything to say, that is fine. I do not either. But I want to thank you for your contribution today. And I do look forward to the coordinated effort collectively through Mr. Daigle. And Mr. Moyer, you are going to cover what the small refiners are going to have to do to stay alive.

Mr. DAIGLE. Senator, the only comment I would add to the comment that you just made is the situation you described is real. And again, it clearly spells out the need for more access on the part of the industry to areas that have the potential to allow more production in the United States.

If there were more access, I think there are funds that the industry would put into exploring and developing. And I think the industry has clearly demonstrated that it has the know-how and the technology to do this in an environmentally sound manner and balance energy needs for the Nation versus environmental considerations.

So access is a very clear need, if we are going to really reduce or reduce the increase in dependence on foreign oil for this nation.

The CHAIRMAN. Yes. I cannot help but refer to the *Wall Street Journal* today, April 26. I would encourage all participants to—if you are too tight to buy it, I will give you a copy. But in any event, they make a suggestion that the energy task force is reflecting on what the priorities and objectives are. And they indicate in the article that the media debate has focused on whether the task force

will suggest opening up that sliver of ANWR and reviving the nuclear power industry.

The *Wall Street Journal* happens to suggest both. And then they go on to hope that the green lobby will blow a gasket. And then we hope the liberal Congress and the liberal Democrats go berserk. But they say they are getting ahead of themselves. So if you want the rest of the story, go buy a paper.

Mr. HEMINGER. Yes, Mr. Chairman, just one last comment. We spoke today about oxygenates and the delicate balance of supply and demand on the downstream. And as we see refineries running at full capacity, that is today. In 4 years, I guess it is 5 years, we are required to meet low sulfur diesel and low sulfur gasoline specs. We did not discuss those issues today.

I just want to provide additional caution that what we are talking about today will help us in the near term. We need to look way beyond at those requirements coming down at us in 5 or 6 years, the hundreds of millions of dollars of investment that we are going to have to put in to meet these low sulfur specs and, again, the delicate balance.

If small refineries cannot make that investment, they are going to close. And it is going to continue to multiply and accelerate the problems that we have in this industry.

And lastly, the waterway systems are very important infrastructure transportation needs to us as well. And again, the budget this year, we have noticed that 8 out of 20 locks within the Midwest require repair. That has been stricken from the budget. $3 billion per year of energy moves across the Ohio region and the upper Mississippi waterways. Again, here we have taken funding away to be able to support an infrastructure system that is very, very important to the livelihood of the entire Midwest.

Thank you.

Mr. ROBINSON. Mr. Chairman, I am a Californian. What is going on in California is replicating itself across the Nation. Crude oil is not the problem in California. Crude oil is important. I am not trying to minimize that. But what is going on in California and across the Nation is we have a very severely stressed refining and distribution system. And as long as you have a stressed system, you are going to have volatility.

It is incredibly important that we make it possible for refineries to make the upgrades necessary to reduce that stress. And certainly two really key areas to help that distribution system is moving away from mandates, moving strictly to performance standards, and also a more fungible type of a standard.

The CHAIRMAN. Thank you.

Mr. Greenbaum.

Mr. GREENBAUM. Well, Mr. Chairman, thank you very much for having this hearing and giving me the opportunity to bring forward the blue ribbon panel comments. I might say that when that panel issued its report, we had a rare occurrence in Washington.

We actually agree from a very wide range of interests, including both the oil industry and the environmental community, as well as State regulators and a number of experts on the kinds of things we have talked about today.

And I look forward to working with you and the committee staff as you move forward to see if we can get some of the recommendations of that broad group implemented.

The CHAIRMAN. We look forward to that.

Mr. Daigle.

Mr. DAIGLE. Thank you, Mr. Chairman. I would only conclude by saying that we certainly look forward to working with this committee and with the administration to develop a cohesive energy policy based on free markets and open competition.

The CHAIRMAN. Thank you. Well, clearly, Senator Bingaman and I feel an obligation to address the crisis with what appropriate action should be taken by the Congress.

Mr. Moyer.

Mr. MOYER. Thank you. I really just want to thank you and this committee for your leadership in addressing the national energy policy. It is clear it is time, and I do appreciate that you and Senator Bingaman are working very closely together. And I cannot tell you, both as a citizen and as a member of the small refinery industry, I really want to thank you for your leadership in that regard.

The CHAIRMAN. Thank you, gentlemen. We conclude the hearing and wish you all a good day. And when might I get this material?

Mr. MOYER. Soon, within 30 days.

The CHAIRMAN. No, no. I have to have it within 10 days.

Mr. MOYER. You will have it.

The CHAIRMAN. Thank you.

[Whereupon, at 11:36 a.m., the hearing was recessed, to be reconvened on May 15, 2001.]

[The following additional comments of Mr. Daigle follow:]

EXXONMOBIL REFINING & SUPPLY CO.,
*Fairfax, VA, May 8, 2001.*

Hon. FRANK MURKOWSKI,
*Chairman, Energy and Natural Resources Committee, U.S. Senate, Hart Senate Office Building, Washington, DC.*

DEAR MR. CHAIRMAN: Thank you very much for the opportunity to testify before the Senate Energy and Natural Resources Committee on April 26, 2001.

Per my commitment to respond to your request for legislative language to repeal the federal oxygenate mandate, attached is an industry letter which provides such language.

I'd be happy to answer any questions you may have regarding the attached. Amy Hammer in our Washington, D.C., office also is available to answer questions. She can be reached at 202-862-0216. Again, thank you for the opportunity to address your committee.

Sincerely,

D.H. DAIGLE,
*Director, Americas Region.*

[Attachment]

*May 7, 2001.*

Hon. FRANK MURKOWSKI,
*Hart Senate Office Building, Washington, DC.*

DEAR MR. CHAIRMAN: At the April 26, 2001 hearing on national energy policy, fuel specifications and infrastructure constraints, you asked that all the witnesses provide additional information on the oxygen requirement for reformulated gasoline (RFG). In particular, you asked whether we agree that removal of the oxygen requirement would enhance refiners' supply flexibility and, if so, whether we could provide legislative language to accomplish that goal.

As you noted during the hearing, refiners' flexibility is enhanced when they are allowed to meet emission reduction goals in the form of performance standards rather than product specifications. When the Clean Air Act Amendments of 1990 were

enacted, none of us recommended that Congress attempt to prescribe a "recipe" for gasoline in the statute.

Perhaps Daniel Greenbaum's testimony summarized todays situation best by indicating:

> "We have two paths we can follow for clean fuels: to continue clean-burning fuels with legislatively-mandated fuel additive requirements, and risk potential market dislocations and increases in price; or to keep the strong clean air performance requirements for these fuels, but to free the market to make them in the most cost-effective way possible, with a minimum of specific fuel additive requirements."

The most straightforward approach to removing any constraints associated with the oxygen requirement in RFG is to simply delete those sections of the Act that impose the requirement. The language in option 1 in the attachment to this letter does just that.

Should you want an alternative approach that could enhance state flexibility in choosing whether to require oxygenates in RFG, you might consider the approach outlined in option 2 of the attachment. It provides states with the right to waive the oxygen requirement. Of course, this approach would need approval and coordination at the federal level to ensure that such waivers do not impose additional constraints on the fuel distribution system.

We would be happy to answer any questions you may have or provide further information. Please do not hesitate to contact us.

Sincerely,

AMERICAN PETROLEUM INSTITUTE
NATIONAL ASSOCIATION OF CONVENIENCE STORES
SOCIETY OF INDEPENDENT GASOLINE MARKETERS OF AMERICA
WESTERN INDEPENDENT REFINERS ASSOCIATION

Option 1. Elimination of Reformulated Gasoline Oxygen Mandate

Section 211(k) of the Clean Air Act (42 U.S.C. 7545(k)) is amended—

(1) by striking 211(k)(2)(B) and 211(k)(3)(A)(v);
(2) by renumbering 211(k)(2)(C) and (D);
(3) by striking 211(k)(7)(A)(i) and 211(k)(7)(C)(ii);
(4) by renumbering 211(k)(7)(A)(ii) and (iii); and
(5) by renumbering 211(k)(7)(C)(iii).

Option 2. Waiver of Reformulated Gasoline Oxygen Mandate

Section 211(k) of the Clean Air Act (42 U.S.C. 7545(k)) is amended by adding the following new paragraph at the end:

(11) WAIVER OF OXYGEN CONTENT REQUIREMENT—

(A) IN GENERAL—Upon petition to the Administrator by the Governor of a State, the Administrator shall waive any oxygen content requirement in effect under this subsection for that State.

(B) ACTION BY ENVIRONMENTAL PROTECTION AGENCY—Not later than 270 days after the date of receipt of a petition submitted under subparagraph (A), the Administrator shall grant the waiver of the oxygen content requirement requested in the petition. If, by the date that is 270 days after the date of receipt of such a petition, the Administrator has not granted the petition, the petition shall be deemed to be granted. The waiver under this subparagraph shall take effect on the date 90 days after the petition is granted or deemed granted unless the Administrator establishes an earlier effective date.

(C) SPECIAL RULE—The oxygen content requirement in effect under this subsection shall not apply to a State referred to in subsection (c)(4)(B).

○