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U.S. FOREIGN POLICY, PETROLEUM, AND THE MIDDLE EAST

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BEFORE THE

SUBCOMMITTEE ON NEAR EASTERN AND SOUTH ASIAN AFFAIRS

OF THE

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U.S. FOREIGN POLICY, PETROLEUM, AND THE MIDDLE EAST

THURSDAY, OCTOBER 20, 2005

U.S. SENATE,
SUBCOMMITTEE ON NEAR EASTERN AND
SOUTH ASIAN AFFAIRS,
COMMITTEE ON FOREIGN RELATIONS,
Washington, DC.

The committee met, pursuant to notice, at 2:44 p.m., in room SD–419, Dirksen Senate Office Building, Hon. Lincoln Chafee (chairman of the subcommittee) presiding.

Present: Senator Chafee.

OPENING STATEMENT OF HON. LINCOLN CHAFEE, U.S. SENATOR FROM RHODE ISLAND

Senator CHAFEE. Good afternoon. This is the Committee on Foreign Relations' Subcommittee on Middle Eastern and South Asian Affairs. And it is a hearing on U.S. Foreign Policy, Petroleum, and the Middle East.

The subcommittee is pleased to welcome two panels of witnesses today. On our first panel we will hear from Mr. Stephen Gallogly, a fellow Rhode Islander, and Director of the Office of International Energy and Commodity Policy at the Department of State, and Mr. Alan Misenheimer, Director of the Office of Arabian Peninsula and Iran Affairs, also the Department of State, and Mr. George Person, Director of the Office of African and Middle Eastern Affairs, at the Department of Energy. Gentlemen, welcome.

Our second panel consists of Dr. Gal Luft, codirector of the Institute for Analysis of Global Security and cochair of the Set America Free Coalition, Mr. Robert Ebel, chairman of the Energy Program at the Center for Strategic and International Studies, and Mr. Tom Collina, executive director of 20/20 Vision. We look forward to your testimony, also.

The purpose of this hearing is to examine why the United States is dependent on foreign fuel, how such dependence shapes U.S. policies, while potentially contributing to terrorist activities, and what ways we can effectively address this problem.

An overdependence on oil can be a dangerous addiction. It harms our environment and imperils our national security. Our economy is vulnerable to price shocks from disruption of oil supply, a lesson learned all too well in the 1970s. While we learned it then, over the past 25 years we have been lulled into a false sense of security by plentiful oil which ran as low as $9 a barrel.

It is true that the United States imports oil from a variety of foreign sources, including Canada, Venezuela, and Mexico. However, nearly 30 percent of imported oil comes from the Middle East, and that figure is expected to greatly increase over time.

Given the region's enormous oil reserves and its general instability, I believe it is important to continually inquire as to how dependence on oil affects our foreign policy in the region. Since I have come to the Senate, I have supported commonsense policies to increase supply of alternative energy, increase energy efficiency, and decrease demand. Unfortunately, many of these initiatives have been defeated.

When the energy bill was approved, gas prices were roughly $2 a gallon. Since that time prices have increased nearly a third, up to roughly $3 a gallon. This rapid spike in prices has a negative effect on the economy, and it does not appear to be a short-term change.

This should demonstrate to everyone that our economy is very vulnerable to oil shocks and we should be doing more to address the problem.

Despite a barrage of warnings about the vulnerability of New Orleans, our Government was surprised by the damage done there by Katrina. I hope we have learned our lesson and do not let the same thing happen on energy.

I called this hearing to begin to push this important issue into the spotlight, to raise public awareness, and explore ways to facilitate real changes in our foreign and domestic policy. We will hear from the cochair for Set America Free Coalition, Dr. Gal Luft, who will talk about his group's plan to reduce dependence on foreign oil. Components of the plan include increasing use of hybrid and plug-in hybrid electric vehicles and use of biomass fuels, such as waste and switch grass.

I look forward to a discussion where we can assess the viability and ability to implement these types of recommendations. It is my hope that we will exercise the necessary political will to address this critical issue of energy security. The time has come to act.

Let us start in the middle, if I could, with Mr. Gallogly. Welcome.

STATEMENT OF STEPHEN J. GALLOGLY, DIRECTOR, OFFICE OF INTERNATIONAL ENERGY AND COMMODITY POLICY, BUREAU OF ECONOMIC AND BUSINESS AFFAIRS, DEPARTMENT OF STATE, WASHINGTON, DC

Mr. GALLOGLY. Thank you very much, Mr. Chairman. I am very pleased to be here today to discuss U.S. Foreign Policy, Petroleum, and the Middle East. I am also pleased to be joined by my colleagues from the Department of Energy and from the State Department.

It is especially appropriate to be testifying together with the Department of Energy, because DOE and State work together on literally a daily basis in pursuing international energy objectives around the world.

Given the rise in energy prices we have witnessed over the last year, I think this hearing is particularly timely. I would like to focus my brief oral statement on our energy security from a foreign

policy perspective. I would ask that the written testimony that I submit be submitted into the record.

Senator CHAFEE. Without objection.

Mr. GALLOGLY. Thank you. I want to stress that in the immediate term, energy conservation and efficiency provide, by far, the biggest resource for addressing our current energy challenge and limiting our dependence on imported oil. In the longer term, technology will be the key to significantly improving our energy security.

The objective of our energy policy is to ensure that our economy has access to energy on terms and conditions that support economic growth and prosperity. We must also ensure that the United States can pursue its foreign policy and national security interests without being constrained by energy concerns.

In addition, our policies must also be consistent with America's broader economic and foreign policy goals and complement domestic policy initiatives. I would like to highlight four key elements of our national energy policy which include, first, and you alluded to this, diversification of energy supplies.

We have taken a number of steps over the years to promote diversification of energy supplies worldwide. Key areas in countries for major new contributions to global oil supply include Canada, our leading supplier of imported oil, Russia, a major producer of both oil and natural gas, the Caspian Basin, and West Africa.

The second pillar of our energy policy, international cooperation on strategic petroleum stocks. A core element of our national energy policy is the use of strategic petroleum stocks to respond to severe supply disruptions in coordination with other energy-consuming countries. The critical role of the International Energy Agency and multilateral cooperation was recently illustrated by our coordinated stock release following Hurricane Katrina.

Shortly after it became apparent that the hurricane would have a serious impact on U.S. oil production and refining, we worked with other IEA member states to offer 60 million barrels of crude oil and product to world markets. This was only the second coordinated release in the IEA's history. The IEA began in 1974. And the action had an immediate chilling effect on world markets.

The third element in our policy, maintaining dialog with major oil-producing countries. Our objective for these dialogs is not only to exchange information on oil markets, but to also encourage producers to maintain responsible production policies to support a growing world economy and to reduce oil price volatility.

The fourth and final thought, but not the last in the sense of importance, reducing global dependence on oil, particularly over the long term. This includes strategies to improve energy efficiencies and develop alternative fuels. The United States has been a leader in advancing the research, development, and deployment of advanced energy technologies.

In addition to domestic efforts, the United States has initiated or served as a founding member of several international technology partnerships designed to share data and best practices among nations, while reducing the time and expense needed to achieve technological breakthroughs.

In conclusion, we certainly remain aware of the potential risks posed to the United States by reliance on imported oil and by instability in the Middle East, where much of the world's oil is produced. We need to remember, however, that oil is a global commodity and that a disruption in supply anywhere in the world can have an immediate impact on oil-importing countries, no matter where the oil comes from.

Energy security is a leading administration priority, and our national energy policy spells out the roadmap to achieve it. In the long run we need new technologies that can fuel our economy without posing threats to the environment or our national security.

In the interim, our national energy policy must address the familiar challenges posed by a hydrocarbon-based economy, where oil reserves are concentrated in various challenging regions of the world. Like the war on terrorism, this will require sustained patience and determined efforts. The State Department here and overseas will remain strongly engaged in that effort.

Thank you very much.

[The prepared statement of Mr. Gallogly follows:]

PREPARED STATEMENT OF STEPHEN J. GALLOGLY, DIRECTOR, OFFICE OF INTERNATIONAL ENERGY AND COMMODITY POLICY, BUREAU OF ECONOMIC AND BUSINESS AFFAIRS, DEPARTMENT OF STATE, WASHINGTON, DC

Mr. Chairman, distinguished committee members, I am pleased to be here today to discuss U.S. Foreign Policy, Petroleum, and the Middle East.

OIL MARKET DEVELOPMENTS

Given the rise in energy prices we've witnessed over the last year, I think it might be appropriate to first put our discussion of petroleum and the Middle East in the context of current oil markets.

- As we all know, in addition to the tragic human suffering caused by Hurricane Katrina and Hurricane Rita, they also impacted much of our oil and gas infrastructure on the gulf coast. As a result, we've seen increases in the price of gasoline at the pump, which have now moderated somewhat, and concurrent rises in the price of diesel, home heating oil, and natural gas.
- Oil markets were already extremely tight before the hurricanes struck. Over the last 2 years, oil markets witnessed an unexpected surge in the growth of world oil demand. Much of that rising demand has come from the United States and from China, and is linked to strong economic growth. This unexpectedly high demand had already translated into higher prices.
- This rising demand also eroded the surplus production capacity that has been held by OPEC producers (mostly Saudi Arabia) for most of the last 25 years. This loss of a potential "cushion" against supply disruptions added to market uncertainty and to even higher prices.
- At the same time, we have witnessed a reduction in surplus refining capacity, worldwide, and the U.S. refining industry was running above 90 percent of capacity prior to Katrina and Rita.
- The two storms disrupted U.S. oil production in the Gulf of Mexico and onshore, and caused the shutdown of a number of major refineries, sending prices worldwide to much higher levels.
- We expect oil markets will experience the effects of the hurricanes for some time, as infrastructure and production both on- and offshore takes some time to return to prehurricane status.

HARD FACTS ABOUT ENERGY

In addition to recent market developments, we should take into account a number of hard facts:

- Imports supply almost 60 percent of our petroleum needs, a percentage that has been rising for several decades.
- Imports supply an even greater share of the needs of some of our most important allies and economic partners.

- We are no longer self-sufficient in natural gas. We now import 15 percent of our natural gas, almost entirely from Canada, but in growing volumes from Trinidad and other LNG suppliers.
- Almost two-thirds of proven world oil reserves are in the Middle East. In contrast, the United States has less than 3 percent of the world's proven oil reserves.
- The Middle East accounts for approximately one-third of total oil exports, and 28 percent of world oil exports transit the Straits of Hormuz.
- Oil is a worldwide commodity, and, as we've witnessed repeatedly over the last few years, a supply disruption anywhere in the world can have an almost immediate effect on prices worldwide.

Not all the facts about energy are bad; there is some good news:

- Since 1970, the energy intensity of the U.S. economy, that is the amount of energy we consume per dollar of GDP, has fallen by almost 50 percent.
- Aside from petroleum, we are largely self-sufficient in energy, particularly in the generation of electricity, which is produced from American coal, natural gas, hydropower, nuclear, and renewables. In fact, imports account for less than 10 percent of all our nonoil energy sources.
- The United States has the world's largest coal reserves, 250 years worth at current consumption rates.
- We continue to find more oil worldwide. Estimates of the world's remaining proved oil reserves were actually 18 percent higher in 2004 than they were in 1990, despite all the oil consumed in the intervening years. Improvements in petroleum technology continue to unfold, enhancing recovery from existing sources and making new sources possible.
- Markets work. We've been told that within 3 days of the landfall of Hurricane Katrina, 30 tankers had been contracted to ship gasoline from Europe to the United States. They weren't responding to a government mandate, but to the spike in U.S. gasoline prices.
- Markets also work over the longer term, with high prices stimulating the development of new supplies. This applies not only to conventional oil and gas supplies, but also to unconventional sources, such as heavy oil deposits and fuels from natural gas, coal, and biomass.

ENERGY SECURITY

There are a number of elements to advance U.S. energy security laid out in the administration's national energy plan. Energy security begins at home, both on the supply and demand side. President Bush has encouraged Americans to conserve energy, and in August, signed into law the first national energy plan in more than a decade. The legislation provides measures to promote energy efficiency, modernize our energy infrastructure, encourage renewable resources, and support energy-efficient vehicles. In addition to the energy legislation passed in August, we also need to promote the development of new domestic sources of oil and gas, including in parts of the Artic National Wildlife Refuge. In the immediate term, energy conservation and efficiency provide, by far, the biggest resource for limiting our dependence on imported oil. In the longer term, technology will be the key to significantly improving our energy security.

Given the scope of this hearing, I would like to focus my remarks on our energy security from a foreign policy perspective, and focus on the actions that we are currently taking to address energy security concerns.

The objective of our energy policy is to ensure that our economy has access to energy on terms and conditions that support economic growth and prosperity. We must also ensure that the United States can pursue its foreign policy and national security interests without being constrained by energy concerns. In addition, our policies must also be consistent with America's broader economic and foreign policy goals and complement domestic policy initiatives. I would like to focus on four key elements of our national energy policy, which includes:

1. Promoting the diversification of energy supplies, worldwide;
2. Working with other oil consuming countries to respond to supply disruptions, particularly through the coordinated use of strategic petroleum stocks;
3. Encouraging major oil producing countries to maintain responsible production policies to support a growing world economy and to reduce oil market price volatility; and
4. Working with other countries to reduce global dependence on oil, including through conservation, efficiency, and through the development of alternative sources of supply.

1. Diversification of Energy Supplies

We've taken a number of steps over the years to promote the diversification of energy supplies worldwide. Although the Middle East is—and will continue to be—the dominant region for oil production, the development of new supplies in a number of other regions in the world is an important objective. I would like to touch on a few areas, outside the Middle East, where we've been actively engaged and where there has been considerable progress.

North America Energy Integration

Canada is our leading supplier of imported oil, natural gas, uranium, and electricity, and Mexico is our second largest supplier of imported oil. One effect of higher oil prices has been to stimulate greater development of Canada's oil sands, which contain an estimated 175 billion barrels of oil. We expect these to be an increasingly important source of oil, and some experts estimate production will rise to 3.0 million barrels per day over the next 10 years, from about 1.0 million barrels today. Natural gas from Canada, and from Alaska through Canada, will also play an important role in our energy future.

We have made strengthening our energy cooperation with Canada and Mexico a top priority. We are linked, of course by geography, by integrated pipeline networks, by energy that flows across each of our borders in both directions, and by a spirit of close cooperation between our governments and our peoples. To broaden our cooperation, we established a North American Energy Working Group in 2001 to serve as a forum for exchanging information and pursuing joint strategies, such as harmonizing certain appliance standards to facilitate trade and establishing a mechanism for scientific and technical cooperation. We are deepening cooperation on these issues through the trilateral Security and Prosperity Partnership of North America, and will next meet on energy issues November 7 in Ottawa.

Caspian Basin Pipelines

A major U.S. foreign policy priority since the mid 1990s has been the development of multiple pipelines to provide for the export of oil and gas from the Caspian region to the rest of the world. The Caspian basin has been a significant new source of non-OPEC oil in recent years, and production should continue to grow in coming years. In addition to enhanced energy security, our policy in the region has been aimed at strengthening the sovereignty and economic viability of new nation states, enhancing regional cooperation, and avoiding the potential bottlenecks and conflicts that might arise from rising petroleum exports through the Turkish Straits.

I just returned from Georgia, where I participated in "first oil" ceremonies for the Baku-Tblisi-Ceyhan pipeline. This pipeline is a real milestone for development in the region, and reflects years of work on the part of the three governments and the oil companies involved. We expect first shipments from this pipeline to be loaded in the Mediterranean around the end of the year.

Russia

Russia is a major producer of oil and gas. From 1999 to 2004, Russian oil production grew by about 3 million barrels per day, making it the single greatest source of new non-OPEC supply. Much of this growth has taken place in collaboration with U.S. and other international oil companies, and Eximbank and OPIC helped provide financing and insurance for some of these projects. We join the Department of Energy and other agencies in the United States-Russia Energy Working Group, which has focused on government-to-government cooperation in a range of economic and technical activities. We also joined with the Department of Commerce and other agencies to establish the United States-Russia Commercial Energy Dialogue, which focuses on facilitating commercial cooperation both within and outside Russia.

West Africa

The administration recognizes Africa's emerging role as a major energy supplier. Nigeria, Angola, Gabon, Equatorial Guinea, Republic of Congo, Cameroon, and Chad are significant producers, and other countries, such as Sao Tome and Principe and Mauritania are emerging as potential producers. Much of the increased production is the result of the development of new technology to find and extract oil from deep offshore deposits, and U.S. energy firms, both majors and independents, have played a key role in bringing this technology to bear in West Africa.

From a government perspective, we have a strong policy interest in assisting oil producing countries to channel their energy resources into solid and sustainable economic development as well as increased transparency and accountability that will benefit their populations. We negotiated a bilateral energy cooperation framework agreement with Nigeria, and supported the World Bank's involvement in independent monitoring arrangements for the Chad-Cameroon pipeline project, which

led to significant amounts of Chadian oil entering world markets starting in July 2003. Nigeria is also a pilot country working with the G–8 under terms of the Anti-Corruption and Transparency Action Plan developed at the Sea Island and Evian Summits. Another sign of our commitment was the establishment of a more pronounced U.S. Government presence in Equatorial Guinea to support our ongoing work in the areas of energy security, human rights, and good governance in Equatorial Guinea.

2. International Cooperation in the Use of Strategic Petroleum Stocks

A second pillar of our national energy policy is the use of strategic petroleum stocks to respond to severe supply disruptions, in coordination with other energy consuming countries. Since 1974, we have been working with our partners in the International Energy Agency (IEA) to coordinate our efforts. The 26 IEA members collectively account for 4.1 billion barrels of government and industry-held oil stocks, of which roughly 1.4 billion are government-controlled strategic stocks for emergency response. The U.S. Strategic Petroleum Reserve, managed by the Department of Energy, was filled to its target level of 700 million barrels in August of this year.

The critical role of the IEA and multilateral cooperation was recently illustrated by our coordinated stock release following Hurricane Katrina. Shortly after it became apparent that the hurricane would have a serious impact on U.S. oil production and refining, we worked with other IEA member states to offer 60 million barrels of crude oil and product to world markets. This was only the second coordinated release in the IEA's history, and the action had an immediate calming effect on world markets.

I would like to underscore just how important our allies were in this effort. The U.S. Strategic Petroleum Reserve consists of crude oil. There are some stocks of home heating oil in a separate reserve, also managed by the Department of Energy. However, because Hurricane Katrina damaged a number of U.S. refineries, it became clear that world gasoline markets would be particularly tight. European members of IEA hold substantial stocks of refined products, and we, therefore, designed a mixed-stock draw in response, to consist of both crude oil and refined product. I also want to point out that the IEA Secretariat did a superb job in coordinating the whole effort among the member countries. We continue to monitor oil markets carefully with our IEA partners, and are prepared to release additional stocks if the situation merits it.

Finally, I'd like to add that in addition to coordinating releases from strategic reserves, the IEA's small, expert staff provides information and analysis on the energy markets and developments. The agency also provides expert guidance to important nonmember countries, such as Russia and China, on investment policies, strategic stocks, and how to work better within energy markets. This dovetails with work the United States and others are doing in the Asia Pacific Economic Cooperation (APEC) forum and contributes to enhanced energy security.

3. Dialogues with Major Oil Producing Countries

A third pillar of our national energy policy is to maintain a dialogue with major oil producing countries. Our objectives are not only to exchange information on oil markets but also encourage producers to maintain responsible production policies to support a growing world economy and to reduce oil market price volatility. We have had dialogues with a number of the major oil producing states, particularly Middle Eastern producers, for a number of years, in some cases since the 1980s. These have included formal bilateral exchanges with some countries, and regular discussions among high-level officials and through our Embassies in the region.

Through our continued dialogue with producers, we have identified a number of areas where oil producers and consumers have shared interests. Neither consumers nor producers benefit from instability in energy markets. We recognize that price fluctuations are necessary in any commodity market to balance supply and demand, but no one welcomes chaos and uncertainty. Furthermore, some producers share our concerns about the impact of high oil prices on world economic growth, particularly the impact on developing countries. They remember all too well the collapse in oil prices that accompanied the Asian financial crisis in 1998, and would like to avoid a repetition.

As evidence of the maturing relationship between producing and consuming countries, the TEA member states and APEC countries are working with key producers to improve efficiency and transparency of oil markets—to try to avoid the sort of market surprises that led to some of the shortages we see today. Producer-consumer energy ministerials that started in the early 1990s have led to the ministerial-level International Energy Forum (IEF). The IEF is an informal group consisting of about

50 countries and international organizations, dedicated to promoting better understanding of international oil and energy market developments and policy issues among its members. The IEF Secretariat, located in Riyadh, Saudi Arabia, is leading efforts on developing of the Joint Oil Data Initiative (JODI), which is designed to improve our understanding of developments in the oil market.

Oil, of course, is only a part of our broader dialogue with a number of key Middle Eastern producers. With respect to oil, however, I think our dialogue has matured over the years, as our shared interests in market stability and world economic growth have led to frank and honest exchanges.

4. Reducing Global Dependence on Oil

Our policy includes initiatives to reduce global dependence on oil, particularly over the longer term. This includes strategies to improve energy efficiency, worldwide, and develop alternative fuels. The United States has been a leader in advancing the research, development, and deployment (RD&D) of advanced energy technologies. In addition to domestic efforts, the United States has initiated, or served as a founding member of, several international technology partnerships designed to share data and best practices among nations while reducing the time and expense needed to achieve technological breakthroughs.

The United States hosted the first meeting of the Carbon Sequestration Leadership Forum (CSLF) in June 2003. This partnership advances technologies for capture, transport, and storage of carbon dioxide to mitigate greenhouse gas emissions from sources such as coal-fired powerplants. The 21 members, including Saudi Arabia and India, have approved 10 capture-and-storage projects as well as a Technology Roadmap to provide future directions for international cooperation.

The International Partnership for a Hydrogen Economy was launched in April 2003 to implement internationally the goals of the Hydrogen Fuel Initiative and FreedomCar Partnership. The Partnership's 16 countries and the European Union are working together to advance the global transition to the hydrogen economy, with the goal of making fuel cell vehicles commercially available by 2020. The Partnership will work to advance research, development, and deployment of hydrogen and fuel cell technologies; and develop common codes and standards for hydrogen use.

The GenIV International Forum (GIF) Policy Group, composed of 10 countries and EURATOM, is providing a framework for international cooperation in research and development for the next generation of nuclear energy systems, which are intended to be safer, more economic and secure, and able to produce new electricity and, potentially, hydrogen.

The Methane-to-Markets Partnership (M2M) is a new global initiative to advance international cooperation on the recovery and use of methane as a valuable clean energy source. The Partnership works closely with the private sector to develop methods to recapture wasted methane escaping from landfills, leaking from poorly maintained oil and gas systems, and vented from underground coal mines. Inaugurated in November 2004 and now composed of 15 countries and the European Commission, M2M will improve energy security, economic growth, air quality and industrial safety, and reduce greenhouse gas emissions throughout the world.

In January 2003, President Bush committed the United States to participate in the largest and most technologically sophisticated research project in the world to harness the promise of fusion energy, the same form of energy that powers the sun. If successful, this $5 billion, internationally supported research project, the International Thermonuclear Experimental Reactor, or "ITER" as it is known, will advance progress toward producing clean, renewable, commercially available fusion energy by the middle of the century.

The United States is committed to working with other countries, especially developing countries, in building future prosperity while improving energy security, reducing pollution, and addressing the long-term challenge of climate change. Toward this end, the President announced the launch this past summer of the Asia Pacific Partnership for Clean Development and Climate which will focus on voluntary practical measures taken by member countries to create new investment opportunities, build local capacity, and remove barriers to the introduction of clean, more efficient technologies. Current membership in the Partnership includes the United States, India, China, Australia, Japan, and South Korea.

MIDDLE EAST ENERGY DEVELOPMENTS

Since the focus of this hearing is on petroleum and the Middle East, I would like to close with a few observations on developments in selected countries.

Saudi Arabia, which is the world's largest oil producer and exporter, we believe, has tried to play a moderating role in oil markets over the last year by increasing its oil production. Much of the kingdom's remaining surplus production capacity,

however, consists of heavy crude oil, and, as we discovered last year, following Hurricane Ivan, there is a worldwide shortage of refineries with the ability to convert heavier crude to product. Nevertheless, maintaining a margin for increased production in critical. Saudi officials have promised publicly to expand production capacity to both meet greater market demand and to maintain 1.5–2.0 million barrels per day of surplus capacity.

Kuwait has steadily expanded production and is currently producing 2.6 million barrels per day. Kuwait is making significant long-term investments in its oil infrastructure in order to raise production to a target of 4 million barrels per day by 2020, including a proposal to bring in the technical expertise of international oil companies in order to maximize production in its northern oilfields.

The United Arab Emirates has also expanded production over the last few years and is currently producing approximately 2.5 million barrels per day. Earlier this year, Exxon Mobil Corporation confirmed that it has been chosen by the Abu Dhabi Supreme Petroleum Council for final negotiations regarding participation in the Upper Zakum offshore oilfield.

Qatar, with 800,000 barrels/day of production, is not one of the larger Middle East oil producers, but has combined its enormous gas reserves with an attractive investment climate to become a center for the development of liquefied natural gas (LNG) exports and gas-to-liquids processes. Over the last decade, Qatar appears to have attracted more investment from the international oil companies than all the other Middle East countries combined.

Iraq has the potential to become one of the world's largest oil producers. The country is currently producing about 2.1 million barrels per day, and exporting 1.4 million barrels per day. As security conditions improve, we expect those figures to rise. As we have stated on earlier occasions, Iraq's oil and other natural resources belong to the Iraqi people, and they will determine how the country's reserves are developed.

Algeria has witnessed a steady rise in production, of both oil and gas, since ending its civil war, and is viewed by international oil companies as an attractive place to do business.

Libya has emerged from years of isolation as an important new player in world energy. The country has hosted several bid rounds for exploration tracts in the country, and American firms have been quite successful in competing for those opportunities. In particular, we are encouraged by the fact that Libya has focused on making the bidding process as transparent as possible.

CONCLUSION

In conclusion, we certainly remain aware of the potential risks posed to the United States by reliance on imported oil, and by instability in the Middle East, where much of the world's oil is produced. We need to remember, however, that oil is a global commodity and that a disruption in supply anywhere in the world can have an immediate impact on all oil importing countries, no matter where their oil comes from. I also think it worth noting that increases in energy prices we've seen over the last 2 years have very little to do with the Middle East. They are much more directly related to strong world economic growth and, more recently, to acts of God on the U.S. gulf coast.

Energy security is a leading administration priority, and our National Energy Policy spells out the roadmap to achieve it. In the long run we need new technologies that can fuel our economy without posing threats to the environment or our national security. In the interim, our national energy policy must address the familiar challenges posed by a hydrocarbon-based economy where oil reserves are concentrated in various challenging regions of the world. Like the war on terrorism, this will require sustained, patient, and determined effort. The State Department here and overseas will remain engaged in that effort.

Thank you.

Senator CHAFEE. Thank you, Mr. Gallogly. Let us go over to the Department of Energy.

Mr. Person.

STATEMENT OF GEORGE L. PERSON, JR., DIRECTOR, OFFICE OF AFRICAN AND MIDDLE EASTERN AFFAIRS, OFFICE OF POLICY AND INTERNATIONAL AFFAIRS, DEPARTMENT OF ENERGY, WASHINGTON, DC

Mr. PERSON. Thank you, Mr. Chairman. I am honored and humbled to appear before you to talk about this very important issue, petroleum, our economy, foreign policy, and as it relates to the Middle East. I would also like to reinforce the close working relationship with my colleagues at the table and ask that my written testimony be submitted for the record as well.

Senator CHAFEE. Without objection.

Mr. PERSON. Thank you. Energy is the lifeblood of our economic well-being, and petroleum plays a dominant role. As an actively traded commodity, the price is set in a global market. A significant disruption anywhere will have global economic impacts. As a result, the United States can experience rising prices regardless of whether or not the disrupted source is a direct supplier.

Let me spend a couple of minutes on a few statistics. Forty percent of our total U.S. energy consumption is oil. That demand is expected to rise from about 20.5 billion barrels to about 26 million barrels per day in 2020. At the same time, U.S. domestic production will likely decline.

About 59 percent of the oil we use comes from international sources. The International Energy Administration forecasts that that could reach 65 percent.

Of the 12 million-plus barrels that we use daily, about one-fourth comes from Canada and Mexico, what we would like to say, "our backyard," while the Organization of Petroleum Exporting Countries, OPEC, provides about 42 percent. Saudi Arabia is ranked third in terms of exports to the United States.

The Middle East accounts for 71 percent of the world's proven, conventional oil reserves, recognizing the large reserves of Canadian tarsands and the great potential there and in other regions.

Looking at the overall crude oil prices, dating back to 2003, we can look at a number of factors. OPEC production policy, the global demand, geopolitical risks of concerns, the limited surplus, production capacity, and a tightness in the refining capacity.

On August 30, prices hit a high of $70.85 per barrel. For the fourth quarter in 2005, EIA projects that that will average about $64.42. For 2006 it will average about $64.50. Since late February it has been hovering above $50. And this brings me to a couple of guiding principles that we believe guide our interaction both in terms of domestic priorities and our relationships with partners around the world.

The President's national energy policy of 2001, emphasized the importance of international relationships. The recently signed Energy Policy Act of 2005 also looks to promote greater energy security.

In implementing our energy policy we are guided by several fundamental principles. Free market. Free market. Supply, demand, and prices are best set by free market. Diversity of supplies, sources, and type. Energy diplomacy. Ongoing, quiet, effective dialog between producing and consuming countries to facilitate a frank exchange of views, and to promote greater understanding,

energy efficiency, and conservation, two quick ways of becoming—reducing our dependency, becoming more efficient, and encouraging conservation.

Domestic production. Yes. We must increase oil and gas production and we must take advantage of other energy resources, including renewable and nuclear. Energy security is obviously a cornerstone of our policy. We must be prepared and ready to provide strong assurance of protection against a severe supply disruption.

We have seen some of the impacts based on Hurricanes Katrina and Rita, in terms of the delicate U.S. energy balance. The Department of Energy, or DOE, works through many cooperative arrangements and agreements to promote greater energy security. Here in our own region, working with Mexico and Canada through the North American Energy Working Group we are seeking to increase the reliability by integrating our systems. We are working with many other partners throughout the region, including the Gulf of Guinea that we think has the potential to play a greater role.

I want to emphasize that diversifying energy sources through alternative energy sources is very important. Renewable can and should play a greater role. We have many international relationships, including IEA, or International Energy Agency. We have a United States-Africa Energy Ministerial process. There is a Summit of America process. There are international agreements, also, through the IEA, over 30, looking at advanced energy sources.

Energy diplomacy remains very important, because it is a key element in addressing the fluctuations in the energy market. We look to develop those partnerships and relationships. Saudi Arabia, Qatar, Iraq, Libya, Algeria, Egypt; all of these countries play a role in that process.

We are also working through the International Energy Forum, an informal organization of consuming and producing countries, to build a greater understanding of what are the key issues impacting the energy market. And also we are encouraged by the business forum under that organization that recognizes that the private sector has a very important role. So we see progress there.

Again, energy security, energy efficiency, and conservation are very important policy tools. And we are looking to expand the use of alternative energy sources. The Department of Energy's budget, our international partnerships all attest to the emphasis on alternative energy sources.

I would like to close by acknowledging that the Middle East is and will remain a strategically vital region with respect to national and global energy security, that true energy independence in the increasingly global energy market appears to be difficult to achieve in our heightened carbon-based world, but there are opportunities for improvement. And we are working toward that and new energy sources. And we will continue to forge alliances and long-term research development and deployment is quite important.

Thank you.

[The prepared statement of Mr. Person follows:]

PREPARED STATEMENT OF GEORGE L. PERSON, JR., DIRECTOR, OFFICE OF AFRICAN AND MIDDLE EASTERN AFFAIRS, OFFICE OF POLICY AND INTERNATIONAL AFFAIRS, DEPARTMENT OF ENERGY, WASHINGTON, DC

Mr. Chairman and members of the committee, I am honored to appear before you this afternoon to talk about the important role that petroleum plays in our economy and our foreign policy, particularly as it relates to the Middle East.

Energy is the lifeblood of our national economic well-being, with oil currently playing the dominant role. Oil is an actively traded global commodity, with its price set in a global marketplace. Given the nature of the modern market, a significant disruption in oil supplies anywhere will quickly have global economic impacts. As a result, the United States could experience rising oil prices as a result of a major oil supply disruption regardless of whether or not the disrupted source is one of our direct suppliers.

Oil currently accounts for approximately 40 percent of total U.S. energy consumption. As our economy grows, our demand for oil will grow. Demand is expected to rise from an annual average of 20.5 million barrels per day (bpd) in 2005 to near 26 million bpd in 2020. At the same time, forecasts indicate U.S. domestic oil production is expected to fall from 5.42 million bpd in 2004 to 5.21 million bpd in 2020. Increasingly, the United States will rely on foreign sources to meet its oil needs. In 2005, approximately 59 percent of the oil we use in America is expected to come from foreign sources. The most recent Energy Information Administration (EIA) forecast suggests that our dependence on imports could grow to 65 percent by 2020.

Put simply, the United States imports oil because we consume more oil than we can produce domestically. Today, the United States accounts for about a quarter of total world oil consumption. Virtually every forecast of U.S. oil for the next 10–20 years shows trends of flat to declining domestic supply and increasing oil product demand. This will result in an increasing dependence on imports.

So far in 2005, the United States has had net imports of approximately 12.1 million barrels per day of petroleum (this includes crude oil and refined products). More than one-fourth of the imports came from our North America Free Trade Agreement or NAFTA partners, Canada and Mexico. An additional 700,000 barrels per day came from North Sea producers. In 2005, Organization of Petroleum Exporting Countries or OPEC producers have accounted for 42 percent of U.S. gross oil imports, with Saudi Arabia and Venezuela ranked as the third and fourth largest foreign oil suppliers, respectively.

MAJOR SOURCES OF U.S. PETROLEUM IMPORTS, 2005*

[All volumes in million barrels per day]

	Total oil imports	Crude oil imports	Petroleum product imports
Canada	2.121	1.608	.513
Mexico	1.648	1.558	.09
Saudi Arabia	1.597	1.522	.075
Venezuela	1.59	1.329	.261
Nigeria	1.131	1.041	.09
Iraq	.558	.558	0.00
Algeria	.467	.214	.253
Russia	.452	.264	.189
Angola	.406	.399	.007
United Kingdom	.376	.232	.144
U.S. Virgin Islands	.326	0.00	.326
Eduador	.287	.278	.009
Norway	.242	.133	.109
Kuwait	.206	.198	.008
Other	2.012	.898	1.114
Total Imports	13.419	10.232	3.188

*Table includes all countries from which the United States imported more than 200,000 barrels per day in 2005. Totals may not add due to independent rounding.

The Middle East (including North Africa) accounts for approximately 71 percent of the world's proven, conventional oil reserves. Saudi Arabia alone holds close to one-quarter of the world's proven reserves, with each of the other four major producers arrayed around the Persian Gulf—Iran, Iraq, Kuwait, and the United Arab Emirates (UAE)—each accounting for 8–40 percent of global reserves (See Figure 1).

In addition to having the heaviest concentration of oil reserves in the world, Middle Eastern producers also have the lowest production costs in the world.

CURRENT STATE OF THE WORLD OIL MARKET

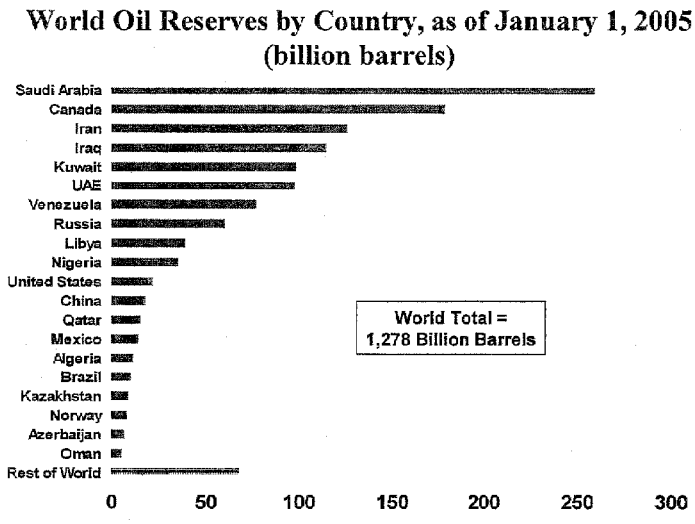
Crude oil prices have risen fairly steadily since early 2003, prices having been propelled higher by a combination of OPEC production policy, soaring global oil demand, geopolitical risks in key producing regions, limited surplus oil production capacity, and tightness in global refining capacity (See Figure 2). With supply already tight, Hurricanes Katrina and Rita have had a pronounced impact on U.S. oil supply since late August, with nearly 60 million barrels of crude oil production and approximately 100 million barrels of refined products having been lost to date.

The market continues to cope with questions on Gulf of Mexico supply losses and indications of falling demand. After dropping for a number of days to reach a low closing price of $61.36 on October 6, the price of crude oil rose slightly and is currently hovering around $64 a barrel on the New York Mercantile Exchange. The Energy Information Administration's most recent forecast (October 12) calls for oil prices (West Texas Intermediate or WTI) to average $64.42 a barrel in fourth quarter 2005 and $64.50 a barrel in 2006. Oil hit a new high of $70.85 a barrel on August 30.

There has recently been an indication that rising oil prices have begun to impact demand. Since the hurricanes, crude oil and product prices have both fallen as the market tries to determine the extent of the slowdown in demand. In its most recent forecast, the Energy Information Administration lowered its assessment of 2005 global oil demand by half million bpd, now projecting average world demand growth of 1.2 million bpd this year.

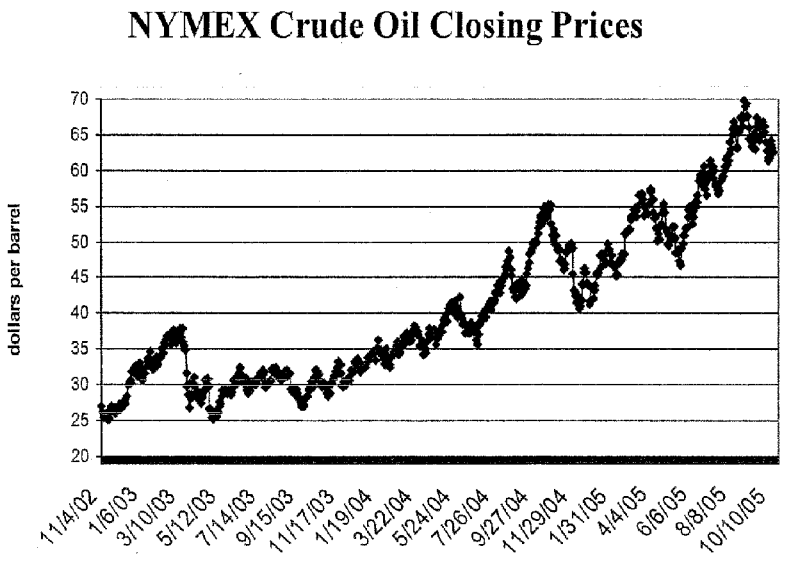
Unexpectedly high demand beginning in 2004 took the oil market by surprise. Having had a relatively healthy cushion of surplus oil production capacity for a number of years, the market has recently had to get used to a narrow cushion of 1 million bpd or so, with virtually all of that located in Saudi Arabia (See Figure 3). Saudi surplus capacity consists mostly of heavy, sour crude oil, the type of crude oil most difficult to refine into the highly valued light products such as gasoline and diesel fuel.

(FIGURE 1)

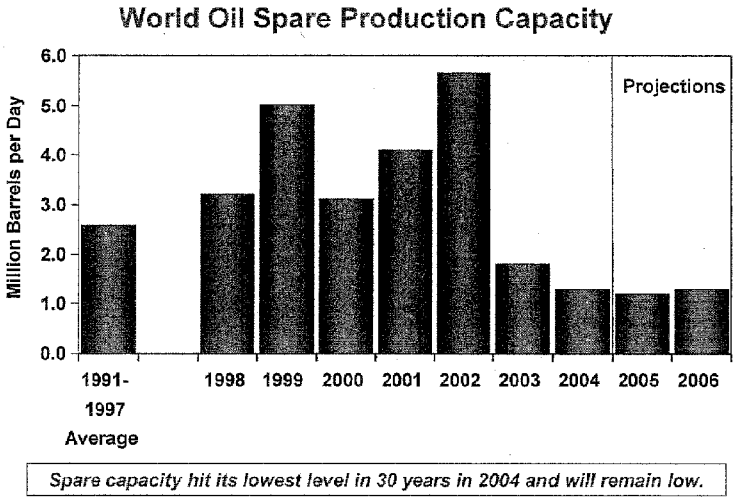


Oil & Gas Journal, "Worldwide Look at Reserves and Production," Vol. 102, No. 47 (December 20, 2004).

(FIGURE 2)



(FIGURE 3)



Short-Term Energy Outlook, June 2005

GUIDING PRINCIPLES

Our growing reliance on imported oil was a driving force behind the development of the President's National Energy Policy (NEP) in 2001 and our efforts in support of the Energy Policy Act of 2005 signed into law by President Bush on August 8, 2005. The NEP recognized that increased reliance on imported oil could have adverse implications for our national security and our economic well-being, and proposed several policy actions aimed at reducing our dependence on foreign sources of oil through increased energy efficiency and increased domestic production, including through the Arctic National Wildlife Refuge or ANWR.

In implementing our energy policy, we have been guided by several fundamental principles:

- Free Market: We are guided by the belief that issues of supply, demand, and price are best settled by the free market.
- Diversity of Supply: To meet our long-range energy needs, we must expand and diversify our sources of energy, especially oil and natural gas, and through the research, development, and deployment (RD&D) of alternative energy sources.
- Energy Diplomacy: Ongoing, quiet dialogue has proven to be the best vehicle for our interaction with producing countries, enabling us to frankly exchange views on oil market developments and to promote a greater understanding of key issues.
- Energy Efficiency and Conservation: Two of the most expeditious ways to enhance current supply are to become more efficient in how we use energy and to encourage energy conservation.
- Domestic Production: One of most immediate ways we can reduce reliance on foreign oil is to increase our reliance on domestic producers—the United States needs to produce more oil and gas, as well as take advantage of other energy resources, including renewables and nuclear.
- Energy Security: Given our dependence on imported oil, it is essential that we provide strong insurance against the possibility that the flow of international oil could be interrupted.

I will touch briefly on those principles that are particularly pertinent to today' s discussion.

DIVERSITY OF SUPPLY

The development of additional energy sources has become increasingly critical as recent events such as Hurricanes Rita and Katrina have demonstrated the delicate balance that characterizes the U.S. energy market. The current market tightness is heightened as oil demand continues to grow, so access to additional energy sources is critical to both global and U.S. energy security. The Energy Policy Act of 2005 reaffirms the importance of building and strengthening international alliances to advance foreign policy objectives, including national and global energy security and economic growth. The DOE is strengthening our energy security by identifying and working to develop energy opportunities around the world. The DOE encourages cooperative trade arrangements to develop new resources, as well as maintains and establishes dialogue with major consumers, such as the Group of Eight (G–8) countries, China and India, to reduce oil demand growth; monitor market developments; and respond to supply disruptions.

Through initiatives such as the North American Energy Working Group (NAEWG) involving the United States, Mexico, and Canada, we work with our immediate neighbors to enhance reliability by facilitating critical infrastructure protection, better integrating our energy systems. NAEWG convenes regularly to discuss issues such as critical infrastructure, energy efficiency, natural gas and electricity. DOE staff recently met with Canadian Government and industry officials to discuss the potential for Canada to increase natural gas supplies to the United States this winter.

During the summer of 2005, the DOE organized a Colombia Oil and Gas Investment roundtable and conference to assist in attracting U.S. investment in the Colombian hydrocarbons sector. These events not only supported President Bush's commitment to President Alvaro Uribe, but also promoted energy supply diversification.

The DOE has also continued to cultivate relationships with more distant, non-Middle East suppliers such as the resource-rich Caspian States. The United States-Kazakhstan Energy Partnership met as recently as September 2005 to further advance bilateral energy cooperation on energy security, oil and gas, electric power, nuclear energy, and alternative energy technologies. Similar partnerships exist with Russia and Azerbaijan, and the DOE also works with Turkey to facilitate energy transportation through infrastructure development in the region.

The DOE's efforts to diversify energy sources cover every region of the world, and this summer the United States-Indonesia Energy Policy Dialogue met in Jakarta to advance oil and gas, electric power, and coal sector cooperation. The DOE is actively supporting the objectives expressed in the White House joint statement issued during the state visit of President Yudhoyono in May 2005, wherein the Governments of the United States and Indonesia pledged to deliver a progress report on energy investment and regulatory issues under the Energy Policy Dialogue to Presidents Bush and Yudhoyono.

Additionally, the DOE has been meeting with American oil companies involved in oil and gas production operations in the Gulf of Guinea. Nigeria's importance as the fifth largest oil supplier to the United States has made recent unrest in the oil-rich Niger Delta an energy security concern, and we will address these developments at the bilateral energy consultations scheduled with Nigerian officials in November 2005 in Washington, DC. Other issues to be discussed include the recent oil bid licensing round, planned increases of Nigerian oil production, gas flaring elimination, and construction contractor needs, including international competition for rigs and services. The DOE is also working to strengthen our bilateral relations with other African oil producers in the Gulf of Guinea and Angola. We continue to promote good governance and greater transparency in Equatorial Guinea, Sao Tome and Principe, Cameroon (and Chad via their pipeline) and Gabon. Angola currently provides 4 percent of our imports. That number could double in the next 5 years.

Even DOE activities with nations of the Middle East are focused on diversification of energy sources both in terms of sources and types of fuel. Recent meetings with Libyan officials focused on development of oil, liquefied natural gas (LNG), and hydrogen. As per the increased focus on LNG in the Energy Policy Act of 2005, the DOE is working to develop relationships with LNG suppliers while the Federal Energy Regulatory Commission (FERC) streamlines the approval process for LNG infrastructure.

In addition to pursuing relationships with non-Middle East energy suppliers, it is important to acknowledge the significant efforts by the DOE to diversify energy supply through alternative energy sources. Development of renewable generating capacity in the United States can greatly relieve pressures on markets for conventional energy sources over time, and supporting similar measures in other countries can mitigate global demand growth for traditional fuels. In the transportation sector, development of alternative fuels such as hydrogen and ethanol could curb the world's growing appetite for oil while reducing greenhouse gas emissions. In the power sector, enhanced use of nuclear and renewable electricity generation and clean-coal-fired powerplants could reduce greenhouse gas emissions as well as demand for natural gas. Several offices within the DOE and the national laboratories cooperate to research and develop domestic alternative energy applications and form domestic and international partnerships for the advancement of such technologies.

Multilaterally, including through organizations such as the International Energy Agency (IEA), Nuclear Energy Agency, and Asian Pacific Economic Cooperation (APEC) and initiatives such as the Hemispheric Energy Initiative and African Energy Ministerial, we are successfully leveraging financial and technical resources to pursue common energy goals, including energy diversification. The IEA was founded, specifically, to help member countries reduce dependence on imported oil through the development of alternative sources as well as through improved energy efficiency. Through more than 30 IEA Implementing Agreements, member and nonmember governments pool resources for the research, development, and deployment of nonfossil energy technologies. Some of these programs include the IEA Clean Coal Centre, the Energy Conservation in Buildings and Community Systems Program, the Advanced Motor Fuels Program, and the IEA Bioenergy organization. The United States is also spearheading or participating in international initiatives such as the International Partnership for the Hydrogen Economy (IPHE), the Carbon Sequestration Leadership Forum (CSLF), the international engagement of GEN–IV nuclear powerplant design, the Clean Energy Technology Exports (CETE) initiative, the International Thermonuclear Experimental Reactor (ITER) consortium, and the FreedomCAR and Fuel Partnership.

ENERGY DIPLOMACY

In both times of crisis and times of quiet, active energy diplomacy has remained a key ingredient in our efforts to deal with fluctuations in the energy markets. We work on a regular basis with our allies in Europe and Asia, and through international organizations like the International Energy Agency, to share information, to coordinate our energy policies, and to discuss advances in energy technology. We continue our efforts with producing and consuming nations, and developing countries to improve oil market data for more efficient markets.

We have strong bilateral relationships with various oil producers throughout the Middle East and North Africa. For instance, Saudi Oil Minister Naimi and the Secretary of Energy cochair an annual forum (most recently this past May) on oil security sponsored by the Center for Strategic and International Studies and we have regular energy bilateral consultations at the working level with our counterparts in the Saudi Oil Ministry. The DOE also participated in this year's United States-

Saudi Trade Mission, which sent Saudi representatives to several U.S. cities to meet with industry officials to encourage investment in Saudi Arabia.

Qatar is another important bilateral partner—we held working-level bilateral meetings with Qatari energy officials this past May, and we often meet with Qatari officials or with U.S. industry representatives invested in Qatar, regarding natural gas development. We are actively engaged with the Iraqi Oil Ministry, seeking ways that we can be of assistance in the Ministry's efforts to revitalize the Iraqi oil industry. The U.S. Department of Energy has a good relationship with our counterparts in Kuwait as well, and the Kuwaiti Ministry of Oil has recently asked DOE to renew our annual bilateral dialogue.

In North Africa, we have moved quickly to take advantage of renewed relations with Libya, helping ease the reentry of U.S. oil companies after being absent for so long. Our relationship with Algeria is particularly strong, and we continue to cooperate with the Algerian Ministry of Energy on solar technology, liquefied natural gas, and regional energy development. DOE also has extensive interactions with Morocco on renewable energy through our technical assistance and advisory role in the creation of the regional renewable energy center in Marrakech. Morocco played an important role in cohosting the last United States-African Energy Ministerial in 2002 and continues to be a valuable partner on regional energy issues. With Egypt, we have developed a firm relationship in recent years based on trade policy and science and technology, and Egypt has recently become active in the CSLF and earlier this year exported LNG for the first time.

Our energy diplomacy extends to a multilateral level as well. For instance, the International Energy Forum (IEF) has become a key fixture over the past several years in fostering relations between consumers and producers. Next month, Secretary Bodman will attend the inauguration of the IEF Secretariat in Riyadh. The IEF Secretariat was proposed by Saudi King Abdullah at the IEF meeting in Riyadh in November 2000, and Saudi Arabia has played a key role in its formation. We hope to play an increasingly active role in the Secretariat as it continues to develop its role and mission. We are encouraged by the progress, while recognizing that the United States could play a more active role in the coming years.

Of particular importance, the IEF Secretariat will direct the Joint Oil Data Initiative or JODI, which is an effort involving nearly 100 countries to create a more transparent, efficient world oil market by providing better information to market participants. The next IEF biennial meeting will take place in April in Doha, Qatar, bringing together ministerial-level officials from 60–70 global energy producers and consumers. The meeting will focus on developing a common view on energy security and methods of enhancing investment in oil production.

Notably, at the last IEF held in May 2004 in Amsterdam, the first Business Forum was held between Ministers and chief executive officers of major international and national oil companies. We believe that the Business Forum reinforces the important role of the private sector in terms of providing the necessary capital and expertise that will facilitate expanded oil and gas productive capacities to meet the growing global energy demand.

With a view of promoting greater access, we want to encourage goverment around the world to create a favorable investment climate that will facilitate increased oil and gas exploration and production to meet global energy demand and to advance economic imperatives for those producing countries. As the role for natural gas increases in the energy equation for the United States and other countries, LNG and gas-to-liquid technologies may eventually help to globalize regional gas markets. There are significant opportunities and, obviously, some challenges in terms of energy supply diversification and security.

ENERGY SECURITY

As we strive to enhance supply around the world and become more efficient in how we use energy at home, it is still essential that we be able to take quick action to assure supply in the event of an emergency. Our relationship with the International Energy Agency, which grew out of the Arab Oil Embargo of 1973, is now over 30 years old. The IEA now has 26 member nations, all committed to holding oil reserves and to taking common action to address the ill effects of oil supply disruptions. The strength and promise of the IEA was demonstrated only last month, as the IEA acted quickly to supplement supply in the followup to Hurricane Katrina and its impact on U.S. gulf oil production and refining.

On September 2, IEA members implemented a response action in the amount of 2 million bpd for a period of 30 days. Given the loss of refined products due to the storm, IEA members were asked to emphasize the drawdown of petroleum products

where possible. There's little doubt that the IEA action contributed to the recent record level of gasoline imports into the United States.

ENERGY EFFICIENCY AND CONSERVATION

Energy efficiency and conservation are important tools, which we are utilizing to help reduce U.S. dependence on oil and gas. Through various domestic and international programs and mechanisms, the United States is actively working to promote greater efficiencies throughout the energy value chain and especially in the transportation and end-user sectors.

For example, we are promoting higher energy efficiency standards for new buildings and energy efficiency ratings for homes. The Energy Policy Act of 2005 strengthens this effort by providing new tax incentives for a number of solar and energy efficiency measures in residences. It provides tax deductions for highly efficient commercial and residential buildings. It also promotes installation of residential and commercial fuel cell systems.

The Federal Government is also taking a role in promoting energy conservation within the government. On September 26, the White House directed the heads of executive departments and agencies to take appropriate actions to conserve fuel and electricity through promotion of carpooling, telecommuting, and use of public transportation. Federal agencies also were directed to take action to conserve natural gas and electricity during periods of peak consumption by shifting energy-intensive activities to nonpeak periods wherever possible and by procuring and using efficient Energy STAR-rated energy intensive appliances and products.

On October 3, Secretary Bodman kicked off a comprehensive national campaign to highlight how American families, businesses, and the Federal Government can save energy in response to rising winter energy costs. Entitled "Easy Ways to Save Energy," the effort provides consumers, industry, and Federal agencies with a variety of energy saving ideas, which, if done properly, can yield significant savings.

With a view of a global energy market and economy, through bilateral and multilateral arrangements, including ministerial dialogues, we work with various partners, including China and India and countries in this hemisphere and other regions to promote energy efficiency and conservation and effective natural resource management to help reduce energy demand and to enhance global energy security. We recognize, and will be pursuing, other energy saving measures, which we believe will directly or indirectly impact the U.S. energy security equation.

CONCLUSION

While recognizing promising discoveries and production in other regions, in a hydrocarbon-based economy, the Middle East is, and will remain, a strategically vital region with respect to national and global energy security. Yes, the United States and other countries could reduce foreign oil dependence. However, true energy independence in an increasingly global energy market appears to be difficult to achieve in our hydrocarbon-based world.

Therefore, we will continue to forge stronger alliances around the world, including in the Middle East, and to strengthen cooperation based on shared goals and interests. We will continue to promote energy security through diversification of supply and sources, through long-term R&D in alternative energy technologies, and through greater energy efficiency and conservation.

Both looking and working toward a long-term future, one with increased energy options and stronger alliances, the possibilities are very promising.

Thank you.

Senator CHAFEE. Thank you, Mr. Person.

Mr. Misenheimer, welcome.

STATEMENT OF ALAN GREELEY MISENHEIMER, DIRECTOR, OFFICE OF ARABIAN PENINSULA AND IRAN AFFAIRS, BUREAU OF NEAR EASTERN AFFAIRS, DEPARTMENT OF STATE, WASHINGTON, DC

Mr. MISENHEIMER. Thank you. Mr. Chairman, I do not have a prepared statement. I will offer a couple of observations, if I may.

Senator CHAFEE. Yes. You may have to lean closer to your microphone or push the button.

Mr. MISENHEIMER. Push the button. That works.

Senator CHAFEE. I made the same mistake. [Laughter.]

Mr. MISENHEIMER. Thank you. It is certainly the case that oil and energy sources have played a major role in U.S. foreign policy in the Middle East going back many, many years. Our relations with the countries of the region are different. Each of the countries, even the very small ones, has a unique and idiosyncratic history.

I will just say a couple of words about our relations with Saudi Arabia, being the largest producer, and also the country with which our government has had the longest and, I would venture to say, the most successful partnership.

Our relations go back many years and continue, really, to be based on a model worked out by President Roosevelt with the founding king of Saudi Arabia, King Abdul Aziz. And the model was fairly simple. The Saudis would ensure a consistent supply, and the United States would provide security for Saudi interests in the region. And that model served us fairly well.

After 9/11 things have certainly changed and I am happy to go into that in ways that you might wish. But I would just say that in the aftermath of 9/11, the relationship has become much more complicated; and the need to combat terrorism originating in the Middle East, originating in Saudi Arabia, as well as other places in the Middle East, has become part of what both divides and unites us with the Saudi Kingdom. And those efforts are proceeding cooperatively and fruitfully in many areas, not least in the area of terrorist financing.

We have, in a very sustained way, worked with the Saudis to clarify the flow of funds and to rectify past inefficiencies that made it possible for funds to flow relatively easily to terrorist sources. And in the aftermath of 9/11, this has been one of the successful areas of international intervention that we have undertaken in that region.

With that, I will stop and be glad to respond to questions.

Senator CHAFEE. Thank you very much. I will start my first question, we will go with Mr. Misenheimer, in the opposite direction. Mr. Gallogly said in his statement that technology will be the key to significantly improving our energy security. And what a worthwhile goal. Energy security. And technology is going to be the key.

Our next panel there is going to be a lot of talk about that technology and that it is achievable, and that, indeed, it is—just for the will, political will, it is present. Yet, none of you three mentioned that technology in any specifics. And I am sure the next panel we are going to hear about biomass and about hybrid, and even plug-in hybrids, and switch grass, and this type of technology.

Why was there no mention of that from you so much? And then I will let the others speak for themselves.

Mr. MISENHEIMER. Mr. Chairman, I probably have the least to say on that subject. I have to be frank with you and admit that my purview is primarily the nonenergy aspects of our relations with the Middle East.

It is simply the overriding reality that we have to face that, as long as our economy is as it is, Middle East oil will remain important. Certainly neither my bureau nor I would venture to say the

State Department has any opposition to new technology. And certainly we do welcome alternative energy development.

My responsibility, the responsibility of my bureau, is to address the interests of the United States as we find them today. And one of the key interests is the stability of oil imports coming from the Persian Gulf region. And that is, again, an aim that we pursue with a variety of policies—both specifically in the energy field, and branching further afield in many areas—to ensure the security of those relationships and specifically of the infrastructure that produces and exports the energy sources.

Senator CHAFEE. Would it make your job easier if there was more effort put toward the development of this technology?

Mr. MISENHEIMER. Mr. Chairman, it is hard for me to go in a hypothetical direction like that. Certainly, it would change it, though.

Senator CHAFEE. Very good. I recognize you are a diplomat, not a technocrat. [Laughter.]

Mr. Person, any efforts in your Department to push us toward that, I am sure the second panel is going to be talking about?

Mr. PERSON. Yes, Mr. Chairman. I should note that my formal presentation, obviously, is a subset of my written testimony, which does, at least, touch on those issues in greater detail.

As I mentioned, the DOE budget reflects an emphasis on alternative energy sources and whatnot. We are actually involved in many activities and programs through our Energy Efficiency and Renewable Energy Office, through our Office of Science, as well as some other offices, and then also our international activities.

Through the International Energy Agency we have over 30 implemented agreements that seek to advance these various technologies. We also have programs within the Department with national laboratories, public/private sector relationships, also, advancing many of these activities.

There is Freedom Car. There is geothermal. There is hydrofuel cell technology. There is bioenergy. There are a host of other things, also, that we are looking to do. Compressed natural gas for the transportation sector. My office has been involved in many of those programs in different parts of the world, as well as the science and technology portfolio. So I realize that we are putting quite a bit into that area as well.

When I briefly looked at the DOE budget, I saw nearly $7 billion going toward science and other areas that will advance this important goal.

Senator CHAFEE. Well, thank you, Mr. Gallogly. You are the Director of the Office of International Energy and Commodity Policy in the Department of State. So I will expand on my question a little bit.

Thirty years ago Brazil was heavily dependent on foreign oil. It imported about 80 percent of its crude oil, and by comparison, the United States imports about 60 percent. Combining strong public policy, leadership, and a free market, Brazil is now projected to be a few weak years away from self-sufficiency. Nearly 40 percent of all fuel Brazilians put into their cars is ethanol. In comparison, in the United States, about 3 percent of fuel is ethanol.

What are the factors that lead to Brazil's success in this effort? And are we making any effort to follow in the same footsteps?

Mr. GALLOGLY. One of the—there is a difference—I am not an expert in ethanol production, but Brazil is better suited for more efficient and economic ethanol production than other areas—than many other areas of the world. The climate and the soil. So that was one angle. And they made a full national commitment.

We have done in recent years, and over the last—this administration and previous administrations increased significantly, albeit from a very small base, the introduction of ethanol and subsidies for ethanol to bring ethanol into the market and increase ethanol production.

But the choices made over the last 30 years in terms of we did not go to an ethanol-only approach as Brazil, and we can go back and look back and maybe secondguess some of those choices over the decade. But in a sense, when I talk about the future being the technology, we need to work on this energy security every day.

We did try—there were a lot of alternative fuel efforts and a lot of technology efforts over the last 30 years. Some bore better fruit than others. And we are continuing that.

This is a daily struggle that we have to continue every day to move closer to improvement every day, incremental. And the other policies that we are pursuing are in the meantime, because this is not—these technologies are not completely readily available today, but to the extent that we increase their availability and use, we are improving our energy security.

Senator CHAFEE. Brazil is doing it, but they are not readily available? What is the difference? That they have more sugar?

Mr. GALLOGLY. Brazil is able to produce ethanol at a lower cost, is my understanding, than the United States. They have more land available. Also, our gasoline consumption—I do not have Brazil's numbers off the top of my head, but my guess is that their consumption—our consumption is probably roughly 10 times their level of production, or in some factor thereof. And it would take—ethanol is a lot more expensive.

It would take devoting a lot more agricultural land to ethanol to match. There are questions of whether that would be feasible or matchable in the United States at a reasonable economic cost. Again, this is not a decision to be made by someone from the State Department, but these economic factors would have to come into hand in making that examination.

Senator CHAFEE. Just, to a layman, it would appear to me that if we could help the farmers, maybe that is a good thing to get us off some subsidies. Mr. Person, did you want to respond?

Mr. PERSON. Yes. Thank you, Mr. Chairman. I would like to emphasize that we actually have an energy-working group with Brazil where we are looking at these types of activities, where biodiesel—and we are looking at these different sources for biofuels. So we are actually recognizing that Brazil could bring something to a more global market in terms of its production of ethanol and other, I would say, farm crops and whatnot, for fuel purposes.

So again, with Brazil, through the IEA, we also have a biofuels agreement involving many countries. So we are looking to demonstrate that in the marketplace, expand the use of those types of sources as well.

Senator CHAFEE. Is there any discussion in the Department of Energy about when oil reaches a certain cost per barrel where there is going to be more of an effort put into this? Hypothetically, if it goes to $80 a barrel, I mean, are you ready to push a new plan or just laissez-faire, we will approach it as it comes?

Mr. GALLOGLY. Again, as I noted earlier, we believe in free market principles, in terms of setting of price. If you were to ask me a year ago would we be looking at $70 prices, I would have told you, "No." I would have told you that would have been a trigger for displacement, or whatnot.

So we recognize that the global economy is rather resilient, in terms of adjusting to some of these things. So there is no particular price trigger. But we believe a consistent sustained effort will eventually lead to a displacement of fossil fuel by other energy sources. When that will happen, how fast we can accelerate that, those are all considerations that we are working to pursue.

Senator CHAFEE. Well, I would agree in general to let the market work, but when you mix in our alliance in this crucial volatile area of the Middle East, that is when I think government should get involved and be pushing us in that different direction.

Mr. Misenheimer, your Department deals with Iran from your Office of Arabian Peninsula and Iran Affairs. Now Iran has, according to Mr. Person's chart, the third highest reserves in the world, behind Saudi Arabia and Canada, according to this chart on page 11 of his testimony. What are our policies with Iran, and considering their status in the world ranking of reserves?

Mr. MISENHEIMER. Iran, of course, is benefiting from the current high energy prices, as the other oil- and gas-exporting countries are. Our policies, however, are not focused primarily on Iran's status as an energy producer. I would say mainly because the importation of oil is primarily a private sector function, and the nature of the international oil and energy market is that it is a private sector matter rather than a government-to-government transaction, or typically conducted as government-to-government transactions.

So, when we look at Iran, our focus has been on other American interests in that region and other concerns. And, of course, since 1979, the tenor of our relationship with Iran has been very negative. It has, in fact, changed rather little since that time. It is almost remarkable how static it has been.

We do not have very much government-to-government contact. We can have that when we need to. But the focus of our policies has been primarily on urging Iran to improve its human rights record at home. Recognizing that many Iranians are not satisfied with the government that they have, and that there is a large sentiment, widely held sentiment among younger Iranians, in particular, that it is favorable to the United States.

And we have tried to use that to spur democratic change and to support the democratic aspirations of the Iranian people, even as we work to counter their interference in other countries in the region, the threat that they pose through their support for terrorism in the Middle East, and most recently, of course, their interference directly in Iraq.

And I finish with the one that has gotten by far the most press coverage, and that is appropriate, and that is the Iranian nuclear

program, which over the last couple of years has been found to be clearly in violation of Iran's commitments under the Nonproliferation Treaty, and something that we believe poses a serious threat to regional stability and American interests. And we put a great deal of diplomatic effort into building an international consensus to isolate and pressure Iran to change its behavior in that regard.

Senator CHAFEE. Do we, in the United States, import any Iranian oil either directly or indirectly through third and fourth parties?

Mr. GALLOGLY. We do not import any Iranian oil. It is against the law to import Iranian oil. Now if the product were—if it came in a refined product, in mixed—I mean if it can be identified as Iranian oil, it is illegal to import Iranian oil to the United States.

Senator CHAFEE. Who are their consumers?

Mr. GALLOGLY. Western Europe and Japan. Asia. Japan and Asia. India.

Senator CHAFEE. And do you, Department of Energy and Department of State, get together on these issues often, our dependence on foreign oil and the dangers associated with it, and try and coordinate a national policy?

Mr. GALLOGLY. We are literally in daily contact. There is always someone from the State Department and someone from DOE working, as we are at this moment. But there are people in Paris at IEA meetings today from DOE and the State Department working together on our policies, and people from the State Department and DOE in South Korea now at an APEC ministerial meeting finishing up there.

So we are constantly working together in Washington and other capitals. George and I work closely on producer/consumer issues, and we work regularly. So we are all looking at these things. That is what we worry about and work together on.

Senator CHAFEE. Well, thank you very much. I am looking forward to the second panel. They are going to probably say that it is all right there, but for the asking. But we will see on the second panel.

Thank you very much, gentlemen, for your testimony.

Mr. PERSON. Thank you very much.

Mr. GALLOGLY. Thank you.

Senator CHAFEE. Now we will welcome the second panel.

[Pause.]

Senator CHAFEE. Welcome, Dr. Luft, Mr. Ebel, and Mr. Collina. The last panel was probably the defenders of the status quo and you are the attackers of the status quo. Maybe I am assuming too much. Let us start with Dr. Luft.

STATEMENT OF DR. GAL LUFT, CODIRECTOR, INSTITUTE FOR THE ANALYSIS OF GLOBAL SECURITY, COCHAIR, SET AMERICA FREE COALITION, WASHINGTON, DC

Dr. LUFT. Thank you, Mr. Chairman, for convening this hearing. Since 1945, the meeting—famous meeting between President Roosevelt and King Ibn Saud, the United States foreign policy has been subservient to the Nation's energy needs, access to the Persian Gulf robust, and costly military presence in the region and frequent intervention.

It also forced us to coddle some of the world's worst despots just because we needed their oil. But in the wake of the war on terrorism, the rise of developing Asia, and the growing voices within the oil industry, the era of easy oil is over. America is finally waking up to the reality that our oil policy is unsustainable and that such policy subjects us to grave risks. Those developments require that we take a sober long-term look at the impact of our growing oil dependence on our strategic posture and what that does mean for our future.

I would like to suggest to—give you three observations about where we are and where we are heading. Observation number one is that oil prices are not going down any time soon and our economy is bleeding as a result. At the same time, oil-producing nations increased their revenues dramatically. In the past 4 years oil prices tripled and as a result we have been seeing a transfer of wealth of historical proportions from consumers to producers. This windfall benefits not only the nondemocratic regimes in the Middle East, but also the jihadists, who are committed to America's destruction as petrodollars trickle down their way through charities and government handouts to madrases and mosques.

In fact, we are locked in an odd situation in which we are fighting a war on terrorism and we are paying for both sides of the war. We finance the defense of the free world against its enemies through our tax dollars and at the same time we support unsavory regimes through the transfer of petrodollars. If we do not change course, our power will be eroded and those who wish us harm gather strength.

The second observation is that due to the rise of China and India, the Middle East is gradually and slowly shifting from being a unipolar system, in which the United States enjoys uncontested hegemony, to a multipolar region. By 2015 the Middle East will supply about 70 percent of Asia's oil. This means that solidifying relations between Asian countries and the Middle East, which could sometimes be to the detriment of our security interests.

The prospect of a region scarred by decades of rivalries turning once again into an arena of competition between superpowers could be one of the most important geostrategic developments of the 21st century, with profound implications for U.S. national security.

The third observation is based on the first two, that America's current oil policy is inconsistent with the hallmark of the Bush administration's foreign policy that is bringing democracy and political reform to areas where democracy is in deficit. Oil revenues help dictators sustain an antidemocratic system and resist change. Our dependence on oil prevents the United States from expressing its true feelings about the conducts and practices of oil-producing countries.

Only last month the administration waived sanctions against Saudi Arabia and Kuwait, two of the world's worst offenders in human trafficking. The explanation was that it is in U.S. interest to continue democracy problems and security cooperation in the war on terrorism. Now, I could only wonder if these two countries would have received the same treatment had they been major exporters of watermelons instead of oil.

Dictators who view democracy with suspicion do not like to be pressured to reform, especially when U.S. pressure could bring an end to their regimes. They prefer selling their oil to the Chinese, who do not lecture them on democracy and human rights, and who turn a blind eye on the way petrodollars are used.

Mr. Chairman, based on these observations, it is essential that we begin to view our political—view our political situation in the context of our oil dependence, and realize that it will be extremely difficult to win the war on terror and spread democracy around the world as long as our energy policy remains as it is.

It is in our national interest to do all we can to extricate petroleum from our foreign policy calculus.

Unfortunately, as long as we rely on oil, there is no real alternative to dependence on Middle East oil. But there are clearly alternatives to oil, particularly in the transportation sector, where two-thirds of our oil is being consumed.

I would like to submit for the record the blueprint for energy security, drafted by the Set America Free Coalition, which is a bipartisan alliance of foreign policy and national security think tanks, environmental groups, religious groups, labor unions, and prominent Nobel-winning scientists.

This out-of-the-barrel energy policy proposal suggests an accelerated shift toward an economy based on indigenously produced next-generation fuels, such as methanol, ethanol, and biodiesel derived from abundant domestic energy resources, such as coal, biomass, and municipal waste. You mentioned Brazil, and Brazil is a very good case study that this can be achieved.

Flexible-fuel vehicles can run on any combination of gasoline and alcohol, such as methanol and ethanol. Nearly 4 million of them are already on the road. American auto companies know how to make them and they are very cheap to make. They only cost about $150 extra per car. And there is no reason in the world why every new car sold in the United States should not be a flexible-fuel car.

Now where do we get the fuel? Without a doubt, as long as corn is the main feedstock used to make ethanol, the domestic ethanol industry will never be able to supply a significant portion of the Nation's fuel needs. But if we are serious about biofuels we must begin to import sugar-based ethanol from Latin America. Sugarcane is by far the most efficient crop for ethanol production and it is why Brazil succeeded.

But today stiff import tariffs imposed by Congress prevent large-scale imports. Congress should remove those tariffs. Simply, it just does not make sense to tax ethanol coming in from our friendly neighbors in Latin America when we do not tax oil imported from nearby Venezuela or from Saudi Arabia, which would also work to electrify our transportation system.

Made-in-America electricity can be a substitute for oil. The currently available hybrid technology can be taken one step further, allowing consumers to tap into our electricity grade by plugging in their car.

The Set America Free blueprint holds that if the plug-in hybrid vehicle is also a flexible-fuel vehicle fueled with let us say 80 percent alcohol and 20 percent gasoline, fuel economy could reach 500 miles per gallon of gasoline. Set America Free also holds that a

massive deployment of such technologies could reduce U.S. oil imports by as much as 12 million barrels a day by 2025, which is more than we import today.

All of these technologies are either already in the market or very close to commercialization. The American people will be better served if instead of pouring billions of dollars into pie-in-the-sky solutions like hydrogen fuel cells we use the funds to promote hybrid technologies, which could address the dependence on foreign oil sooner rather than later.

Thank you.

[The prepared statement of Dr. Luft follows:]

PREPARED STATEMENT OF DR. GAL LUFT, EXECUTIVE DIRECTOR, INSTITUTE FOR THE ANALYSIS OF GLOBAL SECURITY (IAGS), COCHAIR, SET AMERICA FREE COALITION, WASHINGTON, DC

Mr. Chairman, members of the committee, I would like to thank you for inviting me to brief you on the implications of U.S. growing dependence on Middle East oil for our foreign policy and national security.

As consumer of a quarter of the world's oil supply and holder of a mere 3 percent of global oil reserves the United States is heavily dependent on foreign oil and a growing share of this oil comes from the Persian Gulf. America's dependence on foreign oil has increased from 30 percent in 1973, when OPEC imposed its oil embargo, to 60 percent today. According to the Department of Energy this dependence is projected to reach 70 percent by 2025. In the wake of the war on terrorism, the rise of China and India and growing voices within the oil industry that "the era of easy oil is over" it has become apparent to many that America's oil policy is unsustainable and that such a policy subjects the nation to grave risks.

Since the 1945 meeting between President Franklin Roosevelt and King Abdul Aziz ibn Saud, the founder of the Saudi monarchy, U.S. foreign policy has been subservient to the nation's energy needs. Access to the Persian Gulf oil required robust and costly military presence in the region and frequent interventions. Worse, the United States has been forced to coddle some of the world's worst despots just because they held the key to our prosperity hence compromising American values and principles.

Of the 11 million barrels per day (mbd) the United States imports, today, close to 3 mbd come from the Middle East. But in the years to come dependence on the Middle East is projected to increase by leaps and bounds. The reason is that reserves outside of the Middle East are being depleted at a much faster rate than those in the region. The overall reserves-to-production ratio—an indicator of how long proven reserves would last at current production rates—outside of the Middle East is about 15 years comparing to roughly 80 years in the Middle East. According to Exxon Corporation and PFC Energy, non-OPEC production, including Russia and West Africa, will peak within a decade.[1] At that point the amount of oil found outside of the Middle East will decline steeply, putting OPEC in the driver seat of the world economy.

These projections require that we take a sober long-term look at the impact of our growing dependence on our strategic posture in the Middle East.

Oil prices are not going down any time soon. The rise in oil prices will yield large financial surpluses to the Middle Eastern oil producers. This petrodollar windfall will strengthen the jihadists while undermining the strategic relationship the region's oil producers have with the United States.

As President Bush said last April, U.S. dependence on overseas oil is a "foreign tax on the American people." Indeed, oil imports constitute a quarter of the U.S. trade deficit and are a major contributor to the loss of jobs and investment opportunities. According to a study on the hidden cost of oil by the National Defense Council Foundation, the periodic oil shocks the United States has experienced since the 1973 Arab oil embargo cost the economy almost $2.5 trillion. More importantly, while the U.S. economy is bleeding, oil-producing nations increase their oil revenues dramatically to the detriment of our national security. The numbers speak for themselves: In November 2001, a barrel of oil was selling for $18; in less than 4 years the price jumped to $70. This means that Saudi Arabia, which exports about 10 mbd, receives an extra $½ billion every day from consuming nations and Iran,

[1] Exxon president predicts non-OPEC peak in 10 years, Oil and Gas Journal, Dec. 13, 2004.

which exports 2.5 mbd, an extra $125 million. This windfall benefits the nondemocratic governments of the Middle East and other producers and finds its way to the jihadists committed to America's destruction as petrodollars trickle their way through charities and government handouts to madrassas and mosques, as well as outright support of terrorist groups.

It is widely accepted that Saudi Arabia's oil wealth has directly enabled the spread of Wahhabism around the world. The Saudis use oil funds to control most of the Arabic language media and are now moving to gain growing control over Western media. Only last month Saudi Prince Al-Waleed bin Talal, the world's fifth richest man, purchased 5.46 percent of Fox News corporation.

Petrodollars garnered from the United States and other countries are also being used by Saudi Arabia systematically to provide social services, build "Islamic centers" and schools, pay preachers' salaries and, in some cases, fund terror organizations. In July 2005 Undersecretary of the Treasury, Stuart Levey, testifying before the Senate Committee on Banking, Housing, and Urban Affairs noted "Wealthy Saudi financiers and charities have funded terrorist organizations and causes that support terrorism and the ideology that fuels the terrorists' agenda. Even today, we believe that Saudi donors may still be a significant source of terrorist financing, including for the insurgency in Iraq."

The United States in an odd situation in which it is funding both sides in the war on terrorism. We finance the defense of the Free World against its sworn enemies through our tax dollars. And at the same time we support hostile regimes through the transfer of petrodollars. If we don't change course we will bleed more dollars each year as our enemies gather strength. Steady increase in world demand for oil means further enrichment of the corrupt and dictatorial regimes in the Persian Gulf and continued access of terrorist groups to a viable financial network which allows them to remain a lethal threat to the United States and its allies.

The Middle East is gradually shifting from being a unipolar region in which the United States enjoys uncontested hegemony to a multipolar region. The United States will face more competition from China and India over access to Middle East oil.

Throughout its history, the Middle East has been the center of an imperial tug of war with major implications for the region's inhabitants. This was the case during the cold war years. In the decade after the fall of the Soviet Union the United States enjoyed uncontested hegemony in a unipolar Middle East. The rise of China and India is driving the Middle East back to multipolarity. In the coming years the Middle East will turn increasingly to Asia to market its oil and gas. By 2015 it will provide 70 percent of Asia's oil. By far the most important growth market for countries like Iran and Saudi Arabia is China. With 1.3 billion people and an economy growing at a phenomenal rate, China is today the world's second largest oil consumer and is becoming heavily dependent on imported oil. By 2030 China is expected to import as much oil as America does today. To fuel its growing economy China is following America's footsteps, subjugating its foreign policy to its energy needs. China attempts to gain a foothold in the Middle East and build up long-term strategic links with countries with which the United States is at odds like Iran, Saudi Arabia, and Sudan. Though some optimists think that China's pursuit of energy could present an opportunity to enhance cooperation, integration, and interdependence with the United States, there are ample signs that China and the United States are already on a collision course over oil. This will have profound implications for the future and stability of the Middle East and for America's posture in the region.

For China the biggest prize in the Middle East is Saudi Arabia, home of a quarter of the world's reserves. Since 9/11, a deep tension in United States-Saudi relations has provided the Chinese with an opportunity to win the heart of the House of Saud. The Saudis fear that if their citizens again perpetrate a terror attack in the United States, there would be no alternative for the United States but to terminate its long-standing commitment to the monarchy—and perhaps even use military force against it. The Saudis realize that to forestall such a scenario they can no longer rely solely on the United States to defend the regime and must diversify their security portfolio. In their search for a new patron, they might find China the most fitting and willing candidate.

China has also set its sights on Iran. Last year China and Iran entered a $70 billion natural gas deal that Beijing sees as critical to continued economic expansion. China has already announced that it will block any effort to impose sanctions against Iran in the U.N. Security Council. No doubt that as China's oil demand grows so will its involvement in Middle East politics. China is likely to provide not only a diplomatic support but also weapons, including assistance in the development of WMD.

In sum, the prospect of a region, scarred by decades of rivalries, turning once again into an arena of competition between two or more of the major powers could well be one of the most important geostrategic developments of the 21st century, with profound implications for U.S. national security.

The sudden enrichment of OPEC members will undercut efforts to promote democracy and political and economic reforms in the Middle East.

It is a sad fact of life that most of the world's leading oil producing countries are either politically unstable and/or at serious odds with the United States. With the exception of Canada and Norway, all major oil-exporting countries suffer from severe social illnesses due to their failure to absorb the shock of an oil jackpot and distribute the wealth on an equitable basis. This is not an accident. Countries rich in easily extracted and highly lucrative natural resources do not have to invest in education, productivity, or economic diversification. In addition, the government does not feel obligated to be accountable or transparent to its people and it denies them representation. They also have no imperative to educate women and grant them equal rights. While their oil wealth allows them to be the strategic pivot of world politics and economy, these "trust fund states" record on human rights, political stability, and compliance with international law is abysmal. Only 3 of the world's 10 largest oil producers are democracies and only 9 percent of the world's proven oil reserves are in the hands of countries ranked free by Freedom House.

America's current oil policy is inconsistent with the hallmark of the Bush administration's foreign policy: Bringing democracy and political reform to areas where democracy is in deficit. Oil revenues help despots sustain antidemocratic social and political systems giving them disincentives to embrace social and economic reforms. Our dependence on foreign oil often prevents the United States from expressing its true feelings about some of the conducts and practices of oil producing countries. Only last month the Bush administration waived sanctions against Saudi Arabia, Kuwait, and Ecuador, three of the world's worst offenders in human trafficking. In the case of Saudi Arabia and Kuwait the administration's explanation was that it was "in U.S. interest to continue democracy programs and security cooperation in the war on terrorism." One could only wonder if those two countries would have received the same treatment had they been major exporters of watermelons.

While in many cases the United States can turn a blind eye to human rights violations by major energy producers, in some cases the violations are so blunt and atrocious that a strong castigation is unavoidable. But with China joining the great oil game such incidents result in significant weakening of U.S. geopolitical posture. In the most recent incident, when the United States had to choose between oil and its values, the cost was high: The United States publicly expressed dismay over the killing of hundreds of demonstrators in Uzbekistan only to be asked to remove its military forces from there within 180 days. A $600 million gas deal signed between Uzbekistan and China bolstered Islam Karimov's confidence in China's diplomatic support to the degree that he was willing to show the United States the door.

The Uzbek case is a harbinger of things to come. Unlike the United States, which bars companies from doing business with some unsavory regimes, China's state-owned companies turn a blind eye to the way petrodollars are used by the local governments. In the global contest for oil the United States loses ground as a result of its pressure for government reform. Dictators who view democracy with suspicion don't like to be pressured to reform, especially when U.S. pressure can bring an end to their regimes. They much more prefer selling their oil to countries which turn a blind eye to the way petrodollars are used and who are willing to pay top dollars for oil and not lecture to them on democracy and human rights.

The growing economic power of OPEC producers enables them to resist U.S. pressure on a variety of issues from human rights to nuclear proliferation. As the second largest oil producer and holder of 10 percent of the world's proven oil reserves Iran is fully aware of the power of its oil. Its Supreme Leader, Ayatollah Ali Khamenei, warned in 2002: "If the West did not receive oil, their factories would grind to a halt. This will shake the world!" The Iranians also know that oil is their insurance policy and that the best way to forestall U.S. efforts in the United Nations is by bedding themselves with energy hungry powers such as Japan and the two fastest growing energy consumers—China and India. After securing the support of a third of humanity the Iranians are unfazed by the pressure coming from the United States and the European Union. Last month Iran's President, Mahmoud Ahmadinejad, warned that Iran could wield the oil weapon if Tehran's case was sent to the Security Council for possible sanctions.

Mr. Chairman, 4 years after September 11 it is essential that we view our geopolitical situation in the context of our oil dependence and realize that it will be extremely difficult to win the war on terror and spread democracy around the world as long as we continue to send petrodollars to those who do not share our vision

and values. As long as the United States remains dependent on oil to the degree that its does today, its dependence on the Middle East will grow. The United States can no longer afford to postpone urgent action to strengthen its energy security and it must begin a bold process toward reducing its demand for oil.

In order to achieve this it is important to dispel two myths:

Myth 1: The United States can end its dependence on the Middle East by diversifying its sources beyond the region

Since oil is a fungible commodity, it does not matter what proportion of the oil the United States imports comes from the Middle East, what matters is the share of Middle East producers in overall supply. The oil market is like a huge pool: Producers pour in oil while consumers draw it out. Prices and supply levels are determined in the international markets. If all we do is shuffle around our sources of oil supply, but demand for oil does not drop, the influx of petrodollars to proliferators and apologists for radical Islam as well as the vulnerability of the United States to international oil terrorism would remain the same even if the United States did not import a drop of oil from the Middle East.

Myth 2: The United States can drill its way out of its energy problem

Tapping our domestic reserves which, all included, amount to less than 3 percent of the world's reserves, is no more than a stopgap solution. Considering America's vast long-term needs our domestic reserves are a drop in the bucket. Assuming that all the oil that is claimed to be in Alaska is indeed there, the United States' share of world oil would increase by less than half of a percent. No doubt unconventional petroleum sources available in the Western Hemisphere like Canadian tar sands and Venezuelan extra heavy crude could provide some relief but by no means can they significantly reduce America's dependence on the Middle East.

While there is no alternative to dependence on Middle Eastern oil, there are clearly alternatives to oil, particularly in the transportation sector, where two-thirds of U.S. oil is consumed.

America needs an out-of-the-barrel energy policy, one that will gradually diminish the role of oil in world politics. The United States should embark on an accelerated shift, enabled by modern technology, toward an economy based on indigenously produced next-generation fuels, meaning nonoil based transportation fuels such as methanol, ethanol, biodiesel, electricity, and others derived from abundant domestic energy resources such as coal, biomass, and municipal waste. In Brazil ethanol made from sugarcane accounts for at least 25 percent of the liquid fuel used in most cars. Many cars run on pure ethanol. As a result sugarcane ethanol comprises 40 percent of Brazil's fuel needs and the country is moving rapidly toward energy independence.

Flexible-fuel vehicles can run on any combination of gasoline and alcohols such as ethanol and methanol. Nearly 4 million flexible-fuel cars have been manufactured since 1996 and are already on the road, though many of the people driving them don't even know their cars can tolerate other fuels. The marginal additional cost associated with the production of a flexible-fuel vehicle is currently under $150—less than the cost of a typical CD player. That cost would be reduced further as the volume of production of such cars increases. Since most of the flexible-fuel cars sold in Brazil are made by American auto manufacturers like Ford and GM there is no reason why every new car sold in the United States should not have such fuel flexibility.

Without doubt, as long as corn is the main feedstock used to make ethanol the domestic ethanol industry will never be able to supply the needs of the U.S. transportation sector. In the coming years if the production of ethanol from cellulosic material becomes commercially feasible it could add a significant amount of ethanol into the transportation fuel market. But until the technology is ready for deployment the United States will have to rely on its sugargrowing neighbors in Latin America. Sugarcane is by far the most efficient crop for ethanol production but today stiff import tariffs imposed by Congress prevent large-scale imports of sugarcane ethanol. To strengthen energy security, Congress and free trade champions must open the U.S. ethanol market to imports. It simply does not make sense to tax ethanol coming in from our neighbors when we do not tax oil imported from Saudi Arabia.

Methanol is another alcohol that can be used in flexible-fuel vehicles. Today, this liquid fuel is produced mostly from natural gas. Greatly expanded domestic production can be achieved, however, by producing methanol from coal, a resource the United States has in abundance. The commercial feasibility of coal-to-methanol technology has been demonstrated as part of the Department of Energy's "clean coal" technology effort. Currently, methanol is being cleanly produced from coal at

a commercial scale for around 50 cents a gallon. Methanol can also be produced from agricultural waste.

Unlike in the 1970s when a significant portion of U.S. electricity was generated from oil, today only about 2 percent of electricity is generated from oil. Electricity produced from coal, nuclear power, natural gas, solar, wind, and hydropower can also be a substitute to oil. Hundreds of thousands of hybrid gasoline-electric cars which improve fuel efficiency by 30–50 percent will be coming onto our roads in the coming years.

Hybrid technology can be taken one step further allowing consumers to tap into our electricity grid. Plug-in hybrid electric vehicles (PHEVs) are souped-up hybrids that can optionally be plugged in. Like regular hybrids, plug-ins have a liquid fuel tank and internal combustion engine, so they have the same driving range as a standard car. Although they look and perform much like regular hybrid cars, they can, in addition, be plugged into a 120-volt outlet at home or a parking garage and recharged, thus allowing cars to be fueled on Made-in-America electricity.

The attached "Blueprint for Energy Security: 'Set America Free'" endorsed by a bipartisan coalition of foreign policy thinktanks, environmental groups, religious groups, and prominent scientists holds that if by 2025, all cars on the road are hybrids and half are plug-in hybrid vehicles, and if all of these cars were also flexible-fuel vehicles, U.S. oil imports would drop by as much as 12 mbd, which is more than the United States imports today. The "Set America Free" blueprint also holds that vehicles can be powered by any blend of alcohol fuels, gasoline, and electricity. If a plug-in vehicle is also a flexible-fuel vehicle fueled with 80 percent alcohol and 20 percent gasoline, fuel economy could reach 500 miles per gallon of gasoline compared to 22 today.

Despite polls showing that over 90 percent of Americans view our energy dependence as a serious issue that needs to be addressed with urgency, congressional activity to advance such solutions has been insufficient. The recent energy bill and the followup gasoline bill do little to address America's growing dependence on foreign oil. In fact, a provision in the Senate energy bill to do as little as reducing oil dependence by 1 mbd by 2015 was shamefully rejected by the House. In the wake of Hurricanes Katrina and Rita, when gas prices are historically high, there is a new momentum and a renewed opportunity for action. A new bipartisan Oil and National Security Caucus has been announced in the House to advance new ideas to reduce the nation's dependence on oil. On October 7, Senator Joseph Lieberman unveiled, in a speech at Georgetown University, a package of legislative proposals along the lines of "Set America Free" to help America break its dangerous dependence on foreign oil. In his speech he mentioned his collaboration on this bill with Senators Brownback, Bayh, and Sessions. The proposal has been applauded by many energy experts including a leading expert in the National Science Foundation who called it "the biggest really solid accomplishment coming from any part of the U.S. Government in this area and the most sane proposal for legislation." On the grounds of national security it is imperative that such bold bipartisan initiatives will be supported by lawmakers from both parties with the strongest enthusiasm. We cannot afford to do less.

AN OPEN LETTER TO THE AMERICAN PEOPLE

For decades, the goal of reducing the Nation's dependence upon foreign energy sources has been a matter on which virtually all Americans could agree. Unfortunately, differences about how best to accomplish that goal, with what means, how rapidly and at what cost to taxpayers and consumers have, to date, precluded the sort of progress that might have been expected before now.

Today, we can no longer afford to allow such differences to postpone urgent action on national energy independence. After all, we now confront what might be called a "perfect storm" of strategic, economic and environmental conditions that, properly understood, demand that we affect over the next 4 years a dramatic reduction in the quantities of oil imported from unstable and hostile regions of the world.

America consumes a quarter of the world's oil supply while holding a mere 3 percent of global oil reserves. It is therefore forced to import over 60 percent of its oil, and this dependency is growing. Since most of the world's oil is controlled by countries that are unstable or at odds with the United States this dependency is a matter of national secutity.

At the strategic level, it is dangerous to be buying billions of dollars worth of oil from nations that are sponsors of or allied with radical Islamists who foment hatred against the United States. The petrodollars we provide such nations contribute materially to the terrorist threats we face. In time of war, it is imperative that our

national expenditures on energy be redirected away from those who use them against us.

Even if the underwriting of terror were not such a concern, our present dependency creates unacceptable vulnerabilities. In Iraq and Saudi Arabia, America's enemies have demonstrated that they can advance their strategic objective of inflicting damage on the United States, its interests and economy simply by attacking critical overseas oil infrastructures and personnel. These targets are readily found not only in the Mideast but in other regions to which Islamists have ready access (e.g., the Caspian Basin and Africa). To date, such attacks have been relatively minor and their damage easily repaired. Over time, they are sure to become more sophisticated and their destructive effects will be far more difficult, costly and time consuming to undo.

Another strategic factor is China's burgeoning demand for oil. Last year, China's oil imports were up 30 percent from the previous year, making it the world's No. 2 petroleum user after the United States. The bipartisan, congressionally mandated United States-China Economic and Security Review Commission reported that: "China's large and rapidly growing demand for oil is putting pressure on global oil supplies. This pressure is likely to increase in the future, with serious implications for U.S. oil prices and supplies."

Oil dependence has considerable economic implications. Shrinking supply and rising demand translate into higher costs. Both American consumers and the U.S. economy are already suffering from the cumulative effect of recent increases in gas prices. Even now, fully one-quarter of the U.S. trade deficit is associated with oil imports. By some estimates, we lose 27,000 jobs for every billion dollars of additional oil imports. Serious domestic and global economic dislocation would almost certainly attend still higher costs for imported petroleum and/or disruption of supply.

Finally, environmental considerations argue for action to reduce imports of foreign oil. While experts and policymakers disagree about the contribution the burning of fossil fuels is making to the planet's temperatures, it is certainly desirable to find ways to obtain energy while minimizing the production of greenhouse gases and other pollutants.

The combined effects of this "perfect storm" require concerted action, at last, aimed at reducing the Nation's reliance on imported oil from hostile or unstable sources and the world's dependence on oil at large. Fortunately, with appropriate vision and leadership, we can make major strides in this direction by exploiting currently available technologies and infrastructures to greatly diminish oil consumption in the transportation sector, which accounts for two-thirds of our oil consumption.

The attached "Blueprint for Energy Security: 'Set America Free'" spells out practical ways in which real progress on "fuel choice" can be made over the next 4 years and beyond. To be sure, full market transformation will take a longer time. In the case of the transportation sector, it may require 15–20 years. That is why it is imperative to begin the process without delay.

We call upon America's leaders to pledge to adopt this Blueprint, and embark, along with our democratic allies, on a multilateral initiative to encourage reduced dependence on petroleum. In so doing, they can reasonably promise to: Deny adversaries the wherewithal they use to harm us; protect our quality of life and economy against the effects of cuts in foreign energy supplies and rising costs; and reduce by as much as 50 percent emissions of undesirable pollutants. In light of the "perfect storm" now at hand, we simply can afford to do no less.

Signatories:

Gary L. Bauer, President, American Values
Milton Copulos, President, National Defense Council Foundation
Cong. Eliot Engel, Cochair, Oil and National Security Caucus
Frank Gaffney, President, Center for Security Policy
Bracken Hendricks, Executive Director, Apollo Alliance
Jack Hidary, Coalition for Smart Transportation
Bill Holmberg, American Council on Renewable Energy
Anne Korin, Co-Director, Institute for the Analysis of Global Security (IAGS)
Deron Lovaas, Natural Resources Defense Council (NRDC)
Gal Luft, Co-Director, Institute for the Analysis of Global Security (IAGS)
Cliff May, President, Foundation for the Defense of Democracies
Robert C. McFarlane, Former National Security Advisor
Daniel Pipes, Director, Middle East Forum
William K. Shireman, President and CEO, The Future 500
Professor Richard Smalley, Nobel Laureate Chemistry
James M. Strock, former California Secretary for Environmental Protection

Admiral James D. Watkins, former Secretary of Energy
R. James Woolsey, Co-Chairman, Committee on the Present Danger
Meyrav Wurmser, Hudson Institute

"SET AMERICA FREE"—A BLUEPRINT FOR U.S. ENERGY SECURITY

INTRODUCTION

Historically, the United States has pursued a three-pronged strategy for minimizing the vulnerabilities associated with its dependency on oil from unstable and/or hostile nations: Diversifying sources of oil, managing inventory in a strategic petroleum reserve, and increasing the efficiency of the transportation sector's energy consumption. In recent years, the focus has been principally on finding new and larger sources of petroleum globally.

Rapidly growing worldwide demand for oil, however, has had the effect of largely neutralizing this initiative, depleting existing reserves faster than new, economically exploitable deposits are being brought on line. Under these circumstances, diversification among such sources is but a stop-gap solution that can, at best, have a temporary effect on oil supply and, hence, on national security. Conservation can help, but with oil consumption expected to grow by 60 percent over the next 25 years, conservation alone will not be a sufficient solution.

THE "SET AMERICA FREE" PROJECT

Long-term security and economic prosperity requires the creation of a fourth pillar—technological transformation of the transportation sector through what might be called "fuel choice." By leading a multinational effort rooted in the following principles, the United States can immediately begin to introduce a global economy based on next-generation fuels and vehicles that can utilize them:

- Fuel diversification: Today, consumers can choose among various octanes of gasoline, which accounts for 45 percent of U.S. oil consumption, or diesel, which accounts for almost another fifth. To these choices can and should promptly be added other fuels that are domestically produced, where possible from waste products, and that are clean and affordable.
- Real world solutions: We have no time to wait for commercialization of immature technologies. The United States should implement technologies that exist today and are ready for widespread use.
- Using existing infrastructure: The focus should be on utilizing competitive technologies that do not require prohibitive or, if possible, even significant investment in changing our transportation sector's infrastructure. Instead, "fuel choice" should permit the maximum possible use of the existing refueling and automotive infrastructure.
- Domestic resource utilization: The United States is no longer rich in oil or natural gas. It has, however, a wealth of other energy sources from which transportation fuel can be safely, affordably, and cleanly generated. Among them: Hundreds of years worth of coal reserves, 25 percent of the world's total (especially promising with Integrated Gasification and Combined Cycle technologies); billions of tons a year of biomass, and further billions of tons of agricultural and municipal waste. Vehicles that meet consumer needs (e.g., "plug-in" hybrids), can also tap America's electrical grid to supply energy for transportation, making more efficient use of such clean sources of electricity as solar, wind, geothermal, hydroelectric, and nuclear power.
- Environmentally sensible choices: The technologies adopted should improve public safety and respond to the public's environmental and health concerns.

KEY ELEMENTS OF THE "SET AMERICA FREE" PROJECT

Vehicles

- Hybrid electric vehicles: There are already thousands of vehicles on America's roads that combine hybrid engines powered in an integrated fashion by liquid fuel-powered motors and battery-powered ones. Such vehicles increase gas-consumption efficiency by 30–40 percent.
- Ultralight materials: At least two-thirds of fuel use by a typical consumer vehicle is caused by its weight. Thanks to advances in both metals and plastics, ultralight vehicles can be affordably manufactured with today's technologies and can roughly halve fuel consumption without compromising safety, performance, or cost effectiveness.

- "Plug-in" hybrid electric vehicles: Plug-in hybrid electric vehicles are also powered by a combination of electricity and liquid fuel. Unlike standard hybrids, however, plug-ins draw charge not only from the engine and captured braking energy, but also directly from the electrical grid by being plugged into standard electric outlets when not in use. Plug-in hybrids have liquid fuel tanks and internal combustion engines, so they do not face the range limitation posed by electric-only cars. Since 50 percent of cars on the road in the United States are driven 20 miles a day or less, a plug-in with a 20-mile range battery would reduce fuel consumption by, on average, 85 percent. Plug-in hybrid electric vehicles can reach fuel economy levels of 100 miles per gallon of gasoline consumed.
- Flexible-fuel vehicles (FFVs): FFVs are designed to burn on alcohol, gasoline, or any mixture of the two. About 4 million FFV's have been manufactured since 1996. The only difference between a conventional car and a flexible-fuel vehicle is that the latter is equipped with a different control chip and some different fittings in the fuel line to accommodate the characteristics of alcohol. The marginal additional cost associated with such FFV-associated changes is currently under $100 per vehicle. That cost would be reduced further as volume of FFVs increases, particularly if flexible-fuel designs were to become the industry standard.
- Flexible-fuel/plug-in hybrid electric vehicles: If the two technologies are combined, such vehicles can be powered by blends of alcohol fuels, gasoline, and electricity. If a plug-in vehicle is also a FFV fueled with 80 percent alcohol and 20 percent gasoline, fuel economy could reach 500 miles per gallon of gasoline.

If by 2025, all cars on the road are hybrids and half are plug-in hybrid vehicles, U.S. oil imports would drop by 8 million barrels per day (mbd). Today, the United States imports 10 mbd and it is projected to import almost 20 mbd by 2025. If all of these cars were also flexible-fuel vehicles, U.S. oil imports would drop by as much as 12 mbd.

Fuels

- Fuel additives: Fuel additives can enhance combustion efficiency by up to 25 percent. They can be blended into gasoline, diesel, and bunker fuel.
- Electricity as a fuel: Less than 2 percent of U.S. electricity is generated from oil, so using electricity as a transportation fuel would greatly reduce dependence on imported petroleum. Plug-in hybrid vehicles would be charged at night in home garages—a time-interval during which electric utilities have significant excess capacity. The Electric Power Research Institute estimates that up to 30 percent of market penetration for plug-in hybrid electric vehicles with 20-mile electric range can be achieved without a need to install additional electricity-generating capacity.
- Alcohol fuels: ethanol, methanol, and other blends:

  Ethanol (also known as grain alcohol) is currently produced in the United States from corn. The industry currently has a capacity of 3.3 billion gallons a year and has increased on the average of 25 percent per year over the past 3 years. Upping production would be achieved by continuing to advance the corn-based ethanol industry and by commercializing the production of ethanol from biomass waste and dedicated energy crops. P-Series fuel (approved by the Department of Energy in 1999) is a more energy-efficient blend of ethanol, natural gas liquids and ether made from biomass waste.

  Methanol (also known as wood alcohol) is today, for the most part, produced from natural gas. Expanding domestic production can be achieved by producing methanol from coal, a resource with which the United States is abundantly endowed. The commercial feasibility of coal-to-methanol technology was demonstrated as part of the DOE's "clean coal" technology effort. Currently, methanol is being cleanly produced from coal for under 50 cents a gallon.

  It only costs about $60,000 to add a fuel pump that serves one of the above fuels to an existing refueling station.
- Nonoil based diesel: Biodiesel is commercially produced from soybean and other vegetable oils. Diesel can also be made from waste products such as tires and animal byproducts, and is currently commercially produced from turkey offal. Diesel is also commercially produced from coal.

Policy Recommendations

- Provide incentives to auto manufacturers to produce and consumers to purchase, hybrid vehicles, plug-in hybrid electric vehicles and FFVs across all vehicle models.
- Provide incentives for auto manufacturers to increase fuel efficiency of existing, non-FFV auto models.

- Conduct extensive testing of next-generation fuels across the vehicle spectrum to meet auto warranty and EPA emission standards.
- Mandate substantial incorporation of plug-ins and FFVs into federal, state, municipal, and covered fleets.
- Provide investment tax incentives for corporate fleets and taxi fleets to switch to plug-ins, hybrids, and FFVs.
- Encourage gasoline distributors to blend combustion enhancers into the fuel.
- Provide incentives for existing fueling stations to install pumps that serve all liquid fuels that can be used in the existing transportation infrastructure, and mandate that all new gas stations be so equipped.
- Provide incentives to enable new players, such as utilities, to enter the transportation fuel market, and for the development of environmentally sound exploitation of nontraditional petroleum deposits from stable areas (such as Canadian tar sands).
- Provide incentives for the construction of plants that generate liquid transportation fuels from domestic energy resources, particularly from waste, that can be used in the existing infrastructure.
- Allocate funds for commercial scale demonstration plants that produce next-generation transportation fuels, particularly from waste products.
- Implement federal, state, and, local policies to encourage mass transit and reduce vehicle-miles traveled.
- Work with other oil-consuming countries toward distribution of the above-mentioned technologies and overall reduction of reliance on petroleum, particularly from hostile and potentially unstable regions of the world.

A NEW NATIONAL PROJECT

In 1942, President Roosevelt launched the Manhattan Project to build an atomic weapon to be ready by 1945 because of threats to America and to explore the future of nuclear fission. The cost in today's prices was $20 billion. The outcome was an end to the war with Japan, and the beginning of a wide new array of nuclear-based technologies in energy, medical treatment, and other fields.

In 1962, President Kennedy launched the Man to the Moon Project to be achieved by 1969 because of mounting threats to U.S. and international security posed by Soviet space-dominance and to explore outer space. The cost of the Apollo program in today's prices would be well over $100 billion. The outcome was an extraordinary strategic and technological success for the United States. It engendered a wide array of spinoffs that improved virtually every aspect of modern life, including but not limited to transportation, communications, health care, medical treatment, food production, and other fields.

The security of the United States, and the world, is no less threatened by oil supply disruptions, price instabilities and shortages. It is imperative that America provide needed leadership by immediately beginning to dramatically reduce its dependence on imported oil. This can be done by embracing the concepts outlined above with a focus on fuel choice, combined with concerted efforts at improving energy efficiency and the increased availability of energy from renewable sources.

The estimated cost of the "Set America Free" plan over the next 4 years is $12 billion. This would be applied in the following way: $2 billion for automotive manufacturers to cover one-half the costs of building FFV capability into their new production cars (i.e., roughly 40 million cars at $50 per unit); $1 billion to pay for at least one out of every four existing gas stations to add at least one pump to supply alcohol fuels (an estimated incentive of $20,000 per pump, new pumps costing approximately $60,000 per unit); $2 billion in consumer tax incentives to procure hybrid cars; $2 billion for automotive manufacturers to commercialize plug-in hybrid electric vehicles; $3 billion to construct commercial-scale demonstration plants to produce nonpetroleum based liquid fuels (utilizing public-private cost-sharing partnerships to build roughly 25 plants in order to demonstrate the feasibility of various approaches to perform efficiently at full-scale production); and $2 billion to continue work on commercializing fuel cell technology.

Since no major, new scientific advances are necessary to launch this program, such funds can be applied toward increasing the efficiencies of the involved processes. The resulting return on investment—in terms of enhanced energy and national security, economic growth, quality of life and environmental protection—should more than pay for the seed money required.

Senator CHAFEE. Thank you, Dr. Luft.

Mr. Ebel.

STATEMENT OF ROBERT E. EBEL, CHAIRMAN, ENERGY PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES, WASHINGTON, DC

Mr. EBEL. Thank you, Mr. Chairman. I appreciate the opportunity to appear before you today to discuss the extremely timely, somewhat complex, and often misunderstood topic.

In your letter you identified three principal areas of interest. How has U.S. foreign policy been shaped by our need for affordable oil? What effect would greater energy efficiency and alternative energy sources have on U.S. foreign policy? And third, the interaction between the Departments of State and Energy with respect to the handling of such issues.

I am going to skip this third issue. I think it was adequately handled by the first panel and I will let my discussion concentrate on the first two issues.

First, energy and foreign policy. Following a characterization from Secretary Rumsfeld, let me begin the discussion of the energy and foreign policy issue by listing what I feel are some of the "known knowns" with respect to this topic.

This is recognized by a range of officials ranging from President Bush, to Alan Greenspan, to Prince Abdullah, to President Chavez—energy is a strategic commodity. It is the lifeblood of our economic well-being, and it provides us with the quality and mobility of life that we have come to enjoy and expect.

This is not a new phenomenon. But for the past 25 years or so, global surplus conditions and producing capacity, global refining capacity, and in this country, natural gas production and power generation, have produced a sense of complacency, and have masked the critical role that energy plays in our everyday life. It is only now, when we are faced with conditions that threaten its reliability, security, and affordability, that we begin to fully appreciate its importance.

Energy policy formulation in this and other countries over the past quarter century has been at best a tepid attempt at balancing conflicting or competing economic, environmental, and foreign policy objectives, rather than a serious attempt to secure sustainable supplies on a forward-looking basis. And I must say that that era may now be over.

Second, globally speaking, the largest hydrocarbon reserve holders, at least in terms of conventional fuels, and that includes both oil and gas, are found in the Middle East and also in Russia. And this raises several important implications.

Until we achieve the technological breakthrough that might make energy independence more than a political wish, we would do well to adopt policies and strategies that encourage interdependency and improve stability in various parts of the world.

And as we move to increase our independence on LNG from abroad as a means of satisfying our almost insatiable energy demand, consider the risks inherent in making our electric power grid as import-dependent as our transportation system.

In the past several decades U.S. energy security policy has been based on four pillars: Encouraging the development of a wide variety of energy supplies at home and abroad; promoting improved efficiency, conservation, and the development of alternative energy

sources; establishing the strategic petroleum reserve and the international sharing agreement provided by the IEA; and relying on Saudi Arabia to act responsibly as the swing producer to moderate price and supply. Now we have from time to time been moved to call upon our military to defend facilities, protect transit routes, and secure inhospitable areas.

These policy tools have worked reasonably well over the course of the past several decades. However, as the surplus conditions that I referred to earlier have eroded and global demand has accelerated, energy markets and infrastructure have been greatly strained. And the present hurricanes in the gulf have made that situation even more precarious.

Much has been written about the U.S. import reliance and how undue reliance on foreign oil imports from unstable parts of the world has undermined U.S. security. Canada is our number one supplier of crude oil and petroleum products. And three of our top suppliers, Canada, Mexico, and Venezuela, are in the Western Hemisphere, and comprise 48 percent of total U.S. petroleum imports.

Saudi Arabia currently supplies about 8 percent of total U.S. demand, although by any measure they remain the most prolific, reliable, and secure source of oil for global consumers.

I would be remiss if I did not point out that the energy calculus in play, with respect to security, foreign policy, and economic policy choices made in other parts of the world include such diverse players as Canada, Mexico, Venezuela, Russia, China, Iran, Iraq, Nigeria, Sudan, and the Caspian.

One final note before moving on, and that relates to our definition of instability and conditions that affect continuous supplies. For all the hoopla surrounding the various centers of political unrest, and there are many, total global energy output in 2004 and the loss of that global energy output was the result of Hurricane Ivan in the U.S. gulf which was the single largest source lost of global energy. I suspect when we look back on the year 2005 we will view the hurricanes in the Gulf of Mexico as bringing about the largest loss of global energy.

The IEA and EIA have both projected huge increases in oil revenue for the major producing and exporting countries. EIA estimates that the GCC as a group will realize in excess of $300 billion this year in oil export revenues. Over the course of the past 10 years, export revenues for all OPEC members have at least doubled, and in the case of Qatar, have tripled.

I cannot comment on how this revenue will be spent, but I would only suggest that given the enormous population, demographics, and social challenges faced by many of these countries, the question must be asked if this purchased wealth can be more of a civilizing or destabilizing factor.

Let me conclude with some comments and opportunities for improved efficiency and use of alternative energy products. It presents the one area on which I would hope that this panel would have the most consensus. As the energy market is global in scope, with producers and consumers engaging in inter-regional trade, increases by one nation, even the United States as the largest energy consumer, might not be enough to tilt the scale any time soon. In

fact, to the extent the United States opted for a more costly energy form, freeing up lesser expensive conventional supplies to competitor nations, we will find ourselves at a competitive disadvantage from an industrial point of view.

Alternatively, the prospect of ramping up global production to meet ever-increasing demand and pitting strategic consumers against one another, competing for available and secure supplies is equally unappealing.

While I am not a supporter of the current hype associated with the increasingly pervasive peak oil theory, I recognize that, as a world, we are consuming conventional energy resources at a rate far in excess of our ability to replenish. So we would welcome the addition of supplemental sources of supply and encourage the adoption of conservation and efficiency initiatives, and promote the deployment of promising technology for a wide variety of economic, environmental, health, trade, and security reasons.

That concludes my oral comments. And I ask that my written remarks be included in the record.

Senator CHAFEE. Without objection, they will be.

[The prepared statement of Robert Ebel follows:]

PREPARED STATEMENT OF ROBERT E. EBEL, CHAIRMAN, ENERGY PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES, WASHINGTON, DC

Mr. Chairman, members of the subcommittee, I appreciate the opportunity to appear before you today to discuss an extremely timely, somewhat complex, and often misunderstood topic, dealing with "U.S. Foreign Policy, Petroleum and the Middle East." In your invitation to testify, Mr. Chairman, you identified three principal areas of interest:

- How has U.S. foreign policy been shaped by our need for affordable oil?
- What effect would greater energy efficiency and alternative energy sources have on U.S. foreign policy?
- The interaction between the Departments of State and Energy with respect to the handling of such issues.

As the State and Energy Departments are most ably represented here today, I will focus my remarks on the first two topics and also provide some general impressions and thoughts that are most relevant to this discussion.

ENERGY AND FOREIGN POLICY

Borrowing a characterization from Secretary Rumsfeld, let me begin a discussion of the energy and foreign policy issue by listing what I feel are some of the "known knowns" with respect to this topic.

First, as recognized by a wide range of officials ranging from President Bush and Alan Greenspan to Prince Abdullah and President Chavez—energy is a strategic commodity. It is the lifeblood of our economic well-being, fuels the troops that protect our homeland, provides essential services in growing our crops, heating and lighting our homes, transporting goods to market, moving local, regional, national and international commerce, making information transfer via the Internet possible, and providing us with the quality of life and mobility that we have come to enjoy and expect.

This is not a new phenomenon. But for the past 25 years or so, global surplus conditions (relative to demand)—in the case of spare oil producing capacity, global refining capacity, and in this country, natural gas production and power generation—have produced complacency and masked the critical role which energy plays in our everyday lives. It is only now when we are faced with conditions that threaten its reliability, security, and affordability that we begin to more fully appreciate its importance.

As a consequence, energy policy formulation, in this and other countries over the last quarter century, has been, at best, a tepid attempt at balancing conflicting or competing economic, environmental, and foreign policy objectives—along with local political concerns—rather than a serious attempt to secure sustainable supplies on a forward-looking basis. That era may now be over.

Second, globally speaking, the largest hydrocarbon reserve holders, at least in terms of conventional fuels sources—and this is true for both oil and natural gas—are found in the Middle East, and also in Russia. This fact has several important implications:

1. Until we achieve the technological breakthrough that might make energy independence more than a political wish, we would do well to adopt policies and strategies that encourage interdependency and improve stability in various parts of the world; and

2. As we move to increase our dependence on LNG supplies from abroad as a means to satisfy our seemingly insatiable energy demand, consider the risks inherent in making our electric grid as import dependent as our transportation system.

For the past several decades, U.S. energy security policy, has been based on four pillars—encouraging the development of a wide variety of energy supplies at home and abroad; (periodically) promoting improved efficiency, conservation and the development of alternative energy sources; establishing the strategic petroleum reserve and the international sharing arrangement provided by the IEA (International Energy Agency); and relying on Saudi Arabia to act responsibly as the swing producer to moderate price and supply volatility. In addition, we have, at times, been moved to call on America's military to defend facilities, protect transit routes, and secure inhospitable areas.

In combination, these policy tools have worked reasonably well over the course of the past several decades. However, as the surplus conditions, I referred to earlier, have eroded and global demand has accelerated, energy markets and infrastructure have been greatly strained. The recent hurricanes in the gulf have made that situation even more precarious.

POLITICAL INSTABILITY IN CONTEXT

Much has been written about U.S. import reliance and how "undue" reliance on foreign oil imports from "unstable" parts of the world has undermined U.S. security. In point of fact, while it is frequently overlooked, Canada is the number one supplier of oil (crude and refined products) to America. And three of our top four suppliers (Canada, Mexico, and Venezuela) are in the Western Hemisphere—and comprise over 48 percent of total U.S. petroleum imports.

Saudi Arabia currently supplies about 8 percent of total U.S. demand, although by any measure they remain the most prolific, reliable, and secure source of oil for global consumers. With the exception of the targeted oil embargo of 1973, Saudi Arabia has been one of the very few highly reliable producer/exporters of the past 30 years. Their performance in providing the world with incremental supply in time of need (e.g., in the lead up to the 1991 gulf war, during the 2002 Venezuelan strike, more recently in advance of the 2003 gulf conflict and as prices spiked in the past 2 years) is unsurpassed.

While I recognize the focus of this hearing with respect to foreign policy choices in the Middle East, I would be remiss if I did not point out that the energy calculus is also in play with respect to security, foreign and economic policy choices made in other parts of the world and with global players as diverse as Canada, Mexico, Venezuela, Russia, China, Iran, Iraq, Nigeria, Sudan, and the Caspian.

One final note on this topic before moving on—and that relates to our definition of instability and conditions that affect continuous supplies. For all the hoopla surrounding the various centers of political unrest last year—and there were many—from concern about supply continuity in Russia in the wake of Yukos, the referendum in Venezuela, repeated sabotage in Iraq, strikes in Norway and Nigeria, the threat of unrest in Saudi Arabia—the single largest loss of global energy output in 2004 was the result of Hurricane Ivan in the U.S. Gulf of Mexico. And I suspect that, barring any calamitous disaster occurring over the next quarter, the largest loss of production for 2005 will again be the result of hurricanes in the Gulf of Mexico.

WEALTH TRANSFERS FROM OIL PRICE INCREASES

The IEA and EIA (U.S. Energy Information Agency) have both projected huge increases in oil export revenues for all of the major producing/exporting nations. As collectively significant reserve holders, producers, and exporters, this is particularly true for OPEC members and the GCC nations of the Middle East. Although it should be noted that Venezuela, Nigeria, Norway, Canada, and Russia have also benefited greatly from higher energy export prices. EIA estimates that the GCC countries, as a group, will realize in excess of $300 billion this year in oil export

revenues. Over the course of that past 10 years, export revenues for all OPEC members have at least doubled, and in the case of Qatar, have tripled.

While I cannot comment on how this revenue is used by the host governments, I would only offer that given the enormous population, demographic, and social challenges faced by many of those countries in the coming years, one might well ask if this increased wealth can be more of a stabilizing or destabilizing factor. In short, would their plight and situations be improved if they were poorer?

OPPORTUNITIES FOR IMPROVED EFFICIENCY AND USE OF ALTERNATIVE ENERGY FORMS

I have saved this last point until the end, because it represents the one area on which I would hope that this panel would have the most consensus. The question posed by the committee was whether, and to what effect, would improvements in energy efficiency and the development and use of alternative energy forms have on U.S. foreign policy.

As the energy market is global in scope, with producers and consumers engaging inter-regional trade, increases by one nation, even the United States as the largest energy consumer, might not be enough to tilt the scale anytime soon. In fact, to the extent, the United States opted for a more costly energy form, freeing up lesser expensive conventional supplies to competitor nations, we could well find ourselves at a competitive disadvantage from an industrial point of view.

Alternatively, however, the prospect of increasingly ramping up global production to meet ever-increasing demand and pitting strategic consumers against one another, competing for available and secure supplies is equally unappealing.

While not a supporter of the current hype associated with the increasingly pervasive "peak oil" theory, I recognize that as a world we are consuming conventional energy resources at a rate far in excess of replenishment. Therefore, we should welcome the addition of supplemental sources of supply, encourage the adoption of conservation and efficiency initiatives and promote the deployment of promising technologies for a wide variety of economic, environmental, health, trade, and security reasons.

The Stone Age did not end because we ran out of rocks. The oil age will likely be with us for decades to come. But we owe it to ourselves, our children, and our children's children, to do better.

Senator CHAFEE. Mr. Collina, welcome.

STATEMENT OF TOM Z. COLLINA, EXECUTIVE DIRECTOR, 20/20 VISION, SILVER SPRING, MD

Mr. COLLINA. Mr. Chairman, thank you very much. Mr. Chairman, thank you for inviting me here today. It is an honor to appear before you.

My name is Tom Collina. I am executive director at 20/20 Vision, which is a national nonpartisan organization promoting increased citizen participation on global security and environmental issues. We were founded in 1986 and our membership of 30,000 covers all 50 States.

We recently launched a new campaign called, itookthepledge.org, to raise awareness about ways to reduce U.S. oil dependence. I will summarize my statement now and request my full statement be put in the record.

Senator CHAFEE. It will be.

Mr. COLLINA. My message today is simple. America's dependence on oil is fueling much more than our cars. It is fueling conflict in the Persian Gulf and severe storms in the Gulf of Mexico. It is fueling terrorism and sapping our economy.

By reducing our dependence on oil, we can lower gas prices, reduce the chance of further conflicts over oil, reduce our exposure to terrorism, help tame severe storms like Hurricane Katrina, and create jobs.

We have the technology to cut our oil use in half by 2025 while saving Americans money. We have to start now. The best solutions

will take years to implement. The sooner we start, the easier this will be.

What is most striking about the issue of American oil dependence is that virtually everybody agrees that it is bad for America. Nevertheless, our dependence continues to grow. This is due in part to the fact that there is little agreement on the best solutions, and that many solutions until now have proven politically difficult to implement. Therefore, I will spend the second half of my time on realistic solutions.

But first, some context. All solutions to our thirst for oil will require some change. We must understand that the cost of doing nothing is very high. If we do not seize this historic opportunity to reduce our dependence on oil, we will bear the following five serious consequences. And some of them I will summarize very briefly.

First, more conflicts in the Middle East. As has been discussed, America imports almost 60 percent of our oil today, and at this rate we will import 70 percent by 2025. Where will that oil come from? Two-thirds of the world's oil is in the Middle East, primarily in Saudi Arabia, Iran, and Iraq. The United States has less than 3 percent of global oil.

The Department of Energy predicts that North American oil imports from the gulf will double by 2025. Other oil suppliers, such as Venezuela, Russia, and West Africa, are also politically unstable and hold no significant long-term oil reserves compared to those in the Middle East.

Bottom line, our economy and security are increasingly dependent on one of the most unstable regions on earth. Unless we change our ways, we will find ourselves even more at the mercy of Middle East oil, and thus more likely to get involved in future conflicts.

Simply put, the greater our dependence on oil, the greater the pressure to protect and control that oil. The growing American dependence on imported oil is the primary driver of U.S. foreign and military policy today, particularly in the Middle East. This motivates an aggressive military policy now on display in Iraq. To help avoid similar wars in the future and to encourage a more cooperative, responsible, and multilateral foreign policy, the United States must significantly reduce its oil use.

Before the war started, Tony Cordesman, of the Center for Strategic and International Studies, said, "Regardless of whether we say so publically, we will go to war, because Saddam sits at the center of a region with more than 60 percent of the world's oil reserves." Unfortunately, he was right.

In fact, the use of military power to protect the flow of oil has been a central tenet of U.S. foreign policy since 1945. As has been mentioned, it was that year that President Roosevelt promised King Abdul Aziz of Saudi Arabia that the United States would protect the kingdom in return for special access to Saudi oil, a promise that governs United States foreign policy today.

This policy was formalized by President Carter in 1980 when he announced that the secure flow of oil from the Persian Gulf was "In the vital interest of the United States of America." This document was expanded by President Reagan in 1981, and was used by the first President Bush to justify the first gulf war, and provided

a key, if unspoken, rationale for the second President Bush's invasion of Iraq in 2003.

America has tried to address its oil vulnerability by using our military to protect supply routes and prop up or install friendly regimes. But as Iraq shows, the price is astronomical, $200 billion, and counting.

Moreover, it does not work. Iraq is now producing less oil than it did before the invasion. While the reasons behind the Bush administration's decision to invade Iraq may be complex, it is hard to imagine that we would be there today if Iraq exported coffee instead of oil.

It is time for a new approach. Americans are no longer willing to support United States misadventures in the Persian Gulf. Recent polls show that almost two-thirds of Americans think the Iraq war was not worth the price in terms of blood and treasure. LTG William Odom, Director of the National Security Agency, during President Reagan's second term, said recently, "The invasion of Iraq will turn out to be the greatest strategic disaster in U.S. history."

The Nation is understandably split about what to do now in Iraq and about why we are there. Yet, there appears to be widespread agreement that America should not make the same mistake again. And we could take a giant step toward that goal by reducing our dependence on oil.

Second, more terrorist attacks on Americans. Again, simply said, the more dependent we are on foreign oil, the more troops we will deploy abroad to protect that oil. This creates resentment and invites terrorist attacks on our troops and our oil supply routes. United States troop presence in Saudi Arabia during the first gulf war was a major contributor to the rise of Islamic terrorist groups like al-Qaeda. And United States troops in Iraq now are a major justification for the insurgency there. We must break our oil habit so we can reduce our military footprint abroad.

Third, collision course with China. China currently imports half its oil, and like the United States, China will become increasingly dependent on oil from the Middle East. As a result, access to Middle East oil over time will become a key issue in relations between the two nations.

The more United States actions in the Middle East are perceived as an effort to dominate oil resources, the more China will consider the United States a threat to its interests, and vice versa. In the context of stagnating supply, this kind of demand competition is very destabilizing, and defusing a potential United States-Chinese rivalry over global oil is a key driver for reducing U.S. oil dependence.

Fourth, and this has not been mentioned yet, continued global warming and more dangerous storms. Recent studies show that global warming is increasing the intensity of storms like Hurricane Katrina. An MIT study has shown for the first time that major storms in both the Atlantic and Pacific Oceans, since the 1970s, have increased in duration and intensity by 50 percent. This increase in storm intensity is closely related to increases in average water temperature, which is linked to increases in global atmos-

pheric temperature. Simply put, warmer air meets warmer water, and storms that are more severe.

This is a domestic as well as foreign policy problem. Hurricanes Katrina and Rita displaced tens of thousands and will cost the Federal Government $200 billion or more for reconstruction. Refugee migrations and costs on this scale could easily overwhelm smaller nations and lead to international conflict.

Last, a weaker economy. And here I will simply quote Federal Reserve Chairman, Alan Greenspan, who said this week that global economic growth will be hurt by the rising energy prices caused by the hurricanes: "The recent surge in energy prices will undoubtedly be a drag from now on." Energy prices soared 12 percent in September, the fastest rate on record, contributing to the highest monthly consumer inflation rate in 25 years.

As our dependence on foreign oil grows, so will our vulnerability to supply shocks. According to Robert M. Gates, former CIA director: "The real lesson here is that it only requires a relatively small amount of oil to be taken out of the system to have huge economic and security implications."

Mr. Chairman, rising gas prices are hurting the economy, global warming is fueling extreme storms, and our soldiers are dying to protect our access to oil in the Middle East. Reducing our oil use will save jobs, save the environment, save lives, and free us from the shackles of Middle East oil.

So how do we do it? First, we need to reject the Carter Doctrine. America can no longer afford to use military force as a substitute for a serious energy policy, which is what we have been doing up until now. We must no longer agree to protect any foreign state or regime as a condition to access to oil.

Clearly, any rejection of the Carter Doctrine must be matched by a comprehensive plan to kick the foreign oil habit. Our goal should be to reduce our use of foreign oil enough such that our national and economic security is no longer tied to the survival of the Saudi oil family or any other nondemocratic oil producer. Only at that point can our foreign policy be truly independent of our need for oil.

Number two, Congress should establish a national goal of saving 2.5 million barrels of oil per day over the next decade, and 10 million barrels of oil per day by 2025. Without national agreement on a goal, we will not get there. We must commit to investing the money we would otherwise send overseas to modernizing our factories and farms here at home.

Number three, raise gas mileage in new passenger vehicles through tax credits and standards. Here I will just quickly quote a recent Washington Post story: "U.S. carmakers have watched consumers move away from gas-guzzling sport utility vehicles in favor of more efficient models, a trend that has become more pronounced as gas prices have soared."

General Motors is a good example. GM lost $1.6 billion in the third quarter of this year and has lost $3 billion so far in 2005. GM, maker of the Hummer, is responding by shutting factories, slashing 25,000 manufacturing jobs, freezing bonuses, and cutting health benefits.

GM is now developing more fuel-efficient cars, including hybrids. GM CEO, Richard Wagner, recently told employees, in fact, this week, that the company has "too much reliance" on trucks and SUVs.

Number four, invest in smart growth and better transportation. And number five, encourage growth in biofuels industry. Those have been touched on. I will leave those and try to wrap up.

Mr. Chairman, imagine America with new automobile production plants producing advanced vehicles, creating jobs for American workers. Imagine American farmers growing ethanol fuel to run our cars, and American citizens living in communities designed around modern transit systems.

Imagine Americans driving cars that get 500 miles per gallon of gasoline. Americans love their cars, and at 500 miles per gallon, we can keep them.

Now imagine America free from the burden of protecting our stake in Middle East oil, allowing us to reduce our military footprint in the region and our exposure to terrorism. We could then base our foreign policy on ideals that make this a great nation, like global peace and security, freedom, and democracy.

Fifty years ago President Roosevelt could not have foreseen the dangerous situation in which we now find ourselves as a result of his promise to a Saudi King. But today the danger is all too clear. Fortunately, we can now foresee a way out of the oil trap that will revitalize our economy and liberate our foreign policy.

Thank you very much.

[The prepared statement of Tom Collina follows:]

PREPARED STATEMENT OF TOM Z. COLLINA, EXECUTIVE DIRECTOR, 20/20 VISION, SILVER SPRING, MD

"I've often said one of the worst problems we have is that we're dependent on foreign sources of crude oil, and we are . . . It is clear that when you're dependent upon . . . hydrocarbons to fuel your economy and that supply gets disrupted, we need alternative sources of energy."—President George Bush, September 26, 2005

"Our energy plan for a stronger America will invest in new technologies and alternative fuels and the cars of the future—so that no young American in uniform will ever be held hostage to our dependence on oil from the Middle East."—Senator John Kerry, July 29, 2004

Mr. Chairman, Senator Boxer and members of the committee, thank you for inviting me here today. It is an honor to appear before you.

My name is Tom Collina and I am the executive director of 20/20 Vision. 20/20 Vision is a national, nonpartisan organization promoting increased citizen participation on global security and environmental issues. Founded in 1986, our membership of 30,000 covers all 50 States. We recently launched a new campaign—called itookthepledge.org—to raise awareness about ways to reduce U.S. oil dependence.

My message today is simple:

1. By reducing our dependence on oil, we can lower gas prices, reduce the chance of future conflicts over oil in the Middle East, reduce our exposure to terrorism, help tame severe storms like Hurricane Katrina, and create jobs.
2. We have the technology to cut our oil use in half by 2025 while saving Americans money.
3. We have to start now. The best solutions will take years to implement. The sooner we start the easier this will be.

Hurricanes Katrina and Rita sent gas prices soaring and opened our eyes, to America's dangerous dependence on oil. Not since the oil crisis in the 1970s has there been so much public attention on this issue. And yet today we have a problem of a very different, more dangerous nature: 30 years ago, OPEC chose to limit the oil supply. Today, oil producers are pumping as fast as they can, but cannot keep

pace with demand. Even Saudi Arabia, atop the world's biggest oil reserves, is pumping so fast that some experts fear it is jeopardizing the long-term viability of its fields.

What is most striking about the issue of American oil dependency is that virtually everyone agrees it is bad for America. It is hard to find anyone who will tell you that oil dependency is good for us. Nevertheless, our dependency continues to grow. This is due in part to the fact that there is little agreement on the best solutions, and that many solution—until now—have proven politically difficult to implement. Therefore I will spend the second half of my time on realistic solutions to U.S. oil dependency.

But first, some context. All solutions to our thirst for oil will require some change. There is no silver bullet, no simple answer. But we must understand that the cost of doing nothing is very high.

THE COSTS OF BUSINESS AS USUAL

If we do not seize this historic opportunity to reduce our dependence on oil, we will bear the following serious consequences:

1. More conflicts in the Middle East

America imports almost 60 percent of its oil today and, at this rate, we'll import 70 percent by 2025. Where will that oil come from? Two-thirds of the world's oil is in the Middle East, primarily in Saudi Arabia, Iran, and Iraq. The United States has less than 3 percent of global oil. The Department of Energy predicts that North American oil imports from the Persian Gulf will double from 2001 to 2025.[1] Other oil suppliers, such as Venezuela, Russia, and West Africa, are also politically unstable and hold no significant long-term oil reserves compared to those in the Middle East.

Bottom line: Our economy and security are increasingly dependent on one of the most unstable regions on earth. Unless we change our ways, we will find ourselves even more at the mercy of Middle East oil and thus more likely to get involved in future conflicts.

The greater our dependence on oil, the greater the pressure to protect and control that oil. The growing American dependence on imported oil is the primary driver of U.S. foreign and military policy today, particularly in the Middle East, and motivates an aggressive military policy now on display in Iraq. To help avoid similar wars in the future and to encourage a more cooperative, responsible, and multilateral foreign policy the United States must significantly reduce its oil use.

Before the Iraq war started, Anthony H. Cordesman of the Center for Strategic and International Studies said: "Regardless of whether we say so publicly, we will go to war, because Saddam sits at the center of a region with more than 60 percent of all the world's oil reserves." Unfortunately, he was right.

In fact, the use of military power to protect the flow of oil has been a central tenet of U.S. foreign policy since 1945. That was the year that President Franklin D. Roosevelt promised King Abdul Aziz of Saudi Arabia that the United States would protect the kingdom in return for special access to Saudi oil—a promise that governs U.S. foreign policy today.

This policy was formalized by President Jimmy Carter in 1980 when he announced that the secure flow of oil from the Persian Gulf was in "the vital interests of the United States of America" and that America would use "any means necessary, including military force" to protect those interests from outside forces. This doctrine was expanded by President Ronald Reagan in 1981 to cover internal threats, and was used by the first President Bush to justify the gulf war of 1990–91; and provided a key, if unspoken rationale, for the second President Bush's invasion of Iraq in 2003.[2]

The Carter/Reagan Doctrine also led to the buildup of U.S. forces in the Persian Gulf on a permanent basis and to the establishment of the Rapid Deployment Force and the U.S. Central Command (CENTCOM). The United States now spends over $50 billion per year (in peacetime) to maintain our readiness to intervene in the gulf.[3]

America has tried to address its oil vulnerability by using our military to protect supply routes and to prop up or install friendly regimes. But as Iraq shows, the price is astronomical—$200 billion and counting. Moreover, it doesn't work—Iraq is now producing less oil than it did before the invasion. While the reasons behind the Bush administration's decision to invade Iraq may be complex, can anyone doubt that we would not be there today if Iraq exported coffee instead of oil?

It is time for a new approach. Americans are no longer willing to support U.S. misadventures in the Persian Gulf. Recent polls show that almost two-thirds of Americans think the Iraq war was not worth the price in terms of blood and treas-

ure. LTG William Odom, director of the National Security Agency during President Reagan's second term, recently said: "The invasion of Iraq will turn out to be the greatest strategic disaster in U.S. history."

The nation is understandably split about what to do now in Iraq, but there appears to be widespread agreement that America should not make the same mistake again—and we can take a giant step toward that goal by reducing our dependence on oil.

2. More terrorist attacks on Americans

The more dependent we are on foreign oil, the more troops we will deploy abroad to protect that oil. This creates resentment and invites terrorist attacks on our troops—and on oil supply routes. The U.S. troop presence in Saudi Arabia during the first gulf war was a major contributor to the rise of Islamic terrorist groups like al-Qaeda, and U.S. troops in Iraq are now a main justification for the insurgency there. We must break our oil habit so we can reduce our military footprint abroad.

Moreover, much of the money we pay for our imported oil goes to countries or groups that support terrorism. It is no accident that 15 of the 19 September 11 hijackers came from Saudi Arabia, as does Osama bin Laden. It is time we stop funneling money to our own enemies.

According to a 2003 article in Foreign Affairs: "It is . . . increasingly clear that the riches from oil trickle down to those who would do harm to America and its friends. If this situation remains unchanged, the United States will find itself sending soldiers into battle again and again, adding the lives of American men and women in uniform to the already high cost of oil."[4]

3. Collision course with China

With over 1 billion people, China is second only to the United States in oil consumption—and gaining fast. China has one of the fastest growing economies in the world and an energy demand that is projected to grow by 150 percent by 2020. China's oil demand is increasing seven times faster than America's.[5]

China currently imports half of its oil, and like the United States, China will become increasingly dependent on oil from the Middle East.

As a result, access to Middle East oil will over time become a key issue in relations between the two nations. The more U.S. actions in the Middle East are perceived as an effort to dominate oil resources there, the more China will consider the United States a threat to its interests, and vice versa. In the current context of stagnating supply, this kind of demand competition is very destabilizing. Defusing a potential United States-Chinese rivalry over global oil supplies is a key driver for reducing U.S. oil dependency.

While China's oil demand is growing rapidly, U.S. demand in absolute terms is much larger, accounting for a quarter of the world's oil consumption. To its credit, China is taking steps to protect itself from the increasingly tight, volatile global oil market by controlling its oil demand. Last year China set fuel economy standards that are higher than those here in the United States.[6]

4. Continued global warming and more dangerous storms

Recent studies show that global warming is increasing the intensity of storms like Hurricane Katrina.[7] An MIT study has shown for the first time that major storms in both the Atlantic and Pacific oceans since the 1970s have increased in duration and intensity by 50 percent. This increase in storm intensity is closely linked to increases in the average water temperature, which is linked to increases in global atmospheric temperature. Simply put, warmer air means warmer water and storms that are more severe.

Global warming is caused by the buildup of carbon dioxide in the atmosphere, and burning oil produces carbon dioxide. So, cutting our oil use can help reduce the intensity of severe storms like Hurricane Katrina—both here and abroad. According to MIT climatologist Kerry Emanuel: "The damage and casualties produced by more intense storms could increase considerably in the future."[8]

This is a domestic as well as foreign policy problem. Hurricanes Katrina and Rita killed thousands, displaced tens of thousands, and will cost the Federal Government $200 billion or more for reconstruction. Refugee migrations and costs on this scale could easily overwhelm smaller nations and lead to international conflict.

5. Weaker economy

High oil prices get passed on to the consumer through higher costs at the pump, more expensive goods and services, a weaker job market, and lower stock prices. At much lower oil prices, the total economic cost of our oil dependence had been estimated to be about $300 billion per year. At today's prices of $60 per barrel, the economic costs of exporting dollars for oil is much greater. As the price of oil continues

to climb due to supply disruptions, this cost to the American economy and jobs will rise.[9]

Federal Reserve Chairman, Alan Greenspan, said this week that global economic growth will be hurt by the rise in energy prices caused by the hurricanes. ". . . The recent surge in energy prices will undoubtedly be a drag from now on," he said in his first public comments about the storms' economic effects. Energy prices soared 12 percent in September, the fastest rate on record, contributing to the highest monthly consumer inflation rate in 25 years.[10]

The current gasoline crisis was set off by the closure of refineries on the gulf coast, revealing our longstanding vulnerability to supply disruptions. In this case, the disruption was domestic. But our oil supply chain is global, and disruption can happen anywhere from when the crude oil is pumped from the ground to when it is pumped as refined gas into your car.

A recent crisis simulation run by the National Commission on Energy Policy and Securing America's Future Energy found that if, for example, there was ethnic unrest in oil-rich Nigeria and terrorist attacks in Alaska and Saudi Arabia; the reduced oil supply would drive gas prices here to $5.74 a gallon and the economy into recession.[11] And now we can add major hurricanes to the list of possibilities.

The point is, as our dependence on foreign oil grows, so does our vulnerability to supply shocks. According to Robert M. Gates, former CIA director, "The real lesson here [is that] it only requires a relatively small amount of oil to be taken out of the system to have huge economic and security implications." [12]

A PROGRAM OF ACTION

Rising gas prices are hurting the economy, global warming is fueling extreme storms, and our soldiers are dying to protect our access to oil in the Middle East. Reducing our oil use will save jobs, save the environment, save lives and free us from the shackles of Middle East oil. So, how do we do it?

First, here is what we should not do: Some would like to drill their way out of this mess, squeezing every last drop of oil from the Alaskan National Wildlife Refuge (ANWR) and other untapped American sources. But even if we did, with only 3 percent of global reserves we would soon be back begging at the Saudi's spigot. It would be wiser to hold onto our untapped domestic reserves rather than exhaust them now and be completely dependent on the Middle East later. Nor is nuclear power the answer. Nuclear plants produce electricity—but electricity today accounts for only 3 percent of U.S. oil demand.

Instead, we must take realistic, effective steps toward reducing our thirst for oil.

1. Reject the Carter/Reagan Doctrine

America can no longer afford to use military force as a substitute for a serious energy policy. We must no longer agree to protect any foreign state or regime as a condition for access to oil. According to Hampshire College Professor Michael Flare, "Any attempt to reconstruct American foreign policy on a more rational and ethical basis must . . . begin with the repudiation of the use of force in procuring foreign oil and the adoption of a forward looking energy strategy based on increased conservation and the rapid development of alternative fuels." [13]

Rejecting the Carter Doctrine does not mean we would abandon alliances and security agreements with friendly, democratic states for defense against mutual threats. But it does mean we would no longer arm and protect undemocratic, repressive regimes for the sole purpose of making sure their oil continues to flow our way.

Clearly, any rejection of the Carter Doctrine must be matched with a comprehensive plan to kick the foreign oil habit. We endorse the recommendations of the March 2005 report by the Natural Resources Defense Council and the Institute for the Analysis of Global Security, outlined below.[14]

Our goal should be to reduce our use of foreign oil enough such that our national and economic security is no longer tied to the survival of the Saudi royal family or any other nondemocratic oil producer. Only at that point can our foreign policy be truly independent from our need for oil.

2. Congress should establish a national goal of saving 2.5 million barrels of oil per day over the next decade and 10 million barrels of oil per day by 2025

Without national agreement on a goal, we will not get there. We must commit to investing the money we would otherwise send oversees to modernize and harness the technology potential of our factories and farms here at home.

3. Raise gas mileage in new passenger vehicles through tax credits and standards

Passenger cars, minivans, SUVs, and light trucks account for almost 50 percent of U.S. oil demand. This is why we must boost efficient use of oil by increasing the

fuel economy performance of our vehicles. Consumers understand this and have responded to the recent price increases by buying more fuel-efficient cars, such as hybrids, and demanding a greater variety of gas-sipping choices. U.S. automakers are starting to respond by producing hybrids, but are far behind their Japanese competition, and putting American jobs at risk. A recent study by the University of Michigan found that thousands of American jobs may be lost unless U.S. automakers move faster to build hybrids.[15]

According to the Washington Post, "U.S. carmakers have watched consumers move away from gas-guzzling sports utility vehicles in favor of more efficient models—a trend that has become more pronounced as gas prices have soared." General Motors is a good example. GM lost $1.6 billion in the third quarter of this year and has lost $3 billion so far in 2005. GM—maker of the Hummer is responding by shutting factories, slashing 25,000 manufacturing jobs, freezing bonuses, and cutting health benefits. GM is now developing more fuel-efficient cars, including hybrids. GM CEO, G. Richard Wagoner, told employees this week that the company has "too much reliance" on trucks and SUVs.[16]

We must make our economy less vulnerable to high oil prices by reducing oil dependency. This is a national priority that merits public investment and commitment. Financial incentives to build more fuel-efficient vehicles would help save oil and increase U.S. automaker competitiveness. The States most vulnerable to factory closings and job loss—Michigan, Ohio, and Indiana—must lead efforts to retool the U.S. auto industry.[17]

Automakers and suppliers will need to retool their factories to produce advanced technology vehicles. Consumers will need to buy these more fuel efficient cars, which will cost more than conventional vehicles. Both groups would benefit from tax credits. We endorse the bipartisan proposal from the National Commission on Energy Policy (NCEP) to spend $3 billion over the next 5 to 10 years on consumer and manufacturer tax credits.[18] These tax credits will help reduce U.S. oil dependence and pay for themselves through increased tax revenue, including new jobs in the production of advanced vehicles.

To make sure that tax credits translate into oil savings, NCEP also recommends that federal fuel economy standards be raised, as they were in the 1970s and 1980s. The fuel economy standards enacted in 1975 were a key factor in the rise in gas mileage between 1978 and 1988.

Other helpful programs include requiring replacement tires to be as fuel efficient as the original tires on new cars, and requiring efficiency improvements and idling reductions for heavy-duty trucks.

4. Invest in smart growth and better public transportation

In addition to providing consumers with more fuel-efficient cars, we also need to give them more alternatives to driving and to design our communities so we can drive less. The potential oil savings from better land use, transit oriented development, telecommuting and improved public transportation are huge. Over 10 years, smart growth developments could save about 50 billion gallons of gasoline, over 1 billion barrels of oil, and 595 million metric tons of CO_2 emissions.[19]

5. Encourage growth of biofuels industry

Increasing auto fuel efficiency just is the first step to reducing our oil use. The next crucial step is to develop alternative fuels that do not use petroleum. These new fuels can be grown by American farmers. Cellulosic biomass—made from agricultural leftovers (leaves, stems, stalks), crops grown for energy use (such as switchgrass), and garbage—can be made into ethanol and methanol as fuel for our cars.

Today's cars can run on 10 percent ethanol fuel. But to really make a dent on oil demand, we need a new generation of cars—called flexible-fuel vehicles (FFVs)—that can run on fuel that is 15 percent gasoline and 85 percent ethanol. High ethanol fuels not only displace oil but also decrease harmful particulate air pollution.

Congress needs to require all new cars and trucks to be capable of running on biofuels by 2012. There is great potential for biofuels to replace oil in our cars and trucks. By 2050, biofuels coupled with efficiency and smart growth could reduce our oil demand by almost 8 million barrels of oil per day.[20]

If hybrids are made to use ethanol and can be plugged in at night, such vehicles can be powered by blends of ethanol, gasoline, and electricity and could achieve 500 miles per gallon of gasoline. According to Set America Free, if, by 2025, all cars on the road are plug-in, flexible-fuel hybrids, U.S. oil demand would drop by as much as 12 million barrels per day.[21]

A VISION FOR THE FUTURE

Imagine America with new automobile production plants producing advanced high-efficiency vehicles, creating jobs for American workers.

Imagine American farmers growing ethanol fuel to run our cars, and American citizens living in communities designed around modern transit systems.

Imagine Americans driving cars that get 500 miles per gallon of gasoline. Americans love their cars, and at 500 miles per gallon, they can keep them.

Now imagine America free from the burden of protecting our stake in Middle East oil, allowing us to reduce our military footprint in the region and our exposure to terrorism. We could then base our foreign policy on the ideals that make this a great nation, like global peace and security, freedom and democracy.

According to Amory Lovins, CEO of the Rocky Mountain Institute: "As our nation stops needing oil, think of the possibilities of being able to treat oil-rich countries the same as nations that don't own a drop. Imagine, too, our moral clarity if other countries no longer assume everything the United States does is about oil.[22]

Fifty years ago, President Roosevelt could not have foreseen the dangerous situation in which we now find ourselves as a result of his promise to a Saudi King. But today the danger is all too clear. Fortunately, we can now foresee a way out of the oil trap that will revitalize our economy and liberate our foreign policy.

Katrina and Rita have opened our eyes to the oil crisis. Let's not blink.

Thank you.

Endnotes:

[1] International Energy Outlook 2004, Energy Information Agency, Department of Energy.

[2] For more on this, see Michael T. Klare, "Blood and Oil: The Dangers and Consequences of America's Growing Dependency on Imported Petroleum," Metropolitan Books, 2004.

[3] "Winning the Oil Endgame Fact Sheet," Rocky Mountain Institute, September 20, 2004.

[4] Timothy Wirth, C. Boyden Gray, John Podesta, "The Future of Energy Policy," Foreign Affairs, July/August 2003.

[5] Gal Luft, Institute for the Analysis of Global Security, "Fueling the Dragon: China's Race Into the Oil Market," http://www.iags.org/china.htm.

[6] Keith Bradsher, "China Sets its First Fuel Economy Rules," the New York Times, September 23, 2004.

[7] Juliet Eilperin, "Severe Hurricanes Increasing, Study Finds," the Washington Post, October 3, 2005.

[8] "Study: Global Warming Making Hurricanes Stronger," Associated Press, July 31, 2005.

[9] National Defense Council Foundation, "The Hidden Cost of Imported Oil," September 2003.

[10] Nell Henderson, "Greenspan Assesses Storms' Impact," the Washington Post, October 18, 2005.

[11] Information on the simulation can be found at www.secureenergy.org.

[12] "Oil Shockwave, Simulation Report and Summary of Findings," National Commission on Energy Policy and Securing America's Energy Future, www.secureenergy.org.

[13] Michael Klare, "More Blood, Less Oil," September 20, 2005, TomDispatch.org.

[14] Natural Resources Defense Council and the Institute for the Analysis of Global Security, "Securing America: Solving Our Oil Dependence Through Innovation," March 2005.

[15] "Fuel-Saving Technologies and Facility Conversion: Costs, Benefits and Incentives," University of Michigan Transportation Research Institute, November 2004.

[16] ShoInn Freeman and Amy Joyce, "For GM, New Deal and Big Loss," the Washington Post, October 18, 2005.

[17] "In The Tank: How Oil Prices Threaten Auotmakers' Profits and Jobs," Natural Resources Defense Council and the University of Michigan Transportation Research Institute's Office for the Study of Automotive Transportation, July 2005.

[18] National Commission on Energy Policy, "Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges," December 2004.

[19] "Location Efficiency as the Missing Piece of The Energy Puzzle: How Smart Growth Can Unlock Trillion Dollar Consumer Cost Savings," Natural Resources Defense Council and the Sierra Club, 2004.

[20] "Growing Energy: How Biofuels Can Help End America's Oil Dependence," Natural Resources Defense Council, December 2004.

[21] "A Blueprint for U.S. Energy Security," Set America Free.

[22] "U.S. Can Eliminate Oil Use in a Few Decades," Rocky Mountain Institute Press Release, September 20, 2004.

Senator CHAFEE. Thank you, gentlemen. I suppose the key question is left over from the first panel. And that is just let the market work. Dr. Luft, that seems to be what they were advocating. When the market dictates higher oil, we will move to more fuel-efficient cars and let it work. How would you respond to that? And other energy conservation measures for those cars, or powerplants, whatever it might be? When the price goes up, we will change.

Dr. LUFT. And indeed, we will change. I am a great fan of the free market, Mr. Chairman. However, the energy market is not a free market. And unless we free the market, we cannot expect the free market principles to operate here.

As I indicated in my oral statement, when you tax fuel that comes from one country and you do not tax fuel that comes from another country, this is not a free market. There are multiple lobbies and interests who are manipulating the market, and government intervention is all over the place.

Now, we also need to remember that consumers are not exposed to the true cost of the fuel that they are using. We are paying at the gas station only a fraction of what it really costs our economy to bring in the oil. According to the National Defense Counsel Foundation, which is one of the most conservative think tanks in this city, they did a study on the true cost of gas. They calculated the national security costs, and the military spending related directly to foreign imports of oil, and they came up with a figure of way over $5 per gallon. That was a time when gasoline was selling for $1.50. So unless we reflect the true cost of gasoline to the consumers, the free market will not be able to work here.

The last comment I would say is that we need to be very careful. We, all the time, will have to tell ourselves that government is not supposed to pick winners. Well, this is very true. But this is exactly what the government is doing now.

If you look at the current energy bill, the one that was just passed, for example, there is an entire section dedicated to hydrogen fuel cell cars. And there is no similar title allocated to plug-in hybrid cars at a time that almost every person who understands something about science will tell you that plug-in hybrid cars are far more feasible than hydrogen fuel cell cars.

In essence, it does not make sense to take electricity from the grid, use it to split water in order to create electricity, in order to put in a fuel cell, in order to create electricity again to power the car, when you can take the same electricity and power the car directly from the grid. And yet, our government is spending billions of dollars on this program, and then we tell ourselves we do not like to pick winners.

Well, we are picking winners, and if we just let the market work here, it will pick the right winners. And I think that it is clear that there should be a government role here. I think that if it was up—if it was left up to Detroit, for example, we would still be driving cars without seat belts or air bags.

There was a government mandate to equip every new car in the United States with a seat belt and an air bag, despite the kicking and objections. And today it is a standard feature. I think that flexible-fuel capability, which is very cheap, should be a standard feature in every car sold in the United States.

Senator CHAFEE. For our audience and listeners that might be out there, could you explain exactly what a plug-in hybrid car is and mixed fuel, just briefly?

Dr. LUFT. A plug-in hybrid car is a car that has—it is better described as souped-up hybrid. It is a car that has a battery that gives you a very limited range of anywhere between 20 or 30 or 40 miles of driving on electricity, up to which the internal combustion

engine kicks in. That essentially means that the first chunk of your daily driving will always be on made-in-America electricity, made from nuclear or coal or wind or solar; whatever makes sense.

Since most Americans do not drive more than 20 miles per day, assuming that they plug in their car every night, they will be able to drive most of the time on electricity, but they will not face the range limitations associated with all-electric cars that we used to have in the 1980s, and actually failed.

Another thing that is interesting about plug-in hybrid cars is that they are—the only car that I am familiar with, they get cleaner and cleaner as they get older, because our electricity grid is getting cleaner. And that is something that we also need to remember, in addition to the fact that electricity costs about a third of the price of gasoline on a per-mile basis.

And I think that the most important thing is that it is a vehicle that allows us to bring into the energy and transportation sector, the utility companies. It allows them to enter this sector and produce fuel, transportation fuel, and compete with oil companies. Because frankly, today, we have a monopoly. Ninety-six percent of our transportation energy is supplied by petroleum. And that allows oil companies to dictate the terms in the market. You need to bring the utilities in to provide the very necessary competition in order to break the monopoly of the oil companies.

Senator CHAFEE. Is anybody making the plug-in hybrid?

Dr. LUFT. Daimler Chrysler has a program, experimental program, for a hundred Sprinter vans that already operate in this country, all over the country. And the technology works. There are a number of modification and improvements need to be done on the battery. But if you compare this to fuel cell cars, if you look at the technological viability of plug-in hybrid cars versus fuel cells, we are talking about a huge gap in favor of plug-in hybrid cars.

There are already private individuals and small businesses who are working, particularly in California, to sell kits that actually you can upgrade your Prius, your regular hybrid and convert it to a plug-in hybrid car. But this is not something that has entered the market in large quantities. I think we are not very far from this point.

Senator CHAFEE. I will invite the other two panelists to make any comments on this discussion.

Mr. EBEL. Thank you, Mr. Chairman. Let me make several points. One, the American consumer is a funny individual. He just has two concerns when it comes to energy, and particularly to oil. One, he does not care where his oil comes from. And second, he wants it to be as cheap as possible.

I have in my office all energy reports going back to 1974. They are sitting in my office gathering dust. And they gather dust because the political will of the American people is not pressing on Congress to do something. Unless we have that political will, nothing is going to happen.

I think most people think that we will get back to cheaper gasoline, that the hurricanes are just a one-time event, and that things will quiet down. And some oil companies are thinking along the same lines. I am not so sure about that.

On plug-in vehicles, I wonder if we introduced such a number of vehicles into our automotive market to make a real impact, what would they take on a daily basis of our generation of electricity? And where would that additional requirement come from? Would it come from nuclear? Would it come from hydro? No. Would it come from oil? Today, oil provides 2 to 3 percent of the electricity that we consume. Would it come from coal? Fifty percent. Natural gas, 15, 16 percent.

What we have been talking about today is great, but let us look at it in terms of reality. The American people's vision is no longer than tomorrow. What are you doing for me so I will be better off tomorrow? And I have to say that some people up on the Hill, their vision is no greater than the next election cycle. What can I do, or not do, that will help me get elected?

Thank you.

Mr. COLLINA. If I could add, I think that is exactly what we should not expect, consumers to pay more for a hybrid car, for example, just because it makes them feel better about themselves. I think this is the appropriate role for government subsidy. To make hybrids the same price or cheaper than conventional cars, because in the short term they are going to be more expensive. And to help producers retool their factories to make hybrid cars, when probably up to now they were somewhat skittish about it. Certainly, the American automakers are way behind the Japanese and others. So this is where government can play a role to prime the pump, if you will, to help us be competitive, because, otherwise, we simply will not be.

And again, it is a national interest for us to be using less oil. So if it costs the government some money to make that happen, it will save us in the long run.

Senator CHAFEE. I will just comment. Yes; politicians naturally look ahead to the next election, but we are also fathers, and I think we are also trying to look ahead to 2025, or whenever, some of the dates that were put out there that are much further down the road, and grandfathers, whatever, here in Congress.

It is still a long way, from what I understand, between a plug-in hybrid that gets, what, 50 miles a gallon and the 20 miles that are free on electricity taken off the grid, to 500 miles a gallon. Can you help me bridge that gap?

Dr. LUFT. Sure. First of all, let me address the question that Mr. Ebel raised about the grid. One of the things we need to remember about the grid is that we have off-peak hours and peak hours. And there is a lot of spare capacity during off-peak hours that is not being utilized.

Utilities can address this. If people, of course, plug in their cars at night, and that is, I assume, when most people will plug in their cars, they will be able to utilize this capacity and help utilities to generate more revenue that we can, in turn, help them upgrade the grid and improve it.

According to the Electric Power Research Institute, up to 30 percent market penetration can be achieved using the existing grid capacity, assuming that we utilize off-peak hour electricity.

Now, when I am talking about the—the various calculations, and it is not really important when they talk about 200, 300, 500 miles

per gallon. I am talking here about miles per gallon of gas. We are not talking BTUs here. We are talking about how to stretch a gallon of gasoline. Because our problem is not with BTUs, from a national security standpoint. Not with BTUs but with gasoline.

If you replace the gasoline with something else, could be methanol made from coal. There is a lot of talk about ethanol in this country. But methanol is just as viable. It is even cheaper. Unlike ethanol, it cannot be made from agricultural products. Methanol can also be made from wood and from coal, and from agricultural product.

It can be cogenerated by utilities. So, if we combine the methanol production, ethanol production, if we open the market for ethanol, we import ethanol, cheap ethanol from Latin America, and we can have a lot of extra energy that can use—can be used in the transportation sector as replacement for gasoline.

It is also very important to realize that implementation of ethanol will help us reach a part of the world—perhaps the only part of the world in which we are not being hated, which is Latin America. I think we have a very strong interest in making sure that in this part of the world we have a strong and positive footprint by creating economic interdependency with the Caribbean nations, with Brazil, with other sugar-producing countries.

We cannot be a major sugar-producing country. We do not have the climate. They can. And they should. And they can help us. And I do not see any problem of us becoming dependent on the farmers in the Caribbean and Brazil.

Senator CHAFEE. After the Monroe Doctrine, we got our hemisphere, and it is going to be our neighborhood. North and South.

My question was on the effects on the weather. And you gentlemen also conclude that this is a factor. Dr. Luft talked about that.

Dr. LUFT. I did not talk about it.

Mr. COLLINA. It was my point about climate change.

Senator CHAFEE. I am sorry.

Mr. COLLINA. And I would just say that when we look at cutting oil, there are two perspectives. One is the global security implications, which primarily are attributed to imported oil. But then from the environmental perspective, it is oil use in general. Wherever the oil is from.

And, I would say, in the case of using coal to make methanol, we are still burning coal and we are still creating carbon. So from the perspective of global warming, and, therefore, its relation to extreme storms, we have to be worried about that.

As well as, I would guess, I have not looked into this, but growing—in Brazil, growing sugarcane, whether that involves cutting down rain forests that would otherwise be a place where carbon would be getting absorbed.

So I think we have to look at both sides of this. But certainly I would say the effect of carbon on storms and through global warming is one of the areas which we should look at very closely. Not just from an environmental perspective, but again, from a security perspective. The crises, the natural disasters that this will create. Not only here, but in other countries. And how countries deal with that. Again, tens of thousands of people migrating from one place

to another, huge bills for reconstruction can have dramatic impacts on nations.

Senator CHAFEE. And my last question is with regard to the Western Hemisphere. President Chavez recently said that oil finally is running out. With India and China coming on, and China, 1.3 billion people living there, I think we are the third most populous country, 285 million, and we are way, way down from those two colossals. Is he remotely right?

Mr. EBEL. Well——

Senator CHAFEE. Did you see that quote?

Mr. COLLINA. Yes.

Mr. EBEL. Mr. Chairman, I think from the very beginning, when we began to use oil, we were hearing voices saying, "We are running out. We are running out of oil." I have a textbook on my desk, and it says in 1934, "I do not know what we are going to do in the future. We are running out of oil."

We moved out of the stone age, because we did not run out of stones. We moved out of the coal age, because we did not run out of coal. And we will move out of the oil age, not because we run out of oil, but we found something better. And whether that better is a plug-in vehicle or a fuel cell vehicle, I do not know. It is too early to tell. But we will find something better.

Mr. COLLINA. At the same time, I will just add that we do know that oil is a finite resource. It is going to run out at some point. It is not a question of if, but when. Obviously, there are a lot of different opinions about when that is going to be, but planning for it now makes great sense.

Senator CHAFEE. Well, thank you very much, gentlemen, for your time. And I will keep the record open for any additional statements until the close of business tomorrow.

The hearing is adjourned.

[Whereupon, at 4:10 p.m., the hearing was adjourned.]

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