

**THE ENERGY POLICY AND CONSERVATION ACT
OF 1975: ARE WE POSITIONING AMERICA FOR
SUCCESS IN AN ERA OF ENERGY ABUNDANCE?**

HEARING
BEFORE THE
SUBCOMMITTEE ON ENERGY AND POWER
OF THE
COMMITTEE ON ENERGY AND
COMMERCE
HOUSE OF REPRESENTATIVES
ONE HUNDRED THIRTEENTH CONGRESS
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¹The information has been retained in committee files and also is available at <http://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=102781>.

- Policy brief, "Changing Markets: Economic Opportunities from Lifting the U.S. Ban on Crude Oil Exports," September 2014, by Charles Ebinger and Heather L. Greenley, Brookings Energy Security Initiative, submitted by Mr. Whitfield¹
- Analysis, "What Drives U.S. Gasoline Prices?," October 2014, Energy Information Administration, submitted by Mr. Whitfield¹
- Report to the Ranking Member, Committee on Energy and Natural Resources, U.S. Senate, "Changing Crude Oil Markets: Allowing Exports Could Reduce Consumer Fuel Prices, and the Size of the Strategic Reserves Should Be Reexamined," September 2014, Government Accountability Office, submitted by Mr. Whitfield¹
- Report submitted to American Petroleum Institute, "The Impacts of U.S. Crude Oil Exports on Domestic Crude Production, GDP, Employment, Trade, and Consumer Costs," March 31, 2014, ICF International and EnSys Energy, submitted by Mr. Whitfield¹
- Press release of May 29, 2014, "Lifting Export Restrictions on U.S. Crude Oil Would Lower Gasoline Prices and Reduce U.S. Petroleum Imports While Supporting Up to 964,000 Additional Jobs, IHS Study Finds," IHS Inc., submitted by Mr. Whitfield¹
- Issue brief, "Crude Behavior: How Lifting the Export Ban Reduces Gasoline Prices in the United States," February 2014 (revised March 2014), by Stephen P.A. Brown, et al., Resources for the Future, submitted by Mr. Whitfield¹

¹The information has been retained in committee files and also is available at <http://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=102781>.

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THURSDAY, DECEMBER 11, 2014

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 9:30 a.m., in room 2123, Rayburn House Office Building, Hon. Ed Whitfield (chairman of the subcommittee) presiding.

Members present: Representatives Whitfield, Shimkus, Pitts, Terry, Latta, Olson, McKinley, Gardner, Pompeo, Kinzinger, Griffith, Barton, Rush, McNerney, Tonko, Yarmuth, Engel, Green, Capps, and Barrow.

Also present: Representatives Flores and Mullin.

Staff present: Nick Abraham, Legislative Clerk; Charlotte Baker, Deputy Communications Director; Sean Bonyun, Communications Director; Leighton Brown, Press Assistant; Allison Busbee, Policy Coordinator, Energy and Power; Patrick Currier, Counsel, Energy and Power; Tom Hassenboehler, Chief Counsel, Energy and Power; Brandon Mooney, Professional Staff Member; Graham Pittman, Staff Assistant; Chris Sarley, Policy Coordinator, Environment and the Economy; Joe Banez, Democratic Policy Analyst; Peter Bodner, Democratic Counsel; Matt Connolly, Democratic Professional Staff Member; Michael Goo, Democratic Senior Counsel; and Caitlin Haberman, Democratic Professional Staff Member.

Mr. WHITFIELD. I would like to call the hearing to order this morning. And before we get into the subject of the hearing, I would mention that this will be the last hearing of the 113th Congress for this subcommittee, and I did want to recognize a number of Members who are on the subcommittee and have been valuable Members of Congress for a number of years who will not be coming back.

First, on our side of the aisle we have Ralph Hall of Texas. All of you know Ralph. And unfortunately, he was involved in a car accident right after the election and I think is still in the hospital.

We have Lee Terry from the great State of Nebraska on the subcommittee. Dr. Bill Cassidy will be moving over to the U.S. Senate and Cory Gardner will be moving over to the U.S. Senate. But I just wanted to thank them for the many contributions that they

have made and the great job they did representing their constituents.

And then on the Democratic side, of course, the ranking member, Henry Waxman of California, served many years on this committee as chairman and as ranking member, will not be returning. Mr. John Dingell, who all of you know, chairman of this committee for many years. John Barrow of Georgia, and Donna Christensen of the Virgin Islands.

So I just want to thank all of them for their many contributions. And with that, you can talk about them in your opening statement if you want to, Bobby. I think that is OK.

But anyway, I will go on at this time and recognize myself for an opening statement.

OPENING STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF KENTUCKY

This morning's hearing we are going to be focused on the Energy Policy and Conservation Act of 1975. We are going to get a little history lesson. As many of you remember, that act established the price controls on domestic oil, also established the Strategic Petroleum Reserve, also established CAFE standards, and also set the prohibition on the export of crude oil.

And as you know, Ronald Reagan eliminated the price controls when he became President. Certainly, Strategic Petroleum Reserve and the CAFE standards are still out there and have a great impact on our economy and our society.

And the big question that we hear more and more about, though, is the wisdom of maintaining this prohibition on the export of crude oil. Of course, under the act, the President does have the authority to allow the export of crude oil, but Joe Barton and others have raised the issue about adopting legislation that would remove this prohibition. And just as we had extensive review of the impact of such a move on the export of natural gas, that is what we intend to do on this question of export of crude oil.

So we are going to have a lot of hearings. We want to hear from all sides of the issue because there are a lot of different opinions about it. And that is why we are delighted to have our distinguished witnesses with us this morning to provide us with this historical perspective. And we will be having some more hearings about it, because as I said we want to be very thorough before we make a decision to go one way or the other.

[The prepared statement of Mr. Whitfield follows:]

PREPARED STATEMENT OF HON. ED WHITFIELD

This morning's hearing will focus on the Energy Policy and Conservation Act of 1975 (EPCA). In particular, we will explore whether this very important but nearly 40-year-old statute is suited to deal with the Nation's changing energy landscape.

In the years since EPCA was enacted, we have reviewed many of its key provisions to determine if they still made sense. Some, like the price controls on domestic oil, were deemed counterproductive and were dropped. Specifically, we learned that suppressing the price of American oil did nothing to lower the price at the pump and instead served to discourage domestic drilling. As a result, President Reagan eliminated these price controls, and we are all better off because of it.

In contrast, other provisions in EPCA are still being implemented including the Strategic Petroleum Reserve and the Corporate Average Fuel Economy (CAFE) standards for cars and trucks.

Among the provisions still in place are the restrictions on exports of crude oil. In retrospect, it is easy to understand why these restrictions were a part of the 1975 law. At the time, America was facing declining domestic oil output and increasing dependence on imports from nations hostile to our interests. And at the same time, the Nation's demand for gasoline was on the rise. Export restrictions were also necessary to avoid circumventing the price controls then in effect.

So, despite the fact that America usually favors free trade, we decided to make an exception when it comes to oil. And almost 40 years later, this policy remains in place.

But as we all know, the trends behind the oil export restrictions have dramatically reversed themselves in recent years. Thanks to advances in hydraulic fracturing and directional drilling, domestic oil production has been sharply rising, and the Energy Information Administration expects continued increases in the years ahead. Meanwhile, oil imports have declined from a peak of 60 percent to around 30 percent today, and EIA expects the net import share to decline to 21 percent in 2015, all while gasoline usage has begun what many predict to be a long-term decline. Overall, most of the original justifications for the oil export restrictions are disappearing.

In fact, America may soon be producing more oil than it can handle. It is important to note that not all oil is the same, and in fact there are distinctly different types. The largest increases in American production have been the lighter types of liquid hydrocarbons, which are not what most U.S. refineries are set up to process. This light oil is better suited to many foreign refineries, and for that reason there is a strong demand for American oil around the world.

This morning's hearing lays the foundation for our discussion of oil exports with a thorough historical review of current law and its origins. There are a number of questions that need to be answered, but first we need a better understanding of how we arrived where we are today.

As with our discussion of natural gas exports, we will conduct a thorough analysis and give all points of view the opportunity to be heard before we consider whether to take action.

Mr. WHITFIELD. And with that, I yield back the balance of my time, and I recognize the gentleman from Illinois, Mr. Rush, for his opening statement.

OPENING STATEMENT OF HON. BOBBY L. RUSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. RUSH. I want to thank you, Mr. Chairman. I, too, want to thank and congratulate and commend those departing Members from this subcommittee. They were all very, very highly esteemed and contributed mightily to the work of the subcommittee and the work on the full committee, work of the Congress, and certainly to the benefit of all the citizens of our great Nation. And I just want to take my hat off to them and wish them good biddings and bright futures and many continued blessings as they move forward in their lives.

I want to take particularly time out to allow me a statement to bid farewell to Mr. Waxman, who has been the former chairman on the full committee and been an extraordinary leader on environmental issues and other issues, and particularly as it relates to consumer protection and protection of the environment against the harsh realities that we are confronted with today, climate change and many, many others.

And I want to also take a moment out of my opening statement to commend the one man who has probably affected my life more than any other legislator in my service in the Congress, and that is John Dingell. John Dingell has not only been a true friend of

mine and worked with me, helped advise me, but John Dingell is the kind of legislator, I call him, and a lot of others call him, the Lion of the House. You can learn just by watching John Dingell. He doesn't have to be doing anything or saying anything especially to you. You just learn how he operates and watch him from afar, and you will learn more than most legislators learn in a lifetime just watching the example of John Dingell, and his impact on this committee and on this Congress will never fade.

And so, Mr. Chairman, I want to thank all those departing members for their contribution.

I want to thank you, Mr. Chairman, for holding this important hearing. As we enter into an era of the new American energy renaissance that we are experiencing, it is important to better understand all of the implications that are associated with exporting crude oil due to the recent surge in domestic production. I think it is entirely appropriate for this subcommittee to revisit the Energy Policy and Conservation Act of 1975, which restricts the export of domestically produced crude oil, as conditions today have shifted dramatically from the 1970s when the bill was first enacted.

What is less clear, however, is how long this current increase in oil production will last and what type of impact will lifting the ban—permanently, I might add—have here on domestic consumers.

Mr. Chairman, I come to this issue with truly an open mind, and I look forward to hearing from today's panel of experts. To be more specific, I am looking for answers regarding how exporting this important commodity would impact American families and the American economy in general in regards to domestic gas prices, consumers goods, manufacturing, and jobs.

Mr. Chairman, I am going to close my mouth and open my mind now, and I want to thank you. I was going to yield my time to Mr. Green, who asked for it, but I will yield my time back, Mr. Chairman. Thank you so very much.

Mr. WHITFIELD. Thank you very much.

Is there anyone on our side of the aisle that—OK. Joe, you are recognized for 5 minutes. They hadn't instructed me who all was speaking today. So I am glad to recognize you for 5 minutes.

**OPENING STATEMENT OF HON. JOE BARTON, A
REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS**

Mr. BARTON. Well, Mr. Chairman, if you need some of that time, I can give some of it back. I mean, I do want to talk for a couple of minutes.

Well, thank you, Mr. Chairman. We have a number of Members on this committee that probably weren't alive when we passed the Energy Policy and Conservation Act of 1975. In that same time period, I believe in that act, we put into place a ban on the export of crude oil from the United States.

Now, in the mid-1970s, Mr. Chairman, the OPEC oil cartel had an oil embargo against the United States and Western Europe, and it devastated our economy. I can remember living in Crockett, Texas, and I could buy 10 gallons of gas on odd days. I could go to the gas station and buy 10 gallons of gas on odd days based on the last digit in my license plate. That was not fun. There were gas

lines. There were plant closings. We were producing, I can't remember exactly, but we were probably producing 5 or 6 million barrels of oil a day, but we were consuming in the neighborhood of 15 to 16, I think.

So putting a ban on crude oil exports at that time made some sense, to husband that resource as a strategic commodity. Well, what is the situation today, Mr. Chairman? The United States is the number one oil producer on a daily basis in the world. Today we will produce in the neighborhood of 9.5 million barrels of oil in the United States of America. If you combine the oil that we import from Canada and Mexico, our NAFTA partners, you can put another 2 million barrels a day, maybe even 3.

Our consumption is down. Our production is up. We have a surplus on the world market today, Mr. Chairman, of 2 to 3 million barrels a day. And the result is that instead of \$110-barrel oil, we have, I think yesterday, West Texas Intermediate closed at about \$63 a barrel.

That is a good thing for the American consumer, Mr. Chairman. It is a good thing that you are holding this hearing. And I would hope in the new Congress we take a look at the bill that I have introduced this week, H.R. 5814. It is a page-and-a-half bill. It is very simple. It repeals the ban on crude oil exports, and it requires a study reported to this committee of what we do with the Strategic Petroleum Reserve.

It is a different world today, Mr. Chairman, and when you are number one you use that status. If we allow our producers to export the crude oil that can't be consumed here in the United States or refined here in the United States, we put pressure on OPEC, we put pressure on Russia, we create jobs here at home, and we make sure that that world price which sets the crude oil price is based on real supply and demand, and that is a good thing for everybody.

So I am extremely pleased that you are holding this hearing. I would ask you also to look at such anachronisms as the Renewable Fuel Standard, and I know how contentious this is on our Gulf Coast States. But I think we should also look at the Jones Act, and as I said earlier, the Strategic Petroleum Reserve.

With that, Mr. Chairman, I still have about a minute, and I would be happy to yield to whoever you wish me to.

Mr. WHITFIELD. Does anyone seek this additional minute?

OK. The gentleman yields back. At this time, Mr. Yarmuth, do you or Ms. Capps want to make a comment? Ms. Capps? Mr. Barrow? We have already thanked you for your service, John, so thanks.

Mr. BARROW. That would be John Barrow, the late.

Mr. WHITFIELD. OK. Thank you.

Well, that concludes the opening statement. And as I said, we have a distinguished panel of witnesses.

And I am just going to introduce you as I introduce you to make your opening statement.

So first opening statement will be by Adam Sieminski, who is certainly no stranger to this panel.

And we welcome you back, Mr. Administrator, with the U.S. Energy Information Administration, and you are recognized for 5 minutes for your opening statement.

STATEMENTS OF ADAM SIEMINSKI, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, DEPARTMENT OF ENERGY; LUCIAN PUGLIARESI, PRESIDENT, ENERGY POLICY RESEARCH FOUNDATION, INC.; CHARLES K. EBINGER, SENIOR FELLOW, ENERGY SECURITY INITIATIVE, THE BROOKINGS INSTITUTION; AND DEBORAH GORDON, DIRECTOR, ENERGY AND CLIMATE PROGRAM, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

STATEMENT OF ADAM SIEMINSKI

Mr. SIEMINSKI. Chairman Whitfield, Congressman Rush, members of the subcommittee, thank you for the opportunity to be here today to discuss the history of the U.S. ban on crude oil exports and to contrast the market conditions at the time of the ban with those today.

The U.S. Energy Information Administration, EIA, is a statistical and analytical agency at the Department of Energy. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the U.S. Government, so the views expressed here should not be construed as representing those of the Department of Energy or any other Federal agency.

At the time of the passage of the Energy Policy and Conservation Act in 1975, U.S. net imports of petroleum were rising rapidly due to declining domestic production while growth in consumption was rocketing up. U.S. net oil imports more than doubled between 1970 and 1978, from 3.2 to 8.6 million barrels per day, driving imports as a share of total consumption from 22 percent to 47 percent.

Internationally, when OPEC declared an oil embargo against the United States in 1973, 65 percent of rising U.S. crude oil imports were coming from OPEC countries. To protect consumers from price shocks, the U.S. policy response at the time was to limit the price for oil produced from U.S. wells existing in 1972 while allowing new oil to sell at world market prices. Limiting exports prevented circumvention of these domestic price controls; however, the separation of new and old oil pricing did not really stem the production declines as oil production in the lower 48 States fell some 23 percent between 1973 and 1980.

By 1981, it was clear that the policy wasn't working, and the price and allocation controls were removed. That is on figure 2 of my testimony. For nearly 3 decades after the removal of price controls, declining production, coupled with rising demand, pushed the U.S. towards ever-increasing imports until net imports as a share of total U.S. petroleum consumption peaked at 60 percent in 2005.

Restrictions on crude oil exports remained in place, but limited modifications from time to time allowed exports to Canada, exports of production from Alaska that went through the Trans-Alaska Pipeline, and certain California heavy crude oil. Since 2008, however, these conditions have been reversed, partly as a result of the growth in domestic supply, and also as a result of swelling demand. U.S. domestic crude oil production has increased by 3.4 million barrels a day, some 68 percent, to its highest level since 1986.

Meanwhile, between 2008 and 2014—this year, we are estimating for the full year—total U.S. liquid fuel consumption fell from 19.5 million barrels a day to 18.9 million barrels a day. The

U.S. went from being the world's largest net importer to becoming a big net exporter of petroleum products. In 2014, net imports as a share of total U.S. petroleum consumption is now down to below 30 percent, close to 25.

The dramatic production growth in the U.S. midcontinent and Canada has resulted in logistical constraints that are reflected in a wide variation of prices for domestically produced crudes. In 2008, benchmark crude, West Texas Intermediate, or WTI, sold for a premium of \$2.73, a premium higher than Brent that comes from the North Sea.

In 2014, through October, WTI has been trading at a discount of over \$6 a barrel to Brent crude oil. EIA's latest short-term energy outlook forecasts recent trends in U.S. petroleum markets will continue into 2015 with domestic crude oil production averaging 9.4 million barrels a day, 10 percent above the 2014 level.

Gasoline demand and net imports as a share of domestic consumption could be 21 percent as recent dramatic declines in crude prices may affect our outlook, but more so, I think, in the longer term rather than in the very short term.

So petroleum market conditions today are very different than they were in the 1970s when the ban on crude oil exports was enacted. Key trends in U.S. oil markets have reversed. Then, demand was rising rapidly and production was falling. Now, production is rising rapidly and demand is falling. U.S. crude production may soon hit an all-time high, surpassing the previous record set in 1970. Gasoline demand is down from its peak and is likely to decline even more as the vehicle fleet becomes more efficient.

In addition to this trend reversal, international oil production is less concentrated. OPEC's share of production is down from 53 percent in 1973 to about 35 percent today. The existence of oil contracts on the futures markets, the development of benchmark crude oil pricing, and the availability of basic data from EIA, created by Congress in 1977, have all brought greater transparency to the oil markets.

As described in my written statement, EIA is actively pursuing a number of important initiatives related to the timeliness and detail of oil market data.

I would like to thank you for the opportunity to testify here today, and I hope to be able to answer your questions. Thank you.

[The prepared statement of Mr. Sieminski follows:]

STATEMENT OF ADAM SIEMINSKI

ADMINISTRATOR

ENERGY INFORMATION ADMINISTRATION

U.S. DEPARTMENT OF ENERGY

Before the

COMMITTEE ON ENERGY AND COMMERCE

SUBCOMMITTEE ON ENERGY AND POWER

U. S. HOUSE OF REPRESENTATIVES

DECEMBER 11, 2014

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the history of the U.S. ban on crude oil exports and to contrast the market conditions at the time of the ban with those of today.

The U.S. Energy Information Administration (EIA) is the statistical and analytical agency within the U.S. Department of Energy. EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government, so the views expressed herein should not be construed as representing those of the Department of Energy or any other Federal agency. As discussed in my testimony, EIA is active in providing both data and analysis that bear directly on the issue of crude oil exports.

Current limitations on U.S. exports of crude oil are based on the Energy Policy and Conservation Act of 1975 (EPCA), which in addition to other key provisions reviewed below, directed the President to promulgate a rule prohibiting the export of crude oil while also providing authority to exempt from the prohibition such crude oil which the President determines to be consistent with the national interests and the purposes of the legislation.

Oil market conditions at the time of EPCA's enactment are very different from those today. Total net imports of petroleum were rapidly rising in the 1970s, reflecting both rapid growth in consumption and declining domestic production. U.S. net petroleum imports nearly doubled between 1970 and 1973

(from 3.2 to 6.0 million barrels per day), with continued growth to 8.6 million barrels per day in 1978 (see Figure 1). As a result, net imports as a share of total oil consumption grew from 22 percent in 1970 to 47 percent in 1978.

In 1973, several members of the Organization of the Petroleum Exporting Countries (OPEC) responded to U.S. support of Israel in its 1973 war with several Arab states by instituting an oil embargo against the United States. Immediately before the embargo, 65% of U.S. crude oil imports were sourced from OPEC countries. Total U.S. crude oil imports fell sharply over a 4-month period from December 1973 through March 1974, and then recovered quickly.

With minimal global excess production capacity available outside of OPEC, the embargo highlighted growing U.S. dependence on imported oil, spurring the enactment of legislation over the next several years that had a significant impact on all aspects of the petroleum industry.

The Emergency Petroleum Allocation Act of 1973, enacted in November 1973, established a two tier pricing system for domestic crude oil; "old" oil from properties producing at or below their 1972 levels was subject to a price ceiling while "new" oil was allowed to be sold at market prices. The price of imported oil remained unregulated. As a result of these provisions, domestic refiners paid significantly less for domestic crude oil than for imported crude oil. In 1973, refiner acquisition costs of domestic and imported crude were roughly equal; in 1974, the acquisition cost of domestic crude was roughly 40% lower than the acquisition cost of imported crude (see Figure 2). This pricing regime discouraged investment to maintain production in existing U.S. oil fields, which had already been in decline since 1970. Crude oil production in the lower-48 states declined from 9.0 million barrels per day in 1973 to just under 7.0 million barrels per day in 1980, a 23% reduction (see Figure 3).

Beyond its provisions limiting crude oil exports, EPCA established the Strategic Petroleum Reserve and the first Corporate Average Fuel Economy standards. It also established a new formula for “old” oil and brought “new” oil under price controls, rather than allowing sales at market prices. Old oil was now to be priced at its May 15, 1973 price plus \$1.35 per barrel and new oil prices were set at their September 30, 1975 levels less \$1.32 per barrel. The provisions limiting crude oil exports were likely intended to prevent domestic crude producers from circumventing these price controls by selling into the higher priced global market.

In early 1981, price and allocation controls on the oil industry were removed. For the first time in over a decade, market forces replaced regulatory programs and domestic crude oil prices were allowed to rise and become more aligned with foreign crude oil prices. In 2014 dollars, domestic crude prices rose from \$28 per barrel below imported crude oil in 1980 to about one dollar below in 1985 (see Figure 2).

Restrictions on crude oil exports remained in place, but over time they were modified to allow for exports under certain conditions:

- U.S. exports to Canada (1985)
- Exports from Alaska’s Cook Inlet (1985)
- up to 50,000 barrels per day of oil moved through the Trans Alaska Pipeline System (TAPS) to Canada (1988)
- up to 25,000 barrels per day of California heavy crude (1992)
- Unlimited TAPS crude to any destination, subject to specific transportation requirements (1996)

With these modifications allowing for exports in particular situations to take advantage of economically attractive export opportunities, the remaining general restrictions on crude oil exports were largely immaterial due to prevailing market conditions, as characterized by the following trends between 1980 and 2008:

- U.S. domestic crude production fell by 3.6 million barrels per day (42%)
- U.S. gasoline demand rose by 2.4 million barrels per day (36%)
- U.S. crude imports rose by 4.5 million barrels per day (85%)
- The import share of the overall U.S. crude supply rose from 39% to 67%
- Net imports as a share of total U.S. petroleum consumption, which declined between 1980 and 1985, rose above 60 percent in 2005, with a slight decline to 57 percent in 2008

Since 2008, however, these conditions have been reversed partly as a result of advances in domestic horizontal drilling and hydraulic fracturing. From 2008 through August year to date 2014:

- U.S. domestic crude production has increased by 3.4 million barrels per day (68%) to its highest level since 1986 (see Figure 3)
- U.S. gasoline demand has fallen by 100,000 barrels per day (1.1%)
- U.S. crude imports have declined by 2.4 million barrels per day (24%), the lowest level since 1995 (see Figure 1)
- The percentage of U.S. crude demand supplied by imports has fallen from 67% to 47%, the lowest level since 1992
- net imports as a share of total U.S. petroleum consumption has declined sharply to roughly 26% in 2014
- the United States, which was the world's largest net importer of petroleum products a decade ago, is now the world's largest net exporter of these products (See Figure 4).

As a result of these changes, as well as logistical constraints and increasing Canadian crude production, prices for domestically produced crude have varied widely. In 2008, WTI crude sold for a \$2.73 per barrel premium to Brent crude but has averaged a \$6.25 per barrel discount to Brent for 2014 through October.

In addition, the Bureau of Industry and Security (BIS), part of the Department of Commerce, is reported to have issued one or more responses to classification requests that have classified lease condensate that has been processed through a distillation tower as a petroleum product.

Petroleum products, unlike crude oil, do not require an export license.

EIA's latest Short Term Energy Outlook forecasts that the recent trends in the U.S. petroleum market will continue into 2015. Our current forecasts for 2015 expect domestic crude production to average 9.42 million barrels per day (10% above the 2014 level), gasoline demand at 8.83 million barrels per day (2% below the 2014 level), and net imports as a share of domestic consumption to be 21%, slightly below its level in 1970. Of course, the recent dramatic declines in crude prices may affect our outlook in the coming months.

As I said at the beginning of my testimony, petroleum market conditions today are much different than they were in the 1970's when the ban on crude oil exports was enacted.

Internationally:

- Oil production is far less concentrated, with OPEC's share of production declining from 53% in 1973 to about 35% today as new entrants such as Brazil, Former Soviet Union countries, and the United States now have significant crude production
- There is much more price transparency with the development of benchmark crudes and futures markets
- There is much more basic data available from both the Energy Information Administration and the International Energy Agency

Domestically:

- U.S. crude production may soon hit an all-time high surpassing the previous record of 9.6 million barrels per day set in 1970
- U.S. gasoline demand is down 4.4% from its peak in 2007 and is likely to decline even further as vehicles compliant with more stringent fuel economy standards become increasingly dominant in our vehicle fleet

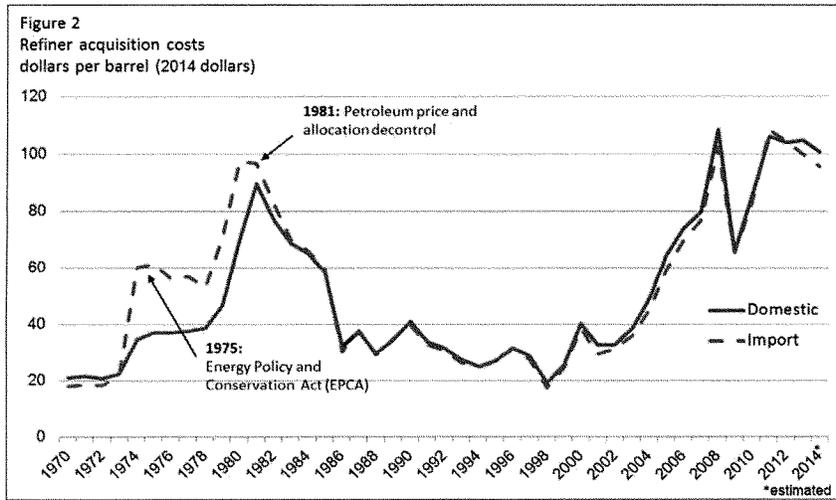
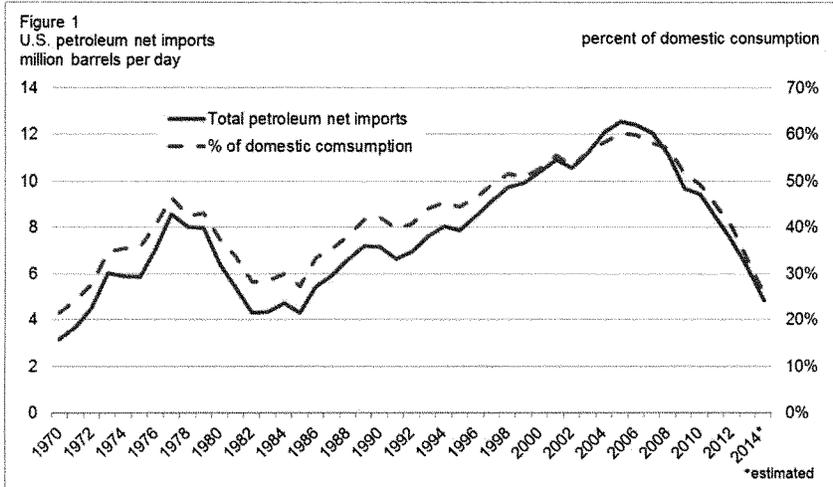
EIA remains actively engaged in monitoring and reporting on matters related to domestic crude oil production and market reactions to recent increases in supplies. So far in 2014, EIA has issued:

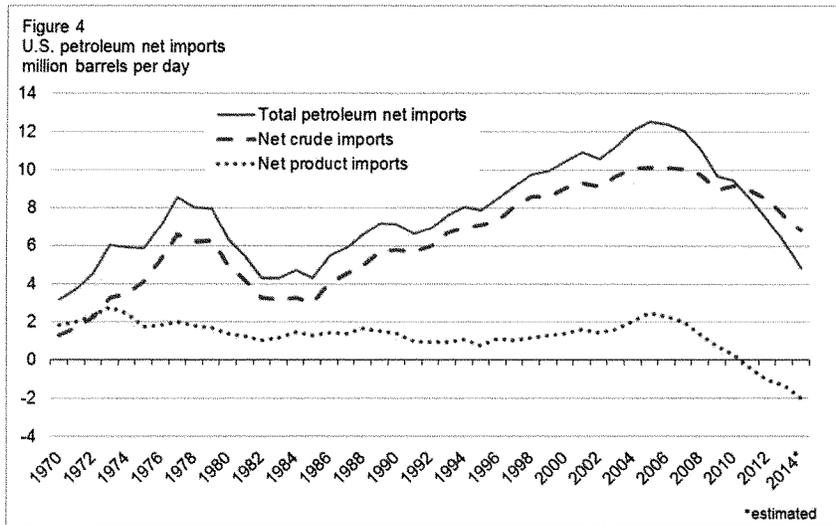
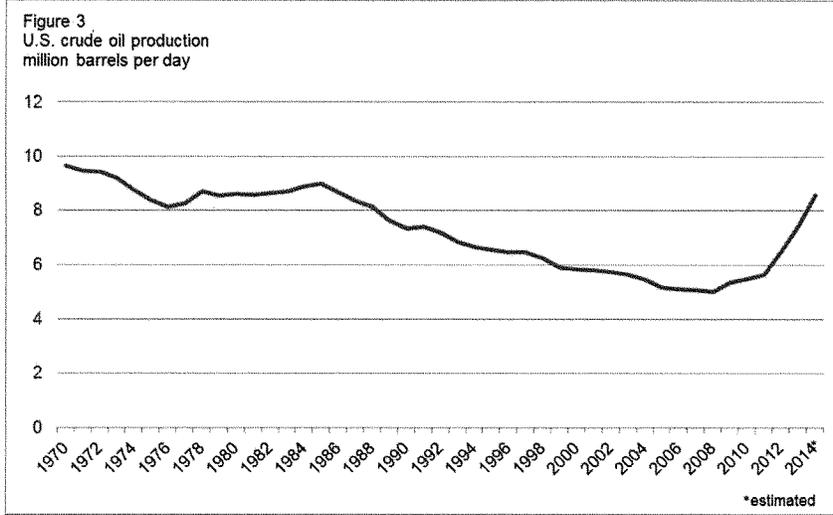
- An analysis and forecast of U.S. crude production by quality (API gravity)
- A paper examining the determinants of U.S. gasoline prices that includes a statistical study of the relationship of U.S. gasoline prices to both domestic and international crude prices and an examination of recent shifts in U.S. regional and international gasoline price relationships
- An online tool to enable the analysis and data visualization of crude oil imports by date, grade, source, port of entry, refiner and other criteria

In addition to these studies, EIA hosted two workshops this fall with government, industry, and academic participants to discuss our work on gasoline price determinants and condensate markets. EIA is undertaking further analyses that will examine other issues relevant to discussions surrounding oil exports and expects to report additional results over the coming months.

Finally, EIA is actively pursuing a number of important initiatives to the timeliness and detail of oil market data. Next spring, EIA will be launching its first-ever monthly survey to collect oil production data directly from operators. This survey will include information on the quality of oil being produced, which is important to markets and policymakers, as well as data on the overall volume of production. EIA had previously obtained this data from the states, which have varying lags and gaps in their own data collection programs. EIA will also begin publishing monthly information on the movement of crude oil by rail, which has grown dramatically in recent years. Both of these efforts, which respond to questions posed by policymakers and others, will also advance EIA's commitment to provide timely, accurate, and relevant information at a time when there are many new developments in the energy sector.

Thank you again for the opportunity to testify before the Committee.





Mr. WHITFIELD. Thank you very much.
 And our next witness is Mr. Lou Pugliaresi, who is the president of the Energy Policy Research Foundation.
 And you are recognized for 5 minutes.

STATEMENT OF LUCIAN PUGLIARESİ

Mr. PUGLIARESİ. Thank you. Thank you, Mr. Chairman, and thank you, members.

Mr. WHITFIELD. Be sure and turn your microphone on.

Mr. PUGLIARESİ. Yes, I think we have some slides. The next slide. So what I would like to do is sort of put a little bit of this in context, and the first thing I think we ought to talk about a little bit is what is energy security.

So we tend to think about energy security as a concentration of low-cost reserves in unstable parts of the world which tend to provide two risks to the U.S. One, they can restrict output and charge higher prices that would prevail in more competitive environments. And two, some of these guys could go out of business with more terrorism, even embargoes also imposing price spike and large costs on the national economy.

So one of the best ways to deal with this threat or this problem is to have a production platform in a stable part of the world, which turns out to be North America. And if you look at what has happened here in this slide, you can see that, if you take the U.S. and Canada together, which Congressman Barton just spoke about, we have had a remarkable increase in production. And it is very important to look upon this through a North American lens because it is this North American lens that is so stable, and it is this rapid runup in production, particularly if you include natural gas liquids, that has made a remarkable change.

Next slide.

Now, you can see prices have come down, but I don't think we quite understand what this means. And I have testified here many times where Members have said, well, you know, we know, Mr. Pugliaresi, if we open up ANWR, if we do X or Y, we will get more production, but OPEC will just cut production, the price won't come down. Well, the price has come down, and this price decrease is an enormous benefit to the world economy. The world consuming centers are going to get a savings of approximately \$1.3 trillion next year if these prices persist. The American driver who spends about \$3,000 a year in gasoline is going to get an \$800 savings. This is enormous boom and benefit to the national economy, to the world economy, and it is being delivered to us through these production gains we are having in this stable North American platform.

And we want to preserve that platform. Right? We want to make the distribution of crude oil efficient. That is why we need Keystone. We want to have good regulations. We want to open up the Federal lands a lot more. You know, all this production we have seen has come from Federal lands.

Next slide.

This shows you the permit activity for oil and gas drilling permits just for 90 days prior to the—December 1st, 2014. Of course, we are a little concerned that these lower oil prices—and we are getting some evidence that the permit activity is coming off.

And I think that is a good reason to have this hearing. We need to look at our whole regulatory structure and see, “OK. What do we—what do we need to do to make it as efficient as possible?”

Because, once again, we want this platform, the upstream, the midstream, and the downstream—we want it to perform as best as possible, and we are concerned about this.

But I must say we met with some of the world’s best extraction technologists in Houston the last couple of days. There are a lot of exciting things going on out there. As long as we have an open system, I think we are going to find ways to drive down these extraction costs. I mean, there are very interesting things happening out there.

Next slide.

This is our estimate of—in a sort of \$80 environment of what we think the U.S. could do, at least in the near term, by API gravity. You see we are producing a lot of light sweet crude, and we are not sure how much this is going to be disturbed by these lower oil price environment. Probably going to see some reduction there. But, you know, the outlook is still very positive.

Next slide.

I want to leave you with just a couple of things here. One, if you look at this slide, it is quite interesting. Traditionally, conventional oil had a very modest decline rate, maybe 5 percent, and a pretty high recovery factor, as much as 50 percent.

What I don’t think we understand is that, even though we have this very high decline rate in these unconventional resources we have now, but we have to keep drilling, our recovery factor is quite small. Small improvements in this recovery factor are going to make a big difference. That is why we want—you know, we want to see this technology continue to progress.

And, you know, if you look at this whole North American success story and we get back to EPCA, keep in mind that we should have a lot of humility about how we proceed. We want you to—we had mandates on ethanol. We had price—we had 6-month oil embargo, and then we had 10 years of price controls. We had a Fuel Use Act which prevented the use of natural gas.

So as we go forward, I think one of the things I want the members to think about is: What are the benefits of an open system? You know, William Pratt, the famous—Wallace Pratt, the famous geologist, said in the 1930s, “Oil is first discovered in the mind of man.” And I think that we want to keep that intellectual capacity going here in the U.S.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Pugliaresi follows:]



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Testimony

before

U.S. House of Representatives Committee on Energy and Commerce

Subcommittee on Energy and Power

December 11, 2014
Rayburn House Office Building

Submitted by:

Lucian Pugliaresi
President, Energy Policy Research Foundation, Inc. (EPRINC)
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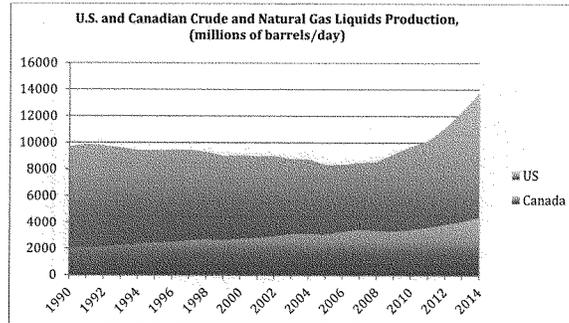
Chairman Whitfield, Ranking Member Rush, and members of the Subcommittee on Energy and Power, I want to thank you for this opportunity to testify on **The Energy Policy and Conservation Act of 1975: Are We Positioning America for Success in an Era of Energy Abundance?** I am president of the Energy Policy Research Foundation, a non-partisan and non-profit organization that has published extensive research on developments in U.S. and world energy markets since 1944. We have been called on to testify at nearly every session of Congress in the last decade and routinely provide briefings on our research for industry, non-profit organizations, federal, state, and local agencies and Congressional staff. EPRINC has been a source of expertise for numerous government studies.

North American Petroleum Renaissance – How We Got Here

The surge in crude oil and natural gas liquids production from the U.S. and Canada, totaling nearly 6 million barrels/day (MBD) since 2006-2007 (Figure 1), is a remarkable achievement of technological innovation and risk taking. This liquids growth arrived on the heels of large scale and low cost development of natural gas supplies from so-called tight or unconventional formations. U.S. production growth has been driven by long-term improvements in the application of both the art and science of horizontal drilling and hydraulic fracturing.

In the years just before the emergence of U.S. petroleum renaissance, Canada achieved substantial improvements in both mining and steam-assisted gravity drainage (SAGD) extraction techniques from the McMurray Formation in the Western Canada Sedimentary Basin. These North American (sans Mexico) unconventional petroleum developments are altering flows in world crude oil trade, shifting long-term price expectations, and challenging long-held conventional wisdom on U.S. energy policy promulgated in an era of scarcity.

Figure 1



An important feature of the rapid expansion in U.S. production is that it occurred entirely on private land outside the jurisdiction of the federal government, which permitted development to take place quickly. Oil and gas production from federal land has become highly contentious and subject to cumbersome and often cavalier regulatory oversight, court delays, and intractable political gridlock. An important feature of the recent surge in U.S. oil and gas output is that drilling permits and environmental regulations were handled largely by local authorities without the typical long delays and financial risks prevalent in projects developed under the jurisdiction of the federal government. In a stunning turn around, the U.S. is now the world's number one oil and gas producer after being written off as a petroleum province undergoing permanent decline.

Both the U.S. and Canadian experiences offer substantially different risk profiles for petroleum investment. All-in per barrel cost of shale resource development is costly by world standards (\$50/barrel or more, with substantial core areas below this cost), but financial and project risks are low as total costs are modest and revenue begins to flow within months. Most shale developments do not require risking large capital outlays over long time periods before first production.

In contrast to the U.S. experience, the Canadian production surge is almost entirely from "Crown" properties, but sustained reform of Canadian leasing procedures administered by the National Energy Board (NEB) of Alberta and the Alberta Energy Regulator have fostered a predictable and long-term program to bring in investment from both international oil companies (IOCs) and state-owned or national oil companies (NOCs).¹ Canadian oil sands development is capital intensive and characterized by a substantial delay before first production, but investors remain confident that they can manage regulatory and political risk in Canada.

Energy Security, Economic Benefits and the Importance of the North American Lens

Over the last 40 years the world oil market has been characterized by a concentration of low-cost petroleum resources among relatively few producers. This concentration of low cost reserves presents an important economic, and to some extent, security threat to the U.S. The primary threat is that a small number of producers can constrain output and obtain prices for crude oil sales into the world market above a price, sometimes substantially, that would prevail in more competitive environments. This market power results in large wealth transfers from the United States to foreign oil producers. OPEC's market power waxes and wanes, but it is this concentration of low cost reserves among a few producers that remains the major energy security threat to the U.S. economy. A second threat is that production from one or more of the major producing centers might be halted or substantially restricted as a result of war, revolution or terrorism. If production losses are substantial these events could spike world oil prices, harming U.S. economic growth (or even moving the economy into a recession). The U.S. cannot insulate itself from the world oil prices, but a stable and growing North American oil production platform can substantially reduce this risk.

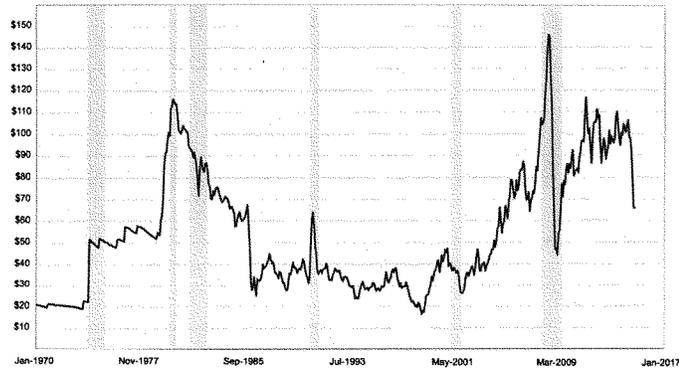
The energy security benefits to the U.S. from rising North American crude oil production are not directly tied to exports, imports, or oil dependence, but instead by diminishing the market power of major foreign producers through the establishment of a stable production platform outside of production centers subject to either manipulation of output and/or to disruption in world supplies from embargoes,

¹ The commercialization of the oil sands benefitted from a royalty relief regime wherein projects paid 1% royalty until initial capital costs were recovered then moved to the prevailing royalty rate

war and terrorism. This is why preserving and ensuring that the entire North American production platform can continue to prosper and grow should be a central theme in U.S. energy policy.

Even as many world production centers (Iraq, Iran, Libya, Sudan, Syria, etc.) lost output from political turmoil, sanctions, and war, the growth in North American production constrained spikes in oil prices, common in earlier periods. Until very recently oil prices remained high, but would have been substantially higher in the absence of the North American production increase. The production surge has been so successful that oil prices now are declining (Figure 2). These lower oil prices; over \$30/bbl. below recent levels (\$65/bbl. on December 1, 2014) are delivering substantial benefits to the world

Figure 2
Crude Oil Prices – West Texas Intermediate
(nominal prices)



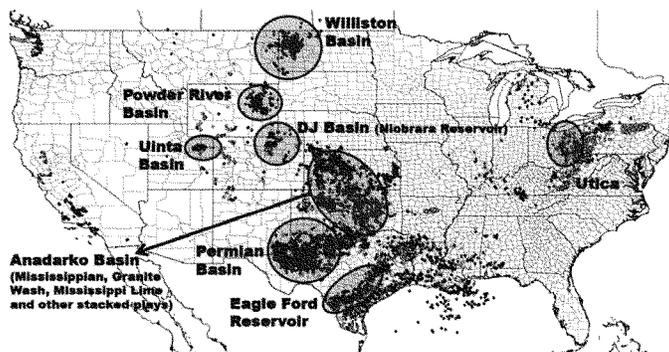
Source: Macrotrends

economy and U.S. consumers. This reduction in oil prices, if they persist for one year, puts approximately \$1.3 trillion in the hands consumers worldwide. For the average U.S. driver, who has seen annual costs of \$3,000 for gasoline, the lower oil prices mean he or she will now be receiving an \$800 reduction their annual fuel bill. This is equivalent to a 2% pay increase.

Will the Fall in Oil Prices Constrain U.S. Production?

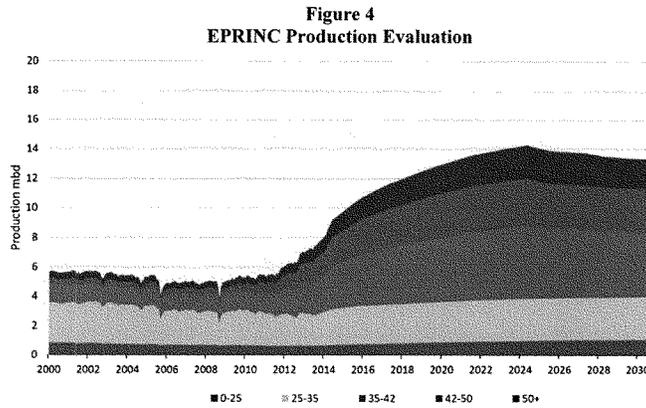
The rapid decline in world oil prices, driven in large part by the success of the North American petroleum renaissance, will also place considerable cost pressure on the pace of oil and gas development in the U.S., particularly unconventional plays. Figure 3 shows new drilling permits issued for the last 90 days prior to December 2014 throughout the lower 48. Note that recent activity has remained high, but these permits were requested and issued before the recent price decline and we are only now

Figure 3
Permit Activity



Source: HDM, Past 90 days, December 2014

receiving some information suggesting a falloff is underway in permit activity. In trying to estimate the implications for domestic oil production, we are in uncharted waters. Figure 4 shows EPRINC's estimate of potential total U.S. production by API category over the next 15-20 years.



Source: EPRINC & Ponderosa Advisors, does not include NGLs.

This production estimate was made under a more favorable price environment, and if current prices persist or even fall further, we can expect some reduction in the pace of new activity. Some smaller firms will go out of business, and clearly there will be a pull back in the rate of growth of new production. In many regions, the rapid pace of drilling will continue for the next year or so as oil companies fulfill minimum drilling requirements under their contracts with landowners. In addition, technological improvements will continue to take place in both exploration and development of unconventional reserves, and this will act to limit a massive pull back in domestic production. What we just do not know at this point is how the industry will fully adapt to this new price environment. Clearly in the case of natural gas, technological improvements and the prolific nature of U.S. unconventional gas

reserves, particularly in the Marcellus, are so extensive that production continued to expand even in a low natural gas price environment.

Preventing Mistakes of the Past

As we look back on U.S. energy legislation policies since the 1970's, we cannot help but be stunned by the systematic failure to predict the future and the unintended consequences of U.S. energy policy. Often these policies, in an attempt to either promote the development of alternatives to petroleum or to insulate consumers from price volatility, prevented more productive responses from both consumers and producers. Price controls implemented in response to a 6 month Arab oil embargo in 1973 resulted in over ten years of sustained misallocation of resources, limited the cost-effective development of U.S. petroleum resources, and brought about the proliferation of dozens of small inefficient refiners. The contrast of how we responded to the price run up in recent years, compared to the 1970's, speaks for itself. The U.S. government chose not to implement price controls, resources were accessible on private land, and the marketplace delivered a remarkable response in new supply.

In the late 1970's, in response to concerns we were running out of natural gas, we banned its use in electricity generation throughout the national economy. These policies were implemented through the Powerplant and Industrial Fuel Use Act of 1978, which encouraged the use of coal, nuclear energy, and other alternative fuels under the assumption that natural gas production was in permanent decline. I am sure it is lost on none of us how peculiar and counter-productive this legislation seems today.

In more recent years, in response over rising gasoline prices, we implemented the Renewable Fuel Standard (RFS), which mandated the use of ethanol and biofuels into transportation fuels. When the RFS was established as law, the U.S. faced rising consumption of transportation fuels, declining domestic natural gas and crude oil production, and rapidly rising petroleum product imports. None of these conditions exist today, yet we are left with a program that requires U.S. consumers to use ever-larger volumes of ethanol, which continues to place upward pressure on gasoline prices.

Given the vast changes in our energy landscape we should now revisit the entire range of regulatory programs that were put into place in a much different era. Petroleum is no longer an instrument of economic distress, but a major driver of economic growth and a much-improved strategic outlook for the U.S.



Conventional vs. Tight Oil Recovery Factor

Conventional vs Tight Oil Wells
rough numbers

	Annual Decline Rate	Recovery Factor
Conventional Oil Wells	5%	50%
Tight Oil Wells	50%	5%

Low Recovery Factor = High Well Count

Mr. WHITFIELD. Thank you very much.

And our next witness is Dr. Charles Ebinger, who is a senior fellow at the Brookings Institution. Thank you for being with us. And you are recognized for 5 minutes.

STATEMENT OF CHARLES K. EBINGER

Mr. EBINGER. Thank you, Mr. Chairman, and thank you, Congressman Rush, for inviting me to testify this morning on the origins of the crude oil export ban, which ironically was enacted nearly 40 years ago.

Given the profound changes that have occurred in unconventional oil and gas production that we have already heard about over the last 6 years, I think it is important to look back and remind ourselves how our energy situation has evolved since 1975.

In the years prior to the OPEC oil embargo, the chief issues dominating energy policy in the United States were debated over the future of nuclear power, especially whether we should recycle plutonium and develop the breeder reactor, price controls on domestic oil and natural gas, which, I remind you, were enacted by President Nixon back in 1971 out of concern that inflation had reached the dangerous levels of 4.4 percent, and various programs, both a voluntary oil import program and a mandatory oil import program, to hold down oil imports as a protection for our domestic industry.

In reviewing this history—and this is a critical point—what stands out is just as is the case today. Most energy issues were discussed in isolation from one another.

On the geopolitical front, the early 1970s saw momentous changes in the Middle East and North Africa as King Idris in Libya was deposed by Colonel Gaddafi, and in response to a decline in real oil prices, the major oil-producing countries mounted a unified campaign against the petroleum companies to extract more of the economic rent from their oil production.

Under two major agreements negotiated in Tehran and Tripoli between the international oil companies and OPEC, the OPEC, concerned about inflation and a general sense that they were not being treated fairly by the international oil companies, demanded a major increase in the price of their oil.

After these two agreements, OPEC was able to introduce an escalation clause in its contracts that it believed would protect their members from inflation. This proved, however, not to be the case.

But what helped OPEC was—as Mr. Sieminski noted, was the surge in demand worldwide not only in the United States, but in Western Europe and Japan, which allowed OPEC to, every time a contract was up for renegotiation, demand further upward price revisions.

Mr. Chairman, it is worth noting that the global market conditions in the early 1970s could not have been more different than they are today, as we heard from Congressman Barton. Demand for oil throughout the industrialized world was skyrocketing.

In the United States, domestic production had peaked in 1970, leading a Cabinet task force to recommend the gradual elimination of the quotas under the mandatory oil import program.

In retrospect, given the changed circumstances confronting the U.S., it is remarkable that this recommendation did not receive more salience from the Congress, despite the fact that U.S. oil consumption was skyrocketing, domestic production was peaking, and oil imports were up to nearly 30 percent of U.S. consumption on the eve of the oil embargo.

The U.S. could not have been more ill-prepared for the embargo. In response, one of the primary actions taken was enactment of complex regulatory procedures for oil and gas prices as well as an incredibly complex system of allocation controls leading to gasoline lines in the districts and surplus supplies in Potomac.

Unfortunately, they were so—these were so ill-conceived that they accentuated the impact of the crisis and exacerbated gasoline shortages, causing long lines for angry—angry motorists buying regulated volumes of fuel. And I am glad the Congressman got 10 gallons because, as a graduate student, I only got 5 gallons in New England.

In response to the crisis, President Nixon launched Project Independence, designed to eliminate oil imports by 1980, when comprising a host of initiatives, including the Energy Policy and Conservation Act.

Under EPCA, the President was granted the authority to restrict exports of coal, petroleum products, natural gas, petrochemical feedstocks, and supplies of materials and equipment for the exploration, production, refining, and transportation of energy.

EPCA also authorized the President to exempt crude oil and natural gas exports from such restrictions where doing so was deemed by the President to be in the national interest.

As the act today only relates to crude oil, the main exceptions that have been made are predominantly for shipments to our neighbors in Canada and Mexico in recognition of our historic trading relationships. Other exemptions to the ban are noted in detail in my formal testimony.

Today, through modifications to EPCA, the U.S. allows unrestricted exports of all fuels except crude oil, and natural gas has to go through a cumbersome regulatory procedure, but it is not banned. The only expressed ban that remains today is on crude oil.

In reviewing the history since the early 1970s, it is apparent that, whenever the U.S. Government has tried to favor a particular fuel, absent market realities, there have been unintended consequences which have been deleterious to the U.S. economy and to our natural energy security.

Controls on natural gas prices led to the failure to develop the Alaska Natural Gas Transportation system, creating massive natural gas shortages in my home territory in the industrial midwest in the winter of 1977–1978 with devastating economic impact, some of which remains to this day.

The ban on using oil and gas in industrial boilers and power generation led to a major switch away from gas and oil towards coal. This rush towards coal has led to scores of aging coal facilities that now have to be replaced as part of our national environmental policy and our international climate policy.

Mr. Chairman, in conclusion, it is evident that the U.S. energy situation today is far different from what it was when EPCA was

enacted. With crude oil production continuing to rise, it would be detrimental to U.S. energy and economic policy to keep the ban on crude oil exports.

Keeping the ban and attempting to manipulate policy to control a globally traded commodities with hopes that the U.S. Oil boom will lead to energy independence is a fallacy as the U.S. is part of the global market and must, therefore, participate in it.

Lifting the ban will generate paramount foreign policy benefits, it will increase U.S. GDP—and Brookings did a major study on this issue that is on our Web site, if anyone cares to look at it—and it will reduce unemployment, all of which will be foregone if the ban remains in place.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Ebinger follows:]

BROOKINGS

Testimony of
Dr. Charles K. Ebinger
Senior Fellow, Energy Security Initiative
The Brookings Institution

U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and Power Hearing on
“The Energy Policy and Conservation Act of 1975:
Are We Positioning America for Success in an Era of Energy Abundance?”

December 11, 2014

Thank you Mr. Chairman, before commencing I want to thank you and the Committee for inviting me to testify this morning on the origins of the crude oil export ban which was enacted nearly 40 years ago during my first job as a Foreign Affairs Officer in the Federal Energy Administration’s Office of International Energy Affairs. Given the profound changes that have occurred in unconventional oil and gas production over the last 6 years, it is critical to look back and remind ourselves how the energy situation in the United States has evolved since 1975.

History of the Crude Oil Export Ban

During the 20 years prior to the Organization of Arab Petroleum Exporting Countries (OAPEC) Oil Embargo of 1973-1974, the chief issues dominating US energy policy were that of nuclear power (especially the pros/cons of developing the breeder reactor), price controls on domestic natural gas and oil, and limitations on oil imports through both a Voluntary Oil Import program (1957-1959) and a Mandatory Oil Import Program (MOIP) (1959-1973.) Also of great policy

concern at the time was the plight of the domestic coal industry, especially in Appalachia. In reviewing this history, what stands out is that, just as is the case today, most energy issues were discussed in isolation from one another.

Between 1950 and 1960 natural gas consumption in the residential and commercial sectors rose by 160% compared to an 80% rise in oil usage and a two thirds fall in coal consumption.¹ The proportion of homes heated by natural gas rose from 25% to nearly 40%, and the use of natural gas in electric power generation nearly tripled.² By the early 1960s as a result of surging gas consumption, natural gas, which had been viewed as a byproduct of oil production, became a commodity of interest in its own right.

Prior to the early 1970s, the government effectively supported a domestic price for oil above the international or free market price. Concerns about “oil security” which had been prominent in earlier periods arose again on the domestic energy agenda in the mid-1950s as a huge glut of cheap oil imports from the Middle East, North Africa, and Venezuela threatened to drive down domestic prices, leading to a fall in oil production. This in turn as oil demand skyrocketed lead to a new onslaught of cheap imported oil. There was grave concern that since these supplies were coming from unstable regions of the world that this oil import dependency could lead to military intervention if the continuation of imported oil supplies were threatened.

However by the early 1970s concerns about rising inflation, largely owing to the escalating costs of the Vietnam War, became more important than the alarm over rising oil imports. This lead the easing of oil import restrictions and in August 1971 the enactment of price controls designed to keep domestic oil below world prices. During this time, President Nixon’s economic policies led to a devaluation of the dollar which negatively affected OPEC revenues from dollar denominated oil sales on the world market. That same month, the President removed the convertibility of the

¹ Martin Greenberger, “Caught Unawares: The Energy Decade in Retrospect,” Ballinger Publishing Company, 1983.

² Ibid.

dollar into gold. The following year the US dollar was devalued again putting further downward pressure on OPEC revenues.

On the geopolitical front, the early 1970s saw momentous changes as the major oil producing countries in response to a decline in real oil prices mounted a unified campaign against the petroleum companies to extract more of the economic rent from their oil production. Under the Tehran and Tripoli agreements between the international oil companies and OPEC, the host countries were able to boost their revenues both by increasing the “posted price” as well as increasing the tax rate on the companies. Previously the “posted price” was used to calculate the price that would be paid by producers. The “posted price” or taxed price was higher than the actual market price paid by the international oil companies for the oil. After Tehran and Tripoli, OPEC was able to introduce an escalation clause in its contracts that it believed would protect their members from inflation. This, however, failed to stem the tide; as prices continued to rise on the world market largely owing to surging demand in the US. Hardly was the ink dry on one contract before OPEC made new demands for further upward price revisions.

As tumultuous as these times were, it is fascinating to realize that as late as June 1973 Saudi Arabian oil was still posted at \$2.80/bbl, albeit in percentage terms up dramatically from \$1.80/bbl in 1970.³ By the summer of 1973 tensions were boiling as OPEC became more and more concerned that the international oil companies were manipulating international product prices in a manner that was detrimental to their interests. By September, events reached a boiling point as OPEC demanded a renegotiation of the Tehran and Tripoli agreements. With the outbreak of the Yom Kippur War, negotiations broke down and a few days later the six Gulf producers announced a 70% increase in the price of Arabian light oil to \$5.12/bbl—a staggering price increase.⁴ This was followed by production cutbacks in response to the US resupply of weapons to Israel following the outbreak of the Arab Israeli war and the announcement of an oil embargo against the US, Portugal and the Netherlands.

³ Martin Greenberger, “Caught Unawares: The Energy Decade in Retrospect,” Ballinger Publishing Company, 1983.

⁴ Ibid.

Mr. Chairman, given the current glut of oil on the world market relative to demand, it is worth noting that global market conditions in the early 1970s could not have been more different than they are today. Demand for oil throughout the industrialized world was skyrocketing. GNP growth rates in 1973 averaged 5.4% in Western Europe and 10.4% in Japan.⁵ Fuel consumption in Japanese industry was 30% higher in October 1973 than a year previously. In the US, domestic production had peaked in 1970, leading a Cabinet Task Force to recommend the gradual elimination of the quotas under MOIP, discussed above, out of concern that they were costly to US consumers and did little to protect national security. In retrospect, it is remarkable that this recommendation came at the same time as US oil consumption was skyrocketing, domestic production was peaking, and oil imports were up to nearly 30% of US oil consumption.

The US could not have been more ill-prepared for the 1973 Oil Embargo. In response, one of the primary actions taken was the creation of the Federal Energy Administration which was immediately charged with administering oil prices and allocation controls. Unfortunately these were so ill conceived that they only accentuated the impact of the crisis and exacerbated gasoline shortages, causing long lines of angry motorists buying highly regulated volumes of fuels often on odd and even days of the month.

The Energy Policy and Conservation Act of 1975

In response to the crisis, President Nixon launched "Project Independence," designed to eliminate oil imports by 1980 and comprising a host of initiatives including the Energy Policy and Conservation Act (EPCA) of 1975 whose possible modification or rescission is the primary issue of today's hearing. Under the EPCA, the President through the Secretary of Commerce was granted the authority to restrict exports of coal, petroleum products, natural gas, petrochemical feedstocks and supplies of materials and equipment for the exploration, production, and refining or transportation of energy supplies. The EPCA also authorized the President through the

⁵ Ibid.

Secretary of Commerce to exempt crude oil and natural gas exports from such restriction where he/she deems doing so to be in the national interest. As the act today only relates to crude oil, the main exemptions that have been made are for shipments to Canada and Mexico in recognition of our historic trading relationships. The EPCA requires quarterly reports to Congress on any exemptions on this general export ban. Since the Act was passed there have been a number of exemptions to the crude oil export ban, included at the end of my remarks as Annex 1.

Today, through modifications to the EPCA, the US allows unrestricted exports of coal, petroleum products and petrochemical feedstocks, and on a case-by-case basis allows the export of natural gas. The only expressed ban that remains in place is that on crude oil exports.

Project Interdependence

By the time President Ford released his energy plan in November 1974, energy policymakers were aware that under no political circumstances could the US become totally energy self-sufficient at any reasonable economic cost. President Ford launched bold initiatives: creation of a 300 million barrel Strategic Petroleum Reserve (SPR), a (in my opinion misguided) tariff on imported oil, attempts to decontrol domestic oil and natural gas prices, and the authority to order major power plants to convert from oil and gas to coal (a legacy that continues to plague our environmental policy to this day). Despite a declared policy of reducing US oil imports between 1973 and 1977, crude oil imports rose from 3.2 mmbd to 6.6 mmbd with OPEC's share rising from 48.7% to 70.4% while OAPEC's share rose from 14.7% to 36.1%.⁶ In reality our dependence was even higher since a large volume of imported petroleum products from Caribbean refineries used feedstock from OPEC and OAPEC producers that were not included in import volumes from these oil producing countries.

⁶ Charles K. Ebinger, "The Critical Link: Energy and National Security," Ballinger Publishing Company, 1982.

National Energy Plans 1 & 2

To deal with the energy crisis, President Carter unveiled his first National Energy Plan in April 1977, the basic objective of which was to reduce reliance on oil imports from 1985 projected levels of 16 mmbd to 6 mmbd. To achieve this goal, the NEP supported greater reliance on coal and energy conservation until renewable energy resources could be developed. At this time, the Carter Administration viewed nuclear energy as an energy resource of last resort. The SPR was expanded to 1 billion barrels. While many legislators agreed that higher oil and natural gas prices (still under price controls) were needed to encourage conservation, they could not agree on how high prices should go or who should benefit from the increases. The debate centered on several important questions: Should US oil be priced the same as that in the world market as determined by OPEC? Should the appropriate price be the replacement cost of a depletable resource? What is the valid measure of replacement cost? Is a price based on production cost plus a fair rate of return more appropriate than a price based on replacement cost? Debates on proposals for a wellhead tax and continued price controls focused on the fundamental question of who should benefit from oil prices. The Carter Administration argued that the uncontrolled price for newly discovered oil which had been passed provided enough incentive to foster new exploration and production and that the oil industry should not be allowed to recoup windfall profits from existing reserves which had cost them very little. In contrast, the oil industry argued that part of the tax should be rebated to provide for investment in new more expensive exploration and to foster the development of high cost alternative energy resources by the oil industry.

Mr. Chairman, it was not only how to deal with the oil industry where Congress was at an impasse; President Carter opposed the decontrol of natural gas, which not only curtailed the development of the Alaskan gas pipeline, effectively closing off 10% of the nation's perceived natural gas resources at the time, but also led to a rancorous confrontation on the price we would pay for gas from Mexico and Canada as well as Alaska, further cutting off supplies as a gas crisis loomed on the horizon.⁷ Ironically these self-inflicted wounds and the perception of a

⁷ Ibid.

natural gas shortage led not only to a major gas crisis in the winter of 1976-1977 but to also the passage of other legislation that has made a major contribution to the intractability of some aspects of energy policy to this day.

The December 1978 passage of the National Energy Act, which included the Natural Gas Policy Act, the Power Plant and Industrial Fuel Use Act and the Energy Conservation Policy Act, was heralded as a major step in reducing US dependency on imported oil. In reality, most of the provisions had only a marginal impact on the way Americans produced and consumed energy, while others such as the Power Plant and Industrial Fuel Use Act actually increased oil imports by limiting the use of natural gas, which was deemed as “too noble” a fuel to be used in power plants and industrial boilers. Mr. Chairman, given that natural gas production at the wellhead has been booming since 2008 and the fact that it has taken over much of the nation’s electric power sector suggest how quickly the domestic market can respond when the proper price signals are in place. Given that natural gas is now being talked about as a major transportation fuel in 18 wheel trucks, railroad locomotives, and maritime trade and as CNG, methanol, and LNG the folly of thinking that regulation and restrictions on vital global commodities makes any economic sense should be apparent. Please realize that this same misguided thinking on keeping crude oil exports restricted will one day be shown to have been wrong once the ban is lifted.

Lessons from Failed Energy Policy Initiatives

In reviewing the history of US energy policy since the early 1970s, it is apparent that whenever the US government has tried to favor a particular fuel absent market realities there have been unintended consequences which have been deleterious to the US economy and US energy security. Controls on gas prices led to the failure to develop the Alaska Natural Gas Transportation Systems (ANGTS), massive natural gas shortages with devastating economic impact on the industrial Midwest and a switch away from gas and oil towards coal in both the power generation sector and in industrial boilers. This rush towards coal has led to scores of aging coal facilities that now have to be replaced as part of our national environmental policy and our international climate policy.

Perceptions that the US was running out of oil along with continued price controls throughout the 1970s led to a protracted debate on whether to allow the export of Alaskan oil even though the economics were overwhelmingly in favor. Price controls while in effect also constrained domestic oil production in high cost areas such as the Outer Continental Shelf, though clearly environmental policy concerns also played a role.

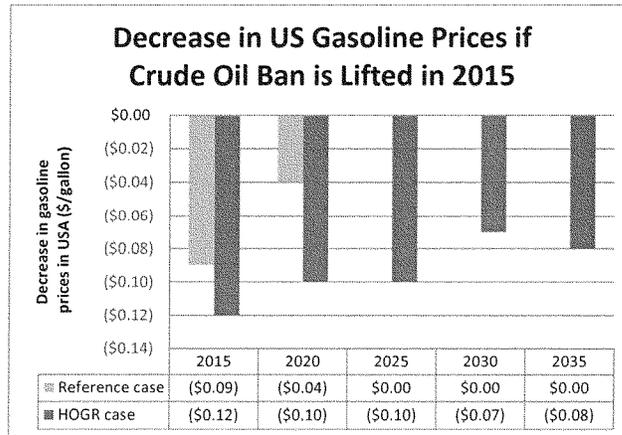
Prior to the removal of oil price controls by President Reagan, the multi-tiered pricing system for domestic oil created inefficiencies in the market as well as outright fraud by a few oil companies and traders that led to a major waste in resources as well as the construction of so called “tea-kettle refineries” that served no economic or public policy purpose but rather perpetuated a distorted national energy policy. Furthermore, continuation of the Jones Act and proposals to require that if the crude oil ban is lifted that the Congress should require the use of Jones Act vessels for all export cargoes makes no economic sense and should be rejected out of hand. The Jones Act for far too long has been a thorn in the side of a coherent US energy and economic strategy and is at sharp odds with the US’ long standing commitment to free trade.

Economic Benefits of Lifting the Ban on Crude Oil Exports

Mr. Chairman, it is evident that the energy situation the US is in today is far different from the one it was in when the EPCA was enacted. With crude oil production continuing to rise in the US, it would be detrimental to US energy and economic policy to keep the ban on crude oil exports in place. Keeping the ban in place and attempting to manipulate policy to control a globally traded commodity with hopes that the US oil boom will lead the US to energy independence is a fallacy, as the US is part of the global market and therefore must participate in it; otherwise significant benefits will be forgone, as outlined below:⁸

⁸ The following data is taken from: Charles Ebinger & Heather L. Greenley, “[Changing Markets Economic Opportunities from Lifting the U.S. Ban on Crude Oil Exports](#),” Brookings Institution Energy Security Initiative, September 2014, in conjunction with data from NERA Economic Consulting, “[Economic Benefits of Lifting the Crude Oil Export Ban](#),” prepared for The Brookings Institution, 2014.

- Lifting the ban on crude oil exports from the United States will boost US economic growth, wages, employment, trade and overall welfare. For example, the discounted net present value of gross domestic product (GDP) through 2039 has the potential to be between \$600 billion (EIA’s reference case) and \$1.8 trillion (EIA’s High Oil and Gas Resource case), depending on how soon and how completely the ban is lifted.
- Benefits are greatest if the US lifts the ban in 2015 for all types of crude. Delaying or allowing only condensate exports lowers benefits by 60 percent relative to a complete and immediate removal of the ban. If oil and gas supplies are more abundant than expected, allowing only condensate exports lowers the benefits by 75 percent relative to completely lifting the ban. The chief reason for this is that the greatest increase in light tight oil (LTO) production comes in 2015. Therefore, a delay would forego significant benefits.
- Lifting the ban actually lowers gasoline prices by increasing the total amount of crude supply. The decrease in gasoline price is estimated to be \$0.09 per gallon in 2015, but if oil supplies are more abundant than currently expected, the decline in gasoline prices will be larger (\$0.07 to \$0.12 per gallon) and will continue throughout 2035.



- Permitting the export of crude oil will enhance US global power in several ways, including: reinforcing the credibility of US free and open market advocacy; allowing for the establishment of secure supply relationships between American producers and foreign consumers; increasing flexibility to export crude to others to address supply disruptions; empowering another non-OPEC nation to meet the growing energy demands from countries in Asia, as well as other rapidly developing nations; shifting oil rents to the US from less reliable suppliers; and providing our own hemisphere with a competitive source of crude supply. Most importantly, allowing crude oil exports will increase revenues to domestic producers helping to maximize the scope of the production boom, while boosting American economic power that undergirds US national power and global influence.

Allowing crude oil exports in any fashion will have positive economic affects both in the US and in the world oil market. At the same time, world energy security will be enhanced by increasing the diversification of oil supply available globally, while also increasing US energy security.

Lifting the ban generates paramount foreign policy benefits, increases US GDP and welfare and reduces unemployment, all of which will be forgone if the ban remains in place.

Conclusions

Mr. Chairman, as your committee deliberates whether to lift the current ban on crude oil exports I think it is vital to keep several things in mind:

1. When the ban was enacted, US oil imports were skyrocketing in stark contrast to today where oil imports are falling, and domestic oil prices, owing to price controls, were lower than the international price of oil. If the US had not put the ban in place, US oil producers would have had a strong incentive to sell into the international market to get a better price for their oil. Today the situation is similar; with the ban in place, producers in areas such as the Bakken do not have access to pipelines and as a result have had to discount their oil to account for the higher costs of transportation by rail, barge, and truck. However, if they were able to export their oil, despite these higher transportation costs, they could

command higher prices, generating higher profits which they could then bring back and use to look for more oil and gas here in the US, generating an economic stimulus while lowering unemployment.

2. There is currently no outright ban on any other energy commodities in the US including: coal, natural gas, petroleum products, NGLs, uranium etc. Maintaining a ban on crude oil exports is inconsistent with US policies on other energy exports and, moreover, the US long standing position on free and open international markets.
3. Contrary to popular opinion, gasoline prices will not increase if the ban is lifted—in fact, they are likely to fall. In addition to the economic study Brookings has conducted on this issue, at least 5 other major studies⁹ have similarly concluded that gasoline and other critical commodities such as home heating fuel prices will fall if the ban is lifted albeit by modest amounts. This owes mainly to the fact that the price of oil and gasoline is set in the international market. Furthermore, as stated, the US already exports gasoline without any disruption to gasoline prices, again because this price is set globally. It is illogical to ignore the fact that the US is part of the international market.
4. The infrastructure in the US is not equipped to refine and process the type and amount of oil produced domestically. Much of this oil is from unconventional production and termed light tight oil, much of which cannot be processed in US refineries without substantial capital investment because US refineries were designed to process heavier crudes. Refiners are reluctant to make these sizeable investments given projections of flat to declining US petroleum demand. Since June 2014 the surplus of oil has been driving down crude oil prices by 30%.¹⁰ Meanwhile, the international demand for crude oil and

⁹ See reports by IHS International, the Congressional Research Service, ICF International, Resources for the Future, and Barclays.

¹⁰ Jack Stubbs and Ahmed Abouleinein, "Oil steadies around \$80 as Iran deadline extended," *Reuters*, November 24, 2014. <http://in.reuters.com/article/2014/11/24/markets-oil-idINKCN0J818H20141124>

petroleum products are continuing to fall. Therefore if the US allows the export of crude we will see a further decline in prices putting much needed excess revenue in the hands of US consumers and US industry instead of unnecessary spending on refinery upgrades..

Mr. Chairman, there is no useful purpose in prolonging the current ban on crude oil exports. As I noted, we no longer have any restrictions on any other energy source including petroleum products such as gasoline. We have a crude oil surplus of very light crudes which cannot be used in many of our refineries that were designed to use heavy crude oil imports from Venezuela, Mexico, and the Middle East without sizeable capital investments. With future demand for petroleum products in the US projected to be flat or declining, many refiners are reluctant to make these investments for fear they will not be recovered in the marketplace. We have major allies and trading partners who desperately want access to this oil as they see us as an important source of diversification from more politically volatile regions of the world. Lifting the ban will improve our trade balance and produce jobs for Americans on a sustained basis.

I thank you Mr. Chairman, and I hope I have provided some interesting background on how and why the current ban on crude oil came into place and why given changed market circumstances there is no justification for keeping it. The world we live in today could not be more different than in 1975. Unlike the rising level of oil imports we saw in 1975, today imports are falling and are likely to continue. When the ban was passed in 1975, US domestic oil supply was falling. Today, trends point in the opposite direction—according to the EIA’s high growth scenario, the United States is set to produce 13.3 mmbd by 2035.¹¹ Today OPEC has far less control of crude prices as a variety of non-OPEC oil producers actively compete in the market. Unlike 1975, when areas such as New England were heavily dependent on oil and imports and thus had their economies ravaged, today the overwhelming use of oil in America is in the transportation sector where demand is falling owing to new fuel economy standards. Additionally, unlike 1975, when our truckers saw the cost of diesel skyrocket threatening independent truckers with bankruptcy,

¹¹ “Annual Energy Outlook 2014,” *U.S. Energy Information Administration, April 2014*.
[http://www.eia.gov/forecasts/aeo/pdf/0383\(2014\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2014).pdf)

today we have the prospect that with the proper policies we could over time replace this diesel with LNG, further reducing our oil imports by nearly 2 mmbd. At the same time as President Obama's new fuel economy standards ripple throughout the economy over the next decade we will see demand for gasoline drop by nearly another 2mmbd.

In light of the above factors, Mr. Chairman, I can see no justification for continuing the current ban on crude oil exports and urge you to lift it in its entirety.

Thank you Mr. Chairman for this opportunity to address the Committee; I would be delighted to take questions.

Annex 1¹²**Presidential Allowances for Crude Oil Exports****Exports to Canada, 1985**

President Reagan found unlimited exports of U.S. crude oil to Canada to be in the national interest, especially since simultaneously Prime Minister Mulroney removed price and volume controls on crude oil exports to the United States.¹³ Internal White House memoranda emphasize that imports of Canadian crude oil replace crude oil imports from unreliable and unstable sources.¹⁴ These memoranda note that lifting restrictions on crude exports is a “logical extension of the special treatment which historically has been accorded Canada under U.S. export controls”¹⁵ and that the United States and Canada’s energy markets and needs are interrelated.¹⁶

Exports from Alaska’s Cook Inlet, 1985

President Reagan found that unrestricted exports from Cook Inlet would be in the national interest because they would encourage other countries to remove trade barriers to related domestic goods and services. He also found that crude oil from Alaska’s Cook Inlet was advantageously located for export trade.¹⁷

Exports of 50,000b/d of ANS to Canada, 1989

President Reagan saw the allowance of this limited amount of ANS crude oil to be exported to Canada as another means to promote free trade between the United States and Canada even

¹² The following is taken from: Charles Ebinger & Heather L. Greenley, “[Changing Markets Economic Opportunities from Lifting the U.S. Ban on Crude Oil Exports](#),” Brookings Institution Energy Security Initiative, September 2014

¹³ 50 Fed. Reg. 25189, 18 June 1985.

¹⁴ William T. Archey and Jan W. Mares, “U.S. Crude Oil Exports,” White House Staffing Memorandum to President Reagan, 29 May 1985.

¹⁵ William T. Archey, Acting Assistant Secretary for Trade Administration, Department of Commerce & Jan W. Mares, Assistant Secretary for International Affairs and Energy Emergencies, “U.S. Crude Oil Exports to Canada,” Department of Energy, U.S. Government, 2 May 1985.

¹⁶ Ibid.

¹⁷ 50 Fed. Reg. 52798, 26 December 1985.

though exports of ANS were still prohibited by the MLA as they were transported over the Trans-Alaskan Pipeline, which crossed over federal rights-of-way.¹⁸

Exports of 25,000b/d of California Heavy, 1992

In 1992, President Bush allowed 25,000b/d of California heavy crude oil to be exported, because, “California independent oil producers [were] suffering financial losses due to the surplus of heavy crude oil in the California market and their lack of alternative marketing options.”¹⁹ Additionally, he noted available supply of heavy crude oil exceeded refinery capacity.²⁰ While exports of California heavy crude oil were viewed as helping independent oil producers, the effect of such exports on the domestic maritime industry proved to be a major concern. Under the Jones Act, U.S. flag vessels are the only ones permitted to transport California oil to other U.S. destinations, such as the Gulf Coast, for refining by domestic refiners.²¹ Some officials in the Bush Administration feared the U.S. maritime industry would lose business, potentially leading to unemployment, since foreign vessels were then able to transport California heavy crude oil destined for foreign ports.²²

Exports of Alaska North Slope Crude (ANS), 1996

President Clinton allowed unlimited exports of ANS crude to any destination after an interagency review conducted by the National Economic Council and the Bureau of Export Administration found that such exports would not have a significant impact on the economy or the environment. The exports, however, were approved subject to very specific requirements; namely, that the crude oil is exported on U.S. registered and crewed vessels and the vessels adhere to specific export routes.²³

¹⁸ 54 Fed. Reg. 271, 5 January 1989.

¹⁹ Susan Collins, “EPC Meeting on Oil Exports,” 28 November 1989.

²⁰ Ibid.

²¹ The Jones Act, which is formally known as the Merchant Marine Act of 1920, 46 U.S.C. § 55102, among other things, prohibits vessel transportation of merchandise from one U.S. port to another U.S. port unless the vessel is a U.S. flag vessel – that is it is owned by a United States citizen and documented under the laws of the United States.

²² Council of Economic Advisers Memorandum from Michael Boskin to Susan Collins (Sutherland FOIA Material) page 1.

²³ Presidential Memorandum of 26 April 1996, *Exports of Alaskan North Slope (ANS) Crude Oil*.

Other Export Transactions**California Heavy Crude**

Pursuant to President Bush's national interest finding, BIS is empowered to grant licenses for exports of California heavy crude oil if the exporter can demonstrate that its crude oil was produced in California, has a gravity of 20 degrees API or lower, and the average volume of such California heavy crude oil exported per day from the United States does not exceed 25,000 barrels.²⁴

With respect to the limit of 25,000 barrels, BIS takes a first-come-first-serve approach, in which it will grant licenses to export California heavy crude oil in the order the license applications are received with the total quantity authorized for any one license not to exceed 25 percent of the annual authorized volume of California heavy crude oil exports.²⁵

Exporters receiving license to export California heavy crude oil must export such crude oil within 90 calendar days after the license is issued and, within 30 days of any export; exporters must provide BIS with a certified statement confirming the date and quantity of crude oil exported.

Alaskan ANS Crude

Unlike California heavy crude oil, exports of ANS crude can be exported freely without a license, but such exports must adhere to specific export requirements. First, ANS crude oil must be transported on a vessel documented under the laws of the United States and such vessels must use the same route employed for shipments to Hawaii until they reach a point 300 miles due south of Cape Hinchinbrook Light and then at that point, must remain outside the 200 nautical

²⁴ 15 C.F.R. § 754.2(g).

²⁵ 15 C.F.R. § 754.2(g)(5).

mile Exclusive Economic Zone.²⁶ Returning vessels from foreign ports to Valdez, Alaska must conform to the same route restrictions.

Additionally, owners and operators of vessels exporting ANS must adopt a mandatory program of deep water ballast exchange, must ensure their vessels are equipped with satellite-based communications systems that will enable the Coast Guard independently to determine the vessel's location, and must maintain certain records.

²⁶ 15 C.F.R. § 754.2(j).

Key Facts

Situation in 1975 and the EPCA

- Demand for oil throughout the industrialized world was skyrocketing.
- In the US, domestic production had peaked in 1970, leading a Cabinet Task Force to recommend the gradual elimination of the quotas under MOIP, discussed above, out of concern that they were costly to US consumers and did little to protect national security.
- The US could not have been more ill-prepared for the 1973 Oil Embargo.
- Creation of the Federal Energy Administration which was immediately charged with administering oil prices and allocation controls.
- Unfortunately these were so ill conceived that they only accentuated the impact of the crisis and exacerbated gasoline shortages, causing long lines of angry motorists buying highly regulated volumes of fuels often on odd and even days of the month.
- Under the EPCA, the President through the Secretary of Commerce was granted the authority to restrict exports of coal, petroleum products, natural gas, petrochemical feedstocks and supplies of materials and equipment for the exploration, production, and refining or transportation of energy supplies.

Situation Today

- Today, through modifications to the EPCA, the US allows unrestricted exports of coal, petroleum products and petrochemical feedstocks, and on a case-by-case basis allows the export of natural gas. The only expressed ban that remains in place is that on crude oil exports.
- In reviewing the history of US energy policy since the early 1970s, it is apparent that whenever the US government has tried to favor a particular fuel absent market realities there have been unintended consequences which have been deleterious to the US economy and US energy security.
- Contrary to popular opinion, gasoline prices will not increase if the ban is lifted—in fact, they are likely to fall.
- The US has a crude oil surplus of very light crudes which cannot be used in many of our refineries that were designed to use heavy crude oil imports from Venezuela, Mexico, and the Middle East without sizeable capital investments.
- Today, trends point in the opposite direction—according to the EIA's high growth scenario, the United States is set to produce 13.3 mmbd by 2035. Today OPEC has far less control of crude prices as a variety of non-OPEC oil producers actively compete in the market.

Mr. WHITFIELD. Thank you.

And our next witness is Deborah Gordon, who is the Director at the Carnegie Endowment for International Peace.

And you are recognized for 5 minutes.

STATEMENT OF DEBORAH GORDON

Ms. GORDON. Subcommittee Chairman Whitfield, Ranking Member Rush, distinguished members of the subcommittee, thank you for the opportunity to testify today about EPCA in an era of oil transition.

In my remarks, I will discuss three key points: First, the need to understand the changing conditions influencing today's crude oil market; second, the need for better information about the makeup and specifications of U.S. oils; and, lastly, the need to deal with the environmental consequences from an unconditional lifting of the oil export ban. I explore these issues in greater detail in my written testimony, which I submitted for the record.

The bottom line is that oils are changing and a more complex array of hydrocarbon resource is replacing conventional oil. Public and private stakeholders need to understand the environmental impacts inherent to different oils. The best way to position America for success amid energy abundance is to generate information necessary to make wise decisions among many oil options.

The truth is we know precious little about these new resources. The Nation needs reliable, consistent, detailed, open-source data about composition and operational elements of U.S. oils. Significant information gaps have accompanied the Nation's oil—increased oil production.

Although EPCA was adopted in response to a set of—a specific set of oil supply problems, it can serve as a template for addressing some of the shortcomings that exist today as America struggles to manage the economic, geopolitical, and climate impacts of its new oil bounty.

It will be important for policymakers to think comprehensively about the full range of current oil issues. Several EPCA provisions merit careful review and consideration and possible updating: One, widely expanding oil data collection, making this information publicly available; two, increasing the heavy-duty vehicle efficiency standards for trucks and marine vessels that move the oil and petroleum product that we are trying to consume less of at home; and, three, revisiting oil accounting practices so that the SEC is fully informed about oils that are on tap to bolster U.S. markets.

America is one of the first in line to win the unconventional oil lottery, but despite newfound energy resources at home, the U.S. exists in an increasingly oil interdependent world. As such, if U.S. policymakers enact effective safeguards to minimize unintended consequences, America will be better positioned to chart a path that others can follow.

Two questions require attention.

First, do policymakers and the public have sufficient information about America's oil? Unfortunately, they do not. Ironically, there is more detailed open-source data about OPEC crudes than the oils in the Bakken, Permian, and Eagle Ford.

In seeking to obtain and verify these needed oil data, we have encountered several obstacles, from data inconsistencies, to withheld data, to Government limitations on expanding oil reporting.

I would be happy to elaborate on any of these issues. The overarching concern, however, is that oil markets cannot function efficiently without transparent high-quality information.

Question 2. What are the environmental risks these new oils pose? The Carnegie Endowment is developing an oil-climate index that compares global oils with one another in terms of total greenhouse gas impacts. Together with Stanford University and the University of Calgary, we are modeling the entire oil value chain, from where the oil comes out of the ground through to how the products are used.

Our preliminary findings, based on 28 sample oils, global oils, are that oils' greenhouse gas footprints vary by at least 80 percent from one another. In other words, replacing a high greenhouse gas oil with a lower one could almost halve the impacts of greenhouse gases for every barrel of oil.

There are several categories of higher emissions from oils. These include gassy oils, like the Bakken or Nigeria, where gas associated with oil is flared or burned instead of separated and sold; heavy oils, those that use more heat, steam, hydrogen through their value chains to yield more bottom-of-the-barrel products like petroleum coke, a coal substitute; watery oils, which are interesting, like those in California's San Joaquin Valley where it takes a tremendous amount of energy to lift as much as 50 barrels of water for every one barrel of oil that you produce; and extreme oils like those in the Gulf of Mexico that are miles below the surface or those in the boreal peat bogs in Alberta, where carbon is naturally sequestered.

As one of the world's fastest-growing oil producers, the U.S. has the opportunity and the responsibility to be a global leader in the energy sector. A balanced energy policy informed by oil transparency must guide energy decisionmaking in ways that satisfy U.S. consumers, strengthen the American economy, protect the climate, and enhance national and global security.

In closing, a national discussion, one informed by reliable open-source data about the composition, quality, and environmental profile of new oils will be key to making effective and sustainable decisions.

Thank you.

[The prepared statement of Ms. Gordon follows:]



CARNEGIE
ENDOWMENT FOR
INTERNATIONAL PEACE

Congressional Testimony

House Subcommittee on Energy and Power
hearing on **The Energy Policy and
Conservation Act of 1975: Are We Positioning
America for Success in an Era of Energy
Abundance?**

Testimony by **Deborah Gordon**
Director, Energy and Climate Program
Carnegie Endowment for International Peace

December 11, 2014

Subcommittee Chairman Whitfield, Ranking Member Rush, distinguished members of the Subcommittee, thank you for the opportunity to testify today to examine the Energy Policy Conservation Act of 1975 in an era of energy transition.

I am the Director of the Energy and Climate program at the Carnegie Endowment for International Peace, a non-partisan policy think tank. I began my career with Chevron as a chemical engineer and then spent over two decades researching transport energy policy at Yale University, the Union of Concerned Scientists, and for a wide array of non-profit, public, and private sector clients. I have authored several books and numerous reports on transportation, oil, and climate policymaking.

In my remarks today, I will make three key points: the need to understand the changing conditions influencing today's crude oil market; the need for better information about the chemical characteristics, quality and operational specifications of U.S. oils; and the need to deal with the environmental consequences from an unconditional lifting of the oil export ban.

The bottom line is that oils are changing. A more complex array of hydrocarbon resources is replacing conventional oils. (Attachment 1). The truth is we know precious little about these new resources. The nation needs reliable, consistent, detailed, open-source data about the composition and operational elements of U.S. oils. Significant information gaps have accompanied the nation's increase in oil production, impeding sound decision making. Public and private stakeholders need to fully understand the environmental impacts inherent to different oils. The best way to position America for success in an era of energy abundance is generate the information necessary to make wise decisions among the many oil options. Without this information, the debate over lifting the ban on U.S. crude oil exports is taking place in a context in which we are essentially operating blind.

The Energy Policy Conservation Act of 1975 (EPCA) can serve as a template for addressing some of the shortcomings that exist today as America struggles to manage the economic, geopolitical, and climate impacts of its new bounty of oils.

Historical Context

EPCA is noteworthy for its breadth. Its five titles cover domestic supply availability, energy authority, energy efficiency, petroleum pricing, and general provisions (energy information collection and accounting practices).¹ EPCA has been amended over the years, including in the 113th Congress.²

Several EPCA provisions are relevant to this hearing, including:

¹ <http://thomas.loc.gov/cgi-bin/bdquery/z?d094:SN00622:@@D&summ2=m&>

² <http://legcounsel.house.gov/Comps/EPCA.pdf>

- Presidential authorization to **restrict exports** of all fossil fuels, including crude oil and petroleum products (Title I)³
- Establishment of the **Strategic Petroleum Reserve** (Title I)
- Transmittal of information to the **international energy program** (Title II)
- Corporate Average Fuel Economy Standards for motor **vehicles and industrial efficiency improvements** (Title III)
- Energy **information submittal** to DOE precursor agencies (Title V)
- Energy **accounting practices** by the Security and Exchange Commission (Title V)

EPCA was adopted in response to a specific set of oil problems existing in the 1970s: supply shortage from the Arab oil embargo and resulting price shocks. The present context is vastly different. Today's oil markets are highly uncertain. Conventional oil production has peaked, but new oils are serving as replacements. What new rules will be established to address the unintended consequences for the array of new oils surfacing in the U.S. and around the globe?

It is important for policymakers to think comprehensively about the full range of current oil issues. Several EPCA provisions merit careful review and updating. These include: (1) widely expanding oil data collection and making new information publicly available, (2) increasing heavy-duty vehicle efficiency standards for the trucks and marine vessels that move oil and petroleum products, and (3) revisiting oil accounting practices so that the Security and Exchange Commission is fully informed about the new oils now bolstering U.S. markets.

Assessing the Current Situation

America is one of the first in line to win the unconventional oil lottery. Despite newfound energy resources at home, however, the U.S. will never be free from foreign supplies in an increasingly oil-interdependent world. As such, if U.S. policymakers enact effective safeguards to minimize unintended consequences, America will be well positioned to chart a path that others can follow. Two questions require urgent attention:

Question 1: Do policymakers and the public have sufficient information about America's new oils?

Unfortunately, they do not. America's boom in oil production has been accompanied by far too little relevant information about new U.S. oil resources and their operations. Ironically, *there is more detailed open data available about OPEC crudes than those oils in the Bakken, Permian, or Eagle Ford basins.* What's more, these U.S. oils are very different from one another. And compared to Canadian oil sands, Gulf of Mexico ultra-deep offshore oils, Arctic oils, or Mexican heavy oils, the disparity between oils and their societal impacts

³ Although it has been amended numerous times, EPCA originally permitted the President to restrict exports of coal, petroleum products, natural gas, or petrochemical feedstock, and supplies of materials or equipment for exploration, production, refining, or transportation of energy supplies. Authorized the President to exempt crude oil and natural gas exports from such restriction where he deems such exemption to be in the national interest, such as in recognition of the historic trading relations with Mexico and Canada. Required quarterly reports to the Congress on any such restrictions made.

widen further. We need consistent and publicly available information, which at a minimum contains the expanded data collection summarized in Attachment 2.

In seeking to obtain and verify these needed oil data, Carnegie has encountered several obstacles, including:

1. Oil Data Inconsistencies: There are hundreds of different global oils. In order to be commercially viable, among other things, the oil must be assessed using an *assay* that analyzes its chemical and physical make up. The problem is that there is no standardized format for oil assays. For example, companies use different temperature settings while others omit information altogether. This makes it virtually impossible to compare oils to one another.
2. Data Cannot Be Used Without Company Permission: The oil industry publishes assays. Despite data inconsistency, another issue is the fine print. For example, users who wish to comply have to obtain permission to reproduce oil data in any format. Therefore, some of the oil data that is available for viewing is not truly “open source” in practice.
3. Data Not for Sale: Up to date, comprehensive oil databases are held by the private sector, often by oil consultancies. The price to obtain oil data is typically very high. Even if think tanks and academics can afford the hundreds of thousands of dollars to purchase oil data, it is not necessarily for sale. For example, after lengthy negotiations, a firm would not sell oil data to our academic partner at any price because they were viewed as a competitor.
4. Government Limitations Collecting Data: The Department of Energy is limited in its reach to expand oil-reporting requirements. For example, Carnegie was told that DOE could not establish consistent reporting requirements for oil data because OMB considers oil data collection a duplication of effort. This means that policymakers and the public are at the behest of industry to divulge information that may not be timely, accurate, or consistent.

Oil markets cannot function efficiently without transparent, high-quality information. Full information is also a necessary condition for effective policymaking. With a surplus of U.S. and other global crudes to choose from, we need to know oils’ inherent chemical characteristics, their operational specifications, and how oils differ from one another under set conditions.

Question 2: What environmental risks do new oils pose?

The Carnegie Endowment is developing an **Oil-Climate Index** that compares global oils to one another in terms of their total greenhouse gas (GHG) impacts. Together with Stanford University and the University of Calgary, we are modeling the entire oil value chain, from upstream oil extraction through downstream refining, transport, and petroleum product combustion. **Our preliminary findings (based on 28 sample oils) are that oils’ GHG footprints vary by at least 80 percent. In other words, replacing high GHG oils with**

lower ones could almost halve climate impacts for every barrel consumed. Several contributing factors make certain oils more emission intensive than others, including:

1. Gassy Oils: Oil fields typically have some natural gas associated with them. The more gas that is present, the more challenging and costly to safely manage these commodities. Producing gassy oil without gas-handling infrastructure leads to burning or flaring the gas as a waste byproduct. Oils that rely on flaring can result in as much as 75 percent larger greenhouse gas (GHG) footprints than comparable light oils that do not flare.⁴
2. Heavy Oils: The heavier the oil, the more heat, steam, and hydrogen required to extract, transport, and transform into high-value petroleum products like gasoline and diesel. These high-carbon oils also yield higher shares of bottom-of-the-barrel products like petroleum coke that are often priced to sell. The heaviest oils have GHG footprints that can be nearly twice as large as lighter oils.
3. Watery Oils: Oils that contain a lot of water take a lot of energy to bring to the surface. If an oil field has a water-oil ratio of 10 to one, that adds nearly two tons of water for every barrel of oil produced. Certain oils in California's San Joaquin Valley, for example, have 25 or 50 barrels of water per barrel of oil. Oils with high water-oil ratios can have a GHG footprint that is as much as 50 percent higher than such unencumbered oils.
4. Enhanced Recovery and Extreme Oils: Some oils are difficult to access. For example, it takes a lot of energy to reach extremely deep oils like Russia's seven-mile deep Sakhalin field. Likewise, depleting oil fields can require injection of substances with significant energy inputs. Still other oils are located in areas that sequester GHGs like permafrost, boreal peat bogs, and rainforests. Unearthing these oils can release large volumes of climate-forcing gases. GHG footprints may be least 50 percent larger for oils that are difficult to access or located in climate-sensitive environments.

If handled properly especially with regard to flaring, U.S. light tight oil (LTO) may have GHG impacts at the lower end of the climate spectrum. But in order to determine this, we need to run oils from North Dakota, Texas, and elsewhere through the Oil-Climate Index models. This will require a far greater degree of information transparency than is currently available about U.S. oils.

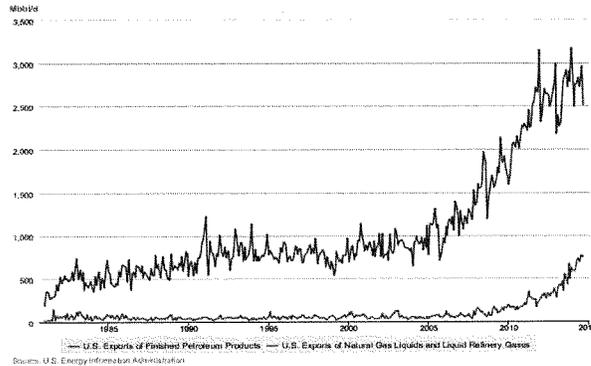
Understanding and Managing the Next Century of Oil

As one of the world's fastest-growing oil producers, the United States has the opportunity and responsibility to be a global leader in the energy sector. A strong, balanced, energy policy that is informed by oil transparency is needed to guide energy decision-making in ways that satisfy the energy needs of U.S. consumers, strengthen the American economy, protect the climate, and enhance national and global energy security.

⁴ Norway produces some of the world's lowest GHG oils because it is illegal to flare associated gas. This is not the case today in the Bakken and other U.S. LTO fields.

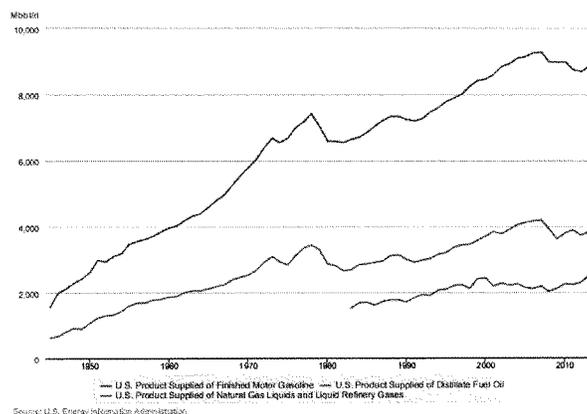
There is tremendous uncertainty at present in oil markets. With Asian growth slowing down, demand for U.S. petroleum product exports (which have ramped up markedly in recent years) may cool off. (Figure 1). It is unclear what this might mean for potential crude oil exports if the ban is lifted. Balancing global liquid fuel trade with an increasing number of players will be an ongoing challenge. But this will be critical in order to minimize market disruptions and price volatility.

Figure 1: U.S. Exports of Petroleum and Other Liquids



And, if oil prices remain low, recent downward trends could reverse and petroleum products may be consumed in greater volumes at home. (Figure 2). For example, in November, U.S. light truck sales were up dramatically over a year earlier. The GMC Sierra (up 57%) posted the largest sales gains compared to the Honda Civic (down 12%), which uses half as much gasoline per mile.

Figure 2: U.S. Consumption of Petroleum Products



We will very likely continue to export petroleum products. Light condensate may be allowed next. But what will it take to entirely reverse the 1975 EPCA decision to ban U.S. crude oil exports? This decision should be informed by full knowledge about the evolving oils America is producing now and into the future.

Should we encourage (or discourage) the development of all unconventional oils that could be transformed into petroleum products? The right answer to this question is far murkier than many people suppose. In reality, the answer depends on what the new rules are for the array of new oils surfacing in the United States and around the globe. Given the contentious geopolitics surrounding these decisions – and the huge stakes for consumers and for the planet—a **transparent debate, informed by reliable, open-source data about the composition, quality, and environmental profile of new oils**, is key to making effective and sustainable decisions.

Attachment 1

DIPLOMAT GORDON

THE WORLD'S GROWING OIL RESOURCES PAST - PRESENT - FUTURE

Oil scarcity is transforming into oil abundance—but what is oil becoming? Yesterday, conventional wisdom held that the world was running out of oil. Today, unconventional oils are changing forecasts. And tomorrow, diverse resources are likely to be turned into even more oil.

YESTERDAY'S OIL (Liquid oil only, 2002)

1.3 trillion barrels 30-35 years remaining

1 trillion barrels consumed to date

84%
Conventional Oils

14%
Unconventional Oils

Heavy 23%

Light 44%

16% Bitumen and Extra Heavy

Source: BP Statistical Review of World Energy, June 2012 and International Energy Agency (IEA) World Energy Outlook 2012

CONVENTIONAL

RESERVE OIL GAS LIQUIDS

Reserve oil is made of oil refining inputs, including natural gas liquids, naphtha, and a small share of raw materials. It is refined, not a by-product.

CONDENSATES

Mostly composed of light hydrocarbon streams, including natural gas liquids, naphtha, and a small share of raw materials. It is refined, not a by-product.

LIGHT

Most of the oil is refined for use in liquid petroleum products, which are refined into fuels.

HEAVY

Most of the heavy oil is refined for use in liquid petroleum products, which are refined into fuels.

UNCONVENTIONAL

TIGHT

Tight oil is a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

EXTRA HEAVY

Extra heavy oil is a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

BITUMEN

Bitumen is a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

GAS TO LIQUIDS

Gas to liquids is a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

BIOMETHANE HYDRATES

Biogas hydrates are a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

COAL TO LIQUIDS

Coal to liquids is a type of oil that is not easily extracted and is produced by hydraulic fracturing and secondary drilling.

TODAY'S OIL (Liquid oil only, 2012)

6.5 trillion barrels 160 years remaining

42%
Conventional Oils

58%
Unconventional Oils

Heavy 18%

Light 20%

23% Bitumen and Kerogen

4% Tight

9% Extra Heavy

Source: BP Statistical Review of World Energy, June 2012 and International Energy Agency (IEA) World Energy Outlook 2012

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EXTRA HEAVY

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TOMORROW'S OIL (Liquid oil only, 2032)

24 trillion barrels 500+ years remaining

26%
Conventional Oils

74%
Unconventional Oils

Conventional Oils 26%

15% Tight

8% Extra Heavy

11% Bitumen

13% Kerogen

12% Gas to Liquids

18% Coal to Liquids

Source: U.S. Energy Information Administration, "International Energy Statistics," Report 7, March and April 10, 2012; "Heavy Oil and Natural Bitumen—Strategic Petroleum Reserves," by D.E. Bergquist, James, U.S. National Energy Technological Laboratory, Energy Researcher of America-Petroleum Refining Society, Technology Institute, Republic of Missouri Oil & Gas State Policy, Oil & Gas Journal, from "World Energy Outlook and Oil Reserves," and in separate reports of the National Energy Commission, and Unconventional Oil and Gas Production Committee.

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Attachment 2



Open Source Oil Modeling Oil Data Gaps



OPGEE Upstream Production Data

1. Extraction method (*primary, secondary, EOR, other*)
2. Level of activity per unit production
 - Water-oil ratio (*for primary and secondary production*)
 - Steam-to-oil ratio (*for tertiary production*)
3. Location (*onshore, offshore, with GIS coordinates*)
4. Flaring rate
5. Venting rate (*level of fugitive emissions*)



PRELIM Downstream Refining Data

1. Reporting on updated refinery process energy requirement data.
2. Oil assay parameters (specified below) and reported consistently for each global oil.

Each parameter (except MCR/CCR) must be specified at each cut temperature* and cut temperature ranges must be standardized, as specified below or in another consistent format. *Note: Cut temperatures are currently reported out using a variety of inconsistent formats.*

- API Gravity
- Density
- Sulphur content (wt %)
- Nitrogen content (mass ppm)
- Hydrogen content
- Volume/Mass Flow (% recovery)
- Micro-carbon residue (MCR) or Conradson carbon residue (CCR)
- Viscosity (cST at 100 °C) for Vacuum Residuum

*The cut temperatures and products currently used in the PRELIM refining model are:

Temperature (°C)	Product Cut Name
80	LSR
180	Naphtha
290	Kerosene
343	Diesel
399	Atmospheric Gas Oil (AGO)
454	Light Vacuum Gas Oil (LVGO)
525	Heavy Vacuum Gas Oil (HVGO)
525+	Vacuum Residue (VR)
399+	Atmospheric Residue (AR)

Mr. WHITFIELD. Thank you, Ms. Gordon.

And thank all of you for your testimony.

At this time I will recognize myself for questions, and then we will give every other member the opportunity as well.

Just from a practical aspect here, anytime you start talking about crude oil, most of the American people think about gasoline prices. That is why it is more volatile, I think, when you talk about exporting crude oil than certainly natural gas or something like that.

Do any of you have an opinion on, if you were at a Rotary Club, how you would explain that exporting additional crude oil would not necessarily raise gasoline prices?

Mr. Sieminski.

Mr. SIEMINSKI. Mr. Chairman, it is always a challenge. Usually, at those Rotary Club functions, I get asked why gasoline prices are so high. Lately I haven't gotten that question.

Mr. WHITFIELD. Right.

Mr. SIEMINSKI. EIA has tried to examine your question from the standpoint of how gasoline prices are set in the U.S. markets and what gasoline prices relate to. And what we found in a study that we published just a short while ago was that these two benchmark crudes that I talked about, the one in the U.S., WTI, West Texas, and Brent in the international markets, that gasoline prices historically tend to be much more closely related to Brent crude oil prices than to the domestic benchmark.

The second thing that we found was that U.S. gasoline prices tend to be more closely related to gasoline prices in markets like Singapore and Rotterdam in the global markets than to comparing, let's say, Chicago prices with prices in the Gulf Coast.

The conclusion that one would draw from that is that gasoline prices, because we are exporting and importing so much gasoline, are really set in the global markets—gasoline prices in the U.S. tend to reflect that global market—and that, if exports of crude oil resulted in higher prices for West Texas Intermediate or crudes that are benchmarked to that, it would not have much impact on gasoline prices.

Mr. WHITFIELD. And I am glad you mentioned we are already exporting gasoline anyway. So we are talking about—

Mr. SIEMINSKI. Quite a bit, actually.

Mr. WHITFIELD. Quite a bit.

Did you have a comment, Mr. Pugliaresi.

Mr. PUGLIARESI. I think, you know, how I would explain is that, if you want to constrain volatility in the market, if you want to constrain rising gasoline prices, you should promote a very stable and growing production of crude oil in North America.

Mr. WHITFIELD. Right.

Mr. PUGLIARESI. We have evidence that this is having a big effect. And that is the answer. We are—as Adam said, we are well integrated into the world oil market. The only thing we can—well, what we can do is have a stable growing production of crude oil outside of these more volatile areas.

Mr. WHITFIELD. Right.

And do you have a comment, Dr. Ebinger?

Mr. EBINGER. If I could just add, Mr. Chairman, I think an easy way to look at this is, since, as Mr. Sieminski said, gasoline prices are predominantly set in the international market, if we have a set volume of crude oil in that market and all of a sudden we put more oil into that market, adding to supply while demand stays relatively constant, on the basis of kind of fundamental economics—more supply, constant demand—prices should come down and then refiners buying that oil around the world will—in theory at least, if they wish to be competitive, will lower their product—petroleum product prices, including gasoline, and, hopefully, for New England, home heating fuel. I think that is the way I find sometimes trying to explain it, seems to have some say in it.

Mr. WHITFIELD. Ms. Gordon, do you have a comment?

Ms. GORDON. Yes. I don't know that it would be easy for consumers to understand this. But because oils are so different, the oils that we are largely now set to refine, the heavier oils, don't preferentially make more gasoline. They make more diesel.

So the oils that we are now looking to export, the light tight oils, those do. They are lighter oils. They go through hydroskimming refineries. They make more gasoline.

So we might be getting ready to export the perfect oil to make more gasoline in order to keep and refine the oil that makes more diesel.

It is not a consumer issue then because our consuming public doesn't use diesel. They use gasoline. So it gets a little bit complicated here.

And the big question that Lou raised was volatility. I think that consumers are going to need to understand—in the future, possibly not be explained high prices, but volatile prices.

And volatility will really hurt America because we are equal, in large parts, consumer and producer of oil and product, that, if the markets become very volatile, we are going to be hurt more than anyone else.

Mr. WHITFIELD. OK. Well, my time is expired.

Mr. Rush, you are recognized for 5 minutes.

Mr. RUSH. I want to thank you, Mr. Chairman.

I share the optimism of the panel, but there are some cautionary items or cautionary indications that I want to at least consider for the record.

Ms. Gordon, what type of impact would lifting the crude oil ban have on climate change? Are these precautions or conditions that Congress should consider if we were to lift the ban on crude oil altogether?

Ms. GORDON. It is a great question. And the reality is, as my testimony stated, we just don't know enough about these light tight oils that are coming out of America.

What we do know is, like I said, they are lighter oils. Our refineries are set to run much heavier crudes. Those heavier crudes need much more heat. They produce more bottom-of-the-barrel products. So the heavier oils are generally more greenhouse gas-intensive.

So we are setting ourselves up to be a refiner of higher greenhouse gas oils as we export possibly, if they are not flared, lower greenhouse gas oils to others, which puts a bigger burden on Amer-

ica to control—in terms of global climate agreements, control what we are doing when we are handing off our oils.

So I think that there are real questions from a climate perspective, what are these oils and what are we giving away.

Mr. RUSH. Is there any other panelists who would like to comment on this? Are there any other panelists that would like to comment on this?

Well, let me ask you a question. Mr. Ebinger, in your written testimony, you stated that lifting the ban on crude oil exports would boost economic growth, wages, employment, trade, and, overall, the economic welfare of the Nation.

What, in your opinion, are potential downsides to removing the ban?

Mr. EBINGER. I don't believe, Congressman, that there are sizeable downsides to lifting the ban, with the possible exception of what Ms. Gordon said, that we don't know completely the impact on greenhouse gases.

In a major study that Brookings recently did in association with the economic consulting firm NERA, we have some very detailed data in there on what we think will happen to employment, overall economic welfare for the Nation, and the numbers in various scenarios are almost constantly positive.

And our study has been pretty much seconded or maybe a couple came out before us, but there have been now five or six major studies done by IFC, done by a whole—some by the Government, that have all concluded the benefits far outweigh any potential costs. So I guess I will leave it at that.

Mr. RUSH. Well, I want to ask the other three panelists: Do you have any comments regarding the economic impact on lifting the ban?

Mr. PUGLIARESI. So I think you want—whenever we go to a free trade alternative—which, you know, I think everybody here has a lot of training in economics. No one is going to be against free trade. We think it is a good thing and it is going to make the economy more efficient.

But there will be dislocations. I think some sectors—some segments of the U.S. refining industry, particularly if we have this high production scenario, will have—you know, will find themselves in a less, you know, economically advantaged position.

However, we have a very complex and advanced refining sector in the United States. The capacity to refine very complex kinds of crudes are there. I think we want to—you know, as we go—if we go to lifting the ban on crude oil, we want to look and make sure, “OK. Are we burdening the downstream sector with kind of unnecessary regulations? What is RFS doing? What are ozone regulations doing? What is the permit doing?”

In other words, you know, also, as Congressman Barton raised, maybe we need to look at some—some kinds of adjustments in the Jones Act. That is very tough. I understand. But, you know, there will be adjustments. But, on balance, the economy will be better off.

I think, in the short term, the refining industry probably—you know, probably can handle what is going on right now. It is really a more longer term problem.

But I also think that, you know, probably immediately we should look—look very closely at the condensate issue, which is starting to cause a lot of problems in Eagle Ford.

Mr. SIEMINSKI. Congressman Rush, let me just add that the reason that the U.S. is exporting gasoline from the Gulf Coast is that we really have a surplus of gasoline. Domestic demand for gasoline has been declining and is likely to continue to go down as autos become more efficient.

And, in a sense, what refiners are doing is exporting the surplus product so that they can more efficiently fill the demand for other products in the U.S. market that are more valuable. So the export of gasoline may actually be helping keep overall product prices for U.S. consumers down.

Mr. RUSH. I want to thank you, Mr. Chairman. I yield back.

Mr. WHITFIELD. At this time I recognize the gentleman from Texas, Mr. Barton, for 5 minutes.

Mr. BARTON. Thank you.

I am just looking around the dais here, Mr. Chairman.

First of all, we want to welcome Mr. Flores. We see he is here. He is a new number of the committee. We are glad to have him here.

We have got Mr. Bud Albright Bratta in the audience. He used to be a staffer in the committee. We are glad to have him here.

Mr. WHITFIELD. We got Mr. Mullin, too, here.

Mr. BARTON. I didn't see him. From Oklahoma. Glad to have him here.

I see Mr. Barrow over there. He is a member who is not going to be here next year. His State is the Peach State.

Do we have a ban on exports of peaches? Yes or no?

OK. We got Mr. McKinley up here, who is the Coal State.

Do we have a ban on the export of coal? No.

We got Ms. Capps from California.

Do we have a ban on the export of movies? I don't think so.

We have got Mr. Pompeo and Mr. Terry from the Corn States.

Do we have a ban on the export of corn? No.

Mr. WHITFIELD. We are exporting bourbon, too.

Mr. BARTON. I was saving that for last, Mr. Chairman.

My point is that there are—in a free market economy like the United States, there are almost no commodities or products that we have a ban on. We are the free market nation in the world.

Now, as has been pointed out, in the 1970s, the OPEC cartel banned exports of crude oil to the United States and we retaliated by creating the Strategic Petroleum Reserve and also requiring that no crude oil, with few exceptions, could be exported from the United States. That made some economic sense and some strategic sense in the 1970s, but this isn't the 1970s.

Now, the key question—or one of the key questions the chairman of the subcommittee has already asked, you know: What would happen if we repealed the ban? What would happen to domestic gasoline prices? I haven't seen any study that says they would go up.

And, you know, the reverse question would be: What would happen if we don't? What happens to domestic oil production in the

near term, in the mid term, in the long term if we keep the ban in place?

Now, the key issue there is the market for domestic crude oil. U.S. refinery capacity, I think, is around 12 million barrels a day. Is that correct, Mr. Sieminski?

Mr. SIEMINSKI. If you add in all of the other things. Domestic crude oil is getting close to 9 million barrels a day, and you get to 12 by adding in biofuels and—

Mr. BARTON. No. I am asking what the refinery capacity is, the U.S.—

Mr. SIEMINSKI. Oh. Over 16 million barrels a day.

Mr. BARTON. It is over 16.

Mr. SIEMINSKI. Yes, sir.

Mr. BARTON. OK. I didn't think it was that high.

My point was going to be, if we don't have a market in the United States for the crude oil at our refineries, if you can't export it, you keep it in the ground.

But if it is 16 million barrels, then we can increase domestic supply fairly significantly and we just—we just freeze out or push out imports from overseas. Wouldn't that be correct?

Mr. SIEMINSKI. You raise an interesting point, Congressman.

Many people look at the growth in domestic production and the flatness in demand and they envision a world where the U.S. is not importing any oil.

But, in fact, the U.S. may continue to import oil simply to refine it in our very efficient refining system and sell those products back out into the global markets.

Mr. BARTON. Well, Mexico is finally freeing up their oil economy and, if they follow through with their constitutional change, you will see a large number of U.S. producers and explorer exploration going down to Mexico.

And I would assume that there would be additional oil in Mexico that could come up to the United States in the next 5 to 6 years. Plus, we have got Canada. And I know there are some issues on the environmental front with the Canadian heavy oil.

I guess I only have 22 seconds. I didn't—if I had to look at this panel and you had to vote yes or no on repealing the ban, I think I have three yeses and a maybe.

I am going to ask Ms. Gordon—I didn't sense that the Carnegie Institute is totally opposed to repealing the ban. I think your concern is transparency and information for environmental purposes. Is that correct?

Ms. GORDON. Yes. I think we have a reprieve here because demand has really cooled off globally. So there is not much of a place to put a lot of oil right now.

And that gives time to do the due diligence that has to happen with information so that we have a better sense of what is going to happen when we do change policy some day, because I do think we are headed toward more open markets, I mean, in general.

But do remember, I just should add, the oil market is one of the least efficient markets. There are so many reasons: barriers to entry, barriers to exit, not enough information, externalities. There is far more efficiency in peach markets than in oil markets. So that is—it is a big question.

Mr. BARTON. Could I ask one more question?

Is it possible for these lighter shale oils that are being produced in the Eagle Ford and up in North Dakota to be exported as refined products because they are so light and almost need no refining?

Ms. GORDON. They are really different from each other. The Bakken oil is like Nigerian crude. In fact, we have backed out a lot of Nigerian crude since we have been producing in the Bakken.

So if we export Bakken, we are probably going to have implications for Nigeria in the North Sea because that is what the oil is like.

The Eagle Ford is really unusual. It is much, much lighter and it needs to have the condensates stripped out of it. So even with the light tight oil category, there is a lot of diversity here that we don't have a lot of information about.

Mr. BARTON. Thank you, Mr. Chairman.

Mr. WHITFIELD. At this time I recognize the gentleman from Kentucky, Mr. Yarmuth, for 5 minutes.

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

I thank all the witnesses for their testimony and knowledge.

I have learned a lot, but I am still not sure where I am on this issue. And I am curious. We talked about the potential downside. And while everything looks wonderful right now with an abundance of oil and petroleum in the world and prices down, that would seem to be—mitigate against worrying about a crisis.

But isn't it entirely possible that we could return to a 1970s situation? I was a staffer here in the 1970s and remember those lines as well.

So would it not be useful to have at least some contingency measure if we—whether it is an international outbreak or a war, terrorism, whatever it may be, that we have some way to protect our domestic supply in case of an emergency as opposed to just saying we are not—we will worry about that when we get to it?

Ms. Gordon?

Ms. GORDON. So I think, because we are in this era of new oil and everything is changing, the risks are changing. We have the geopolitical risks, on the one hand, with many of the places abroad that have historically produced oil, and then we have operational and environmental risks here that we have to contend with.

So we have new oils, new conditions, and then we have huge growth in China in terms of demand that is sporadic. It is not going to be, you know, red hot consistently. It is a market. And so we do tend to talk about oil at a moment in time, maybe because it is sold on every corner, that it is as if this is the condition that exists for all time.

But the reality is it is very dynamic and we could easily return with risks, differential risks, different consumption patterns. Even in America, we are selling a lot more SUVs right now. They are up tremendously. I mean, we could—we are reversing our demand profile, as Adam said, but we are not necessarily bound to that.

Mr. YARMUTH. So there is no guarantee, given the volatility of the market, that if we eliminate the prohibition, that we can have the kind of impact on prices that we would expect, that the prices will necessarily be lower. We can't guarantee that.

Ms. GORDON. Yes. And in addition to what was said earlier where we will—because we have the huge—the largest refining capacity, we will maintain imports of oil even—you know, just because we want to put product on the market. That is what industry does here. It is one of the big parts of industry.

Mr. EBINGER. I think, if I could just—

Mr. YARMUTH. Sure.

Mr. EBINGER. If I could just add—answer your question, you know, most of the oil we consume in the United States is in the transportation sector. And it seems to me that, rather than maintain the ban on crude oil exports, we would be much wiser to have an accelerated program to use our vast natural gas reserves to a greater degree in transportation.

There have been numerous studies—you know, it would take a long—it would be a long-term effort, but if we could replace the diesel fuel that we use in our 18-wheel trucks, some people say that would be another 1.8 million barrels a day of oil we didn't use.

If we can use natural gas in marine transportation on the Great Lakes and our major rivers, coastal trade, that is another major place we could save. And we have companies already experimenting with using LNG in railroad locomotives.

So if we could reduce the use of oil in transport by relying on our vast natural gas, I think that would be a far more prudent policy than continuing the ban on crude oil exports.

Mr. PUGLIARESI. If I could just add one thing, you know, if we go back and look at the history of EPCA and everything we did, if you want to take one lesson out of that, we need policies which are robust against uncertainty.

And every time we try to guess or we think we know what the future looks like, nuclear power is going to be too cheap to meter or we are going to ban the use of natural gas and power plants, we really have a hard time getting this right.

And we don't really know what the future looks like, but what we do know is that we do much better when we have policies that allow a lot of—you know, a lot of the marketplace and individuals to adjust to changing circumstances.

Because once we you put something in place here in Capitol Hill, it is really hard to fix it, you know. Those of us who go way back remember, you know, we had dozens of these small refiners. So people remember this? We had dozens of these small refineries which came of the arcane regulations of price controls. And when it came time to decontrol crude oil prices, it was really hard because we had a political establishment of small refiners all over the country. So I think we have to keep in mind as we go forward that what the real lessons of this renaissance is, it was an open system, right? This all occurred on private land.

The heavy hand of the Government was really not trying to stop these guys. We didn't have to rely on Federal land. And so as we go forward, we ought to really think hard about what kinds of strategies are likely to be more productive.

Mr. YARMUTH. Thank you, Mr. Chairman. My time is up. I yield back.

Mr. WHITFIELD. At this time, I recognize the gentleman from Illinois, Mr. Shimkus, for 5 minutes.

Ms. SHIMKUS. Thank you, Mr. Chairman. This is a tremendous panel and a great hearing, so thank you, Chairman, for that.

I have tons and tons and tons of questions, so I want to try to put them in some sensible order.

But, Ms. Gordon, I appreciate your testimony. EPCA, the original EPCA, I didn't know there was reporting requirements more transparency. And following up on what Congressman Barton said, there is probably some truth to getting more information so that markets can operate more effectively and efficiently, so I appreciate those comments. There are different types of crude oil, that is going to be the major front to my question.

But we also know refiners have made major investments based upon a world they perceived 6 years ago, which has significantly changed today—from heavy crude to light sweet and the refinery expansions.

I think the other thing that has not been a part of this discussion or debate is transportation costs and long pipeline versus what could actually happen in the future with all these more localized resources available is that you could see closer interaction between these new finds and more local refineries in a more localized system.

Mr. Pugliaresi, I appreciated this statement because of the need for production platform in a stable part of the world, I think is really not just for what it does on hedging the risk—the volatile risk of pricing, really kind of addressing my colleague from Kentucky's question. But also internationally, and I focus on Eastern Europe a lot of times, and I understand energy extortion. And so importation of LNG, which we have passed through the House that we would like to see for other allies in Europe and Eastern Europe, I think would be true on crude oil exports. But you have to have a stable platform to be able to do that; hence the next kind of position.

Because even in the map, the figure that you have in your testimony, figure 3, you have these major basins, but there are probably more are going to develop, like the southern Illinois basin, which now we have gone through the legislative process. But you have the onshore basin, we still have more Deepwater applications. We have got Anwar debate that will always be there. We have the National Petroleum Reserve. We have the Atlantic Coast exploration. We have Keystone XL debate.

What I hear I think is that—because I am afraid we have this huge supply, but we can't rely on Government to set these parameters. We have got to let the markets do it. The markets will then send a signal of which of these oil basins are recoverable based upon the pricing of a barrel of crude oil.

Some of these may not be able to be now exploited because the cost of recovery is high. But then in the case where there is a new change in world dynamics, then that cost might be available for continued exploration. Do I make sense in any of that analysis?

Mr. PUGLIARESI. Let me say, right now, there is a race going on between the lower valuations and the advances in well productivity and technology. As I said, we are seeing some things, they are out there a few years. Some things are very near in which—if you look at a traditional hydraulic fracturing job, across the U.S., 40 percent

of the frack jobs are very uneconomic in some ways. Or they are 40 percent of the preparation on a horizontal pipe are not working. But there are technologies developing now that are going to drastically improve that.

So you can have a high-cost basis, which doesn't look like it is doing too well right away, but in a few years, things could change. Once again, we want strategies which are robust under uncertainty. If we try to prescribe the future, we are going to be wrong.

Ms. SHIMKUS. Dr. Ebinger, in your testimony, you did state that increasing oil exports will help lower the prices at the pump, that was part of your written testimony.

Mr. EBINGER. Lower gasoline prices, yes, sir.

Ms. SHIMKUS. And then the last thing I want to ask, because it has been raised—we are now having people think we might do this. We are starting to get talked to by a lot of people. Is there a difference, because really, except Ms. Gordon may—start separating heavy, sour and light sweet, is there a difference, is there a credible argument in separating the crude oil price and easing the ban on one, but not easing the ban on the other? That will be my last question if some people want to weigh in on it.

Ms. GORDON. I just will add that I think the time is coming that we are going to have baskets of crude that are split much more on quality than on location. I think that these oils are quite different from each other, and they get very long-term investments that last generations. So the market needs this information. So whether regulations follow or not, I think that the idea of separating oils into these baskets, which is somewhat done but not largely in the market right now, is probably a wave of the future.

Ms. SHIMKUS. The rest of you are chicken and not going to answer that question?

I yield back.

Mr. WHITFIELD. This time I recognize the gentlelady from California, Ms. Capps, for 5 minutes.

Mrs. CAPPS. Thank you, Mr. Chairman.

I want to thank each of our witnesses for your testimony today at this hearing.

I also want to take a moment since it is I believe our last hearing in this session of Congress to honor and acknowledge—as I walked in the room, I realized I am walking into the John Dingell room. The incredible service that—it is the John Dingell room, our colleague, former chairman and under whose leadership I was first asked to be on the committee. And also my colleague from California, ranking member and my neighbor, Mr. Henry Waxman, for their incredible service to this committee and to our Nation.

I know he stepped out, but I want to also bid farewell to our friend John Barrow from the Peach State, who I believe has added much value to this committee, as well. These are people who will be missed.

The oil export market is complex. I picked that up from the hearing today. We need detailed, accurate information, I believe, to conduct a proper assessment of increasing exports.

Yet, Ms. Gordon, in your testimony, you say that accessing this information is difficult. In fact, you said we actually have more

data, which I find quite stunning, about OPEC crude oils than about some new American oils, crude oils.

My question for you to elaborate a bit is on that. Why is this information so difficult to access?

Ms. GORDON. There are so many reasons why the information is not there. The first reason is that the light tight oils are the newest kid on the block so to speak. They just haven't been around as long. In the 20 test oils that we have modeled in the oil-climate index, we have Venezuelan oils. And you think about getting information from Venezuela. There is UAE. There are oils from all over the world, Indonesia, but we don't have any oils that are from North Dakota or Texas, these light tight oils.

There are—one of the big problems is that in order to get information on oil, you do an assay, which is a chemical footprint of the oil. But everyone does assays differently, so when assays are reported, you can't compare oils to one another. So having more consistent reporting on information is one big problem.

Another one, having met with DOE, is that apparently—and I think Mr. Sieminski could talk more about this—apparently, the Energy Department can't really collect data on oil freely. It turns out OMB—and I was kind of flabbergasted when I learned this—but OMB says this is duplication of effort. Industry submits data on oil. DOE doesn't set reporting requirements for oil.

Although, when you read EPCA, there is room for this to happen. It just hasn't really evolved that way. So DOE is actually only getting the information that industry wants to report out. These are new oils; there is less information reported out.

The third one I will mention, one of our partners tried to purchase data. There is data that is owned by these big oil consultancies, and after negotiating for a matter about a year and hundreds of thousands of dollars, they were told the data wasn't for sale because it is competitive. They don't want the academic sector to compete with the consulting sector. So there a lot of concerns when it comes to oil data, especially as now more oils are out there.

Mrs. CAPPS. I want to use that last sentence as a segue to another kind of topic that might be appropriate now. Any discussion of oil exports must also be considered in the context of our overall energy policy and the realities of climate change. And you also touched on that.

You have done an extensive analysis on the climate impacts of our Nation's oil policies. In your testimony, you discussed preliminary research on the climate impacts of various types of American crude oils that could be exported if the current ban is lifted.

Now my question, given the transparency challenges that you just described, have you been able to complete this climate assessment with the data available to you?

Ms. GORDON. No, none of the 28 oils that we have been able to model are—we have U.S. Oils that have been around like Gulf of Mexico, Mars, but we don't have Arlex and North Slope, but we don't have any of the new light tight oils so far in the 28 test oils because data is just not available.

Mrs. CAPPS. I am prepared to yield back, but Mr. Chairman, this lack of transparency I believe is very concerning not just for our

assessment of oil export policy but for conducting proper oversight of the industry in general. If the industry is asking us to lift the export ban, I believe they need to provide the information that is so clearly needed to properly assess the very policy that they asking us to expand upon. I yield back.

Mr. WHITFIELD. The gentlelady yields back.

At this time, I recognize the gentleman from Pennsylvania, Mr. Pitts for 5 minutes.

Mr. PITTS. Thank you, Mr. Chairman.

Thank you for your testimony. I, too, remember the long lines in the 70s. What wasn't said is that after waiting for 45 minutes or an hour with your car idling, and the lines backed up on the highway, and some people just topping off, and some people about to go empty, there were a lot of short tempers. And it was a very bad situation, wasting a lot of oil and gasoline.

Were any studies ever made on how much waste there was with those long lines back in the '70s? Mr. Sieminski.

Mr. SIEMINSKI. I don't think that EIA did, but I think you are absolutely right, Congressman Pitts, that the whole idea behind the program I think made some sense at the time, but the implementation of it left a lot to be desired. A lot of the problems had to do with the availability of gasoline in different areas. It was based on the year-ago use. People in the prior year were all out having vacations outside of the cities, and that is where all the gasoline went. But during the crisis, they were all in lines in the cities. And so they couldn't get the gasoline to go out on their family holiday. It was a bit of a mess.

Mr. PUGLIARESI. So, actually, I worked on this program a bit when I was with the Department of Energy. You cannot imagine the small changes, you know, people just think a refinery takes crude oil and processes it into gasoline, but they are blending dozens of components. And we were trying to control the prices of all of these. And every day, there was enormous misallocation shortages, the wrong kind of mixes, because the market was completely surpassed by the Government price control system. I mean, I don't think you can find anybody who has looked at this program that wants to defend it. It was an unmitigated disaster. It substantially delayed our capacity to even adjust to the crisis.

Mr. PITTS. In addition, after waiting for 45 minutes to an hour, the station, many of them would run out of gas, you would have to go home and come back on another day.

The average family as we heard can expect to save several hundred dollars a year if prices stay where they are. Administrator Sieminski, how can we maximize these benefits and sustain them over the long run?

Mr. SIEMINSKI. The benefit to household income is coming from lower oil prices, most of that coming in gasoline, the number of about \$800 per household is right for a \$30 decline that is from average prices last year that would be sustained for about a year. Those numbers could even be a little bit higher than that, depending upon where oil prices settle out.

That is going to have a pretty positive affect on the ability of households to spend. And I think we will begin to see the positive impact of that on the economy. EIA macroeconomists took a look

at this. If we had this \$30 decline sustained for a year, it could add as much as 1 percent to U.S. GDP.

Mr. PITTS. If the ban were lifted, what effect would it have on gasoline prices? And how would it impact our refinery sector? Do you want to continue?

Mr. SIEMINSKI. Well, gasoline prices, again, if we stay at these levels, gasoline prices could be down almost 77 cents a gallon. That is, again, a huge plus with gasoline prices averaging that much lower than the prior year. Obviously, there will be some losers in the production. Producers are going to have lower income. This could have big effects on countries like Venezuela and others. It depends on oil revenues. That could lead to unrest there. This is why I think the idea that policies, that outcomes, and forecasts are uncertain is really huge. If you lost that oil production from Venezuela because of social unrest there, you could see prices come back up again.

In general, when I think, Mr. Yarmuth, about policies, EIA is not a policy organization, but I think I could describe the three components of energy policy. It is, What does it mean for the economy? What does it mean for the environment? And what does it mean for national security? And you were asking about national security issues. I would imagine that a key thing in thinking about this is how to weigh those impacts from a policy standpoint. I think the Strategic Petroleum Reserve is probably our key tool in security.

Mr. PITTS. My time is expired. Thank you.

Mr. WHITFIELD. At this time, I recognize the gentleman from Georgia, Mr. Barrow, for 5 minutes.

Mr. BARROW. No questions, thank you.

I would like to yield time to Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman.

I hope I get my own 5 minutes. I thank my colleague.

I represent Houston, Texas, and we have five refineries in East Harris County, but also, I have all my service companies, obviously, Halliburton, you name it, Baker Hughes and groups like that.

I want to keep them working in the oil patch, but I also know that this is probably the best time in my history that we have seen the refinery margins where we are at. That is why I wanted to ask Mr. Sieminski—or Administrator—typically, the integrated oil companies that have refiners and production, they have refining, but that is not their profit center. Most of the profit center is the production side. Although we do have three of those refineries are also independent refiners that are not integrated or majors.

Have you seen—have you all done any research on the refining capacity, because I know the shutdown of refineries, smaller refineries around the country, there was some concern over the years that even though—and we weren't producing as much crude as we needed right now, but also we were losing refining capacity. Have you all looked at those numbers?

Mr. SIEMINSKI. We have a study underway on the ability of U.S. refineries to absorb this increase in the lighter oils that are being produced from the shale formations. And we will have that out I think some time in the early part of next year. I think the general feeling is and if you come back to the complexity to this, there

are—removing the export ban does have impacts on different sectors in the economy, and the independent refiners are very concerned about how they would come out in that analysis.

Mr. GREEN. And what happened in the 1990s is because we weren't producing lighter sweet in the United States, most of our refiners who were successful converted, and it cost I know at one refinery about \$2.5 billion to convert to do the heavier crude.

Have you all put any cost estimates on—

Mr. SIEMINSKI. Congressman, you are right in there, we should come up and brief you when we have this study done. We are going to have some estimates in there of what the costs are associated with adding the equipment that is needed to take care of this increase in lighter crudes and how fast those light crudes will be growing.

What we do know is that over the past—if you look back over the last decade, billions of dollars were invested in upgrading refineries in Texas, Louisiana, and elsewhere on the Gulf Coast to process heavy crude oil, and now we have a surplus of light crudes and so it has created problems.

Mr. GREEN. I think the concern—that surplus of light crude because they are typically the shale plays in those wells are very short-lived; although they are much cheaper to drill than the earlier ones. There are some issues with are we going have to reinvest for those refineries another \$2.5 billion to handle heavier to lighter crude.

Mr. SIEMINSKI. There are upgrading and new construction projects underway right now to allow the refiners to handle that, and a lot of those are taking place in your district.

Mr. GREEN. Has EIA looked at the issues, because in the past, we typically used whatever we refined in our country. But now we are producing so much more that it is actually we are having those downstream jobs that are exports. Back in Houston, we are exporting just tons in the last few years of low sulfur diesel. Because of the heavier crude, we get more diesel. But the low sulfur diesel actually is improving the environment in the countries we are sending it to, in Latin America particularly where our customers are and, of course, Europe, but Latin America predominantly.

Have you all looked at some of those issues. And I am going to ask if that has been looked at by our environmental community? Has EIA done that?

Mr. SIEMINSKI. That is going to be part of our study.

Mr. GREEN. OK, I look forward to the study.

Ms. Gordon, has there been any qualification of that, even though we are doing heavier crude and are producing a lot more diesel that we don't use in our country, but it is also low sulfur because that helped in the countries that are buying that from us now, compared to the diesel that may be coming from other parts of the world?

Ms. GORDON. Yes, certainly taking the sulfur out will be fantastic for health and for the environment. But a bigger question with the heavier oils is petroleum coke and what happens with the very bottom of the barrels. So when you put coking capacity into these refineries, you basically remove the middle of the barrel and you end up with a lot more gasoline and diesel, which is good for profit, and

then a lot more of a solid substance, called petroleum coke. And we are also exporting that.

I think we have increased out of Texas, we have increased—the U.S. has increased its petroleum coke exports to China like seventyfold in the last several years. It is a coal substitute, and it is worse than coal in terms of emissions. So it kind of cuts both ways.

Mr. GREEN. Mr. Chairman, I know I am over my time. But I would like to talk about petroleum coke when I get to my time.

Mr. WHITFIELD. This time right now the gentleman from Ohio, Mr. Latta, for 5 minutes.

Mr. LATTA. Thank you, Mr. Chairman.

Again, as has already been stated, thanks to our panelists for being here today. It has been really informational. I really appreciate your time.

If I could just kind of hit a few points. As we have been sitting here, I checked when we started committee that West Texas was selling at \$60.70 when we started. It is down to \$60.51. And Brent was at \$64.23, and it dropped to \$64 in the last few minutes.

I think the discussion we are having here is very informational, because also I think it was in the Wall Street Journal this morning, it was the headline in one of the sections of the paper about the decreasing costs of oil from West Texas and what that is doing here in this country to a lot of our producers, especially out west. Of course, in Ohio and also in Pennsylvania with our Utica Marcellus Shale that we are developing in our States, especially for me in Ohio, it is really interesting and also your concern because if the price drops, you want to make sure that we can keep that production up and also keep people out there producing.

Administrator, if I could just go to your testimony. I really found it interesting, because, on page 5, you state that the U.S. crude imports declined by 2.4 million barrels per day, or 25 percent, the lowest since 1995. And the percentage of U.S. crude demand supplied by imports has fallen by 67 to 47 percent, the lowest level since 1992.

In the testimony, you all have been talking about today, especially about the oil coming in and the refining, how much when that oil comes in that we have imported goes back out as an export, just as a curiosity—or a product? Administrator, would you like to take that? And then anybody else like to answer the question?

Mr. SIEMINSKI. The U.S. has net product exports of about 2 million barrels a day. So the gross amount of imports and exports are different than that. We are exporting it. We are now kind of getting up to close to 4 million barrels a day of exports, but we are also importing, especially gasoline into the east and west coast. So when you net it out, it ends up being about 2 million barrels a day.

Back to Congressman Green's comments, a lot of that exported product is coming from the Gulf Coast region of the U.S. It is going to countries in Latin America and Europe. The gasoline—one of the better exports that we have is gasoline and the reason for that is we just don't need it here in the U.S., and it is needed in places in Latin America.

Mr. LATTA. Thank you.

And if I could turn to Mr. Pugliaresi—I hope I pronounced your name properly—as we look across what has happened and we have seen the increase here, are there any regulatory or market barriers preventing our refiners out there right now from doing anything else to adapt to these new surges that we are having?

Mr. PUGLIARESI. Well, I do think the refining industry is a lot of our downstream processing sectors do face a pretty formidable regulatory environment. They also face fuel constraints in like the renewable fuel standard. I think—it is not that ethanol, for example, is a bad thing. We think ethanol is very useful to the American transportation field sector. It is the mandates that give you all these problems, because as demand shifts radically or the supply side shifts radically, the refiners are unable to adjust in a cost-effective way.

So I think as we go forward with this, and look at crude exports, we don't want to unnecessarily harm these high-value-added downstream processing centers. They add a lot to the economy as well. So we are not in favor of protection, but we are in favor taking a hard look at the trade adjustments you need to do when you move into an export mode.

Mr. LATTI. Thank you very much.

Again, I thank our panelists.

And, Mr. Chairman, I yield back.

Mr. WHITFIELD. At this time I recognize the gentleman from California, Mr. McNerney, for 5 minutes.

Mr. MCNERNEY. Thank you, Mr. Chairman.

Suppose that the U.S. becomes a reliable and consistent exporter of natural gas and crude oil. How much impact will our natural gas exports have on the geopolitical issues relative to how much impact our diplomatic and military policies have on those geopolitical issues? Does anyone care to take that?

Ms. GORDON. I could just say that because these oils within relative bounds kind of trade as like types of oil, as I have been talking about, you do have to look at the geopolitics and the kinds of oil that we would be exporting.

So the light tight oil, as I mentioned earlier, has backed Nigerian imports out of the U.S. As we produce more of that oil, we are importing now no oil from Nigeria. We are importing oil, but it is just not from Nigeria. Well, that has a geopolitical impact, say, on Nigeria.

I think even though oil is not being used at all as a weapon, it ends up being something that can counteract the peacekeeping and the other efforts that we have in these very fragile nations around the world. Venezuela was mentioned.

Mr. MCNERNEY. I am thinking in particular of Russia and Mr. Putin. Will our exports have more impact on his behavior than our military or diplomatic activities?

Ms. GORDON. It is a really good question, but I do think that Russia is reeling from the price of oil. It is not our exports that are really changing what is going on in Russia right now. It is \$60 a barrel oil that is changing what is going on in Russia now, which is a much bigger demand question. That is not about our exports.

Mr. EBINGER. If I could weigh in on that. The problem we have is twofold. We have had a lot of very, you know, I think impas-

sioned proposals to do something to help Ukraine with the Russian crisis and other geopolitical events. But the reality is, of course, that our oil and gas are owned by private companies, and they are likely to ship the oil or gas—oil if we allowed it—to where the market gives them the greatest profit.

Right now, although it is changing before us as I speak, it has always been assumed that the market for LNG primarily would be in the Far East, because the premiums there have been much higher than those in Europe. Although, now we have LNG prices crashing in Asia down to very low levels where it is even questionable whether we can deliver LNG into some of those markets competitively. By the time we actually have LNG people ready to go, outside contracts have already been signed.

Geopolitically, I think the issue of exports is extremely important. Our allies in Korea and Japan and Taiwan are very desirous to have energy from the United States because they see an increasing bellicose China, threatening sea lanes on which all of their energy imports come from, not only oil and gas but also coal. So they are delighted. And I think it does improve our diplomatic status to the extent that we send energy there, but again, these are going to be commercial choices made by the companies that own that oil and gas.

Mr. MCNERNEY. It is clearly a complicated question.

Mr. EBINGER. It is very complicated.

Mr. MCNERNEY. Well, whoever can answer this, how much do you see oil exports increase—how do you see oil exports increasing over time if we were to repeal the Energy Policy and Conservation Act? Do we see a large bump, or do we see a slow increase? How do we see that playing out?

Mr. SIEMINSKI. Well, we do tend to look at those in our annual energy outlooks, which we do every year. We will have that one out we hope some time in late February or March. The answer to that I think probably lies more towards the lower end rather than the upper end. The reason I say that is that the kind of oil that we have in surplus here is light sweet crude. The market for that is not unlimited, so the question is how much of that could be put out on to the global markets before you have saturated the global markets? Something on the order of a million or a million and a half barrels a day might be the number that would be exported.

Mr. MCNERNEY. Thank you, Mr. Chairman.

I yield back.

Mr. WHITFIELD. At this time, I recognize the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman.

And I thank you for the panel. This is very interesting at the end of session. This would have been more interesting perhaps a little earlier, because some of the subjects we have gotten into have been particularly beneficial.

I have a series of questions. After waiting an hour and a half, my question was just asked by my predecessor, because I wanted to get at the geopolitical aspect of it. I think you have answered it in some respects. Perhaps we need to get into that a little bit deeper. One of the questions I would ask you is, who is asking for this ban to be lifted?

Mr. SIEMINSKI. Well, the first groups are producers that have wanted to see the ban removed or those who are producing the lightest of the crude oil, because that is being discounted the most, and the attractiveness of exporting that into the global markets is high. And so we have seen that coming from some of the independent producers in Texas.

Mr. MCKINLEY. I am also curious before I get to my last—I have got three or four questions here, but one would be is back towards the tail end of the Bush administration, gas was selling at \$1.85 a gallon. Then we went up to \$3.50, \$3.85, almost \$4 for regular. Is there an impact here? What caused that? Why did it go from—doubled in price?

Mr. SIEMINSKI. Say that again, Congressman.

Mr. MCKINLEY. When gasoline prices were \$1.85 under the Bush administration, what happened to take them up to double?

Mr. SIEMINSKI. The biggest thing—the overwhelmingly most important factor in gasoline pricing is what the price of crude oil is in the global markets. The next biggest thing after that is probably the different levels of taxation in different States.

Mr. MCKINLEY. That hasn't changed much; taxes haven't changed much.

Mr. SIEMINSKI. The crude oil prices go up and down.

Mr. MCKINLEY. The crude is down now—what—\$63 or something like this, OPEC?

Mr. SIEMINSKI. Yes.

Mr. MCKINLEY. Where was it?

Mr. SIEMINSKI. It had been on average up over \$100 a barrel.

Mr. MCKINLEY. I understand, but I haven't seen the price get back to \$1.85 yet. What is it going to take to get to \$1.85?

Mr. SIEMINSKI. Well, it might have been \$1.85 when prices were a lot lower, and when we had \$40 oil—

Mr. MCKINLEY. That is what your answer is, we need crude to get to about \$40.

Mr. EBINGER. There is one other issue that I think is controversial, but I think if you look at it, you will find that the mandates for biofuels being mixed with gasoline, we have seen ethanol prices go up very high in some of those markets. That has been a major contributor to the price of gasoline.

Mr. MCKINLEY. My last question, I have less than 2 minutes. I have a small boutique refinery in West Virginia, Ergon. It fills a niche in the marketplace. What could be the impact if the export ban were lifted, what would be the impact on Ergon? 22,000 barrels a day.

Mr. SIEMINSKI. In your area, probably very little.

Mr. MCKINLEY. Because?

Mr. SIEMINSKI. Those refiners out in the mid-continent where they have access to discounted WTI, benchmark crude, would see their costs go up.

Mr. MCKINLEY. I think they are starting to tap into the Utica Shale gas now—well, shale gas and then the Utica is what is providing the petroleum, the crude that they are going to be able to tap into. So you are thinking Ergon would be not affected?

Mr. SIEMINSKI. In your State, sir.

Mr. MCKINLEY. Well, they ship all over the country.

Mr. SIEMINSKI. Right, but the question is what would the cost of feed stocks into the refinery in West Virginia be, and I would suspect that it won't change very much.

Mr. MCKINLEY. Thank you very much.

I yield back the balance of my time.

Mr. WHITFIELD. At this time, I recognize the gentleman from Texas, Mr. Green, for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman.

Let me get back to some of the issues.

Well, first, Mr. Chairman, I would ask unanimous consent to place a statement into the record.

Mr. WHITFIELD. Without objection.

[The information follows:]

**Opening Statement of Congressman Gene Green
House Subcommittee on Energy and Power
“The Energy Policy and Conservation Act of 1975: Are We Positioning America for
Success in an Era of Energy Abundance?”
December 11, 2014**

Good morning.

I want to thank the Chairman and the Ranking Member for holding this hearing today.

I want to thank our witnesses for coming up and testifying today.

Today, we are here to discuss an issue that is very important to the district I represent.

Over my twenty years in Congress, I have, at one time, represented five refineries.

But what people forget is that Houston isn't the refining capital of the world, it's the energy capital over the world.

My district is also home to many upstream drillers and producers and many mid-stream transporters and storage companies as well.

All of these companies have a stake in the policies we discuss today.

The producers are in-the-field, creating jobs and are directly responsible for the U.S. position as the number one producer of oil and gas in the world.

I just want to add that Texas had something to do with that.

The pipeline and storage companies are building like crazy in my district and around the country.

I recently visited a TransCanada facility that is under construction that will hold, when completed 700,000 barrels.

Midstream companies are also investing to build splitters to exports condensate under current law.

I know of approximately 10 announced projects that are set to come online in the next two years.

Finally, the refineries in the country are investing.

There have been another 10 announcement across the Gulf and across the country that will result in additional light capacity.

Also remember that we refining and exporting more product that ever and, according to the Houston Chronicle, directly responsible for doubling U.S. exports of low-sulfur diesel and gasoline which has had a big-time positive effect on our economy.

As we discuss energy policy, we cannot forget about the environment.

We've seen a dramatic shift in other parts of the economy to natural gas which has resulted in positive net benefits for the environment.

There are concerns that production of oil and gas are responsible for significant methane emissions but we saw in yesterday's National Journal that industry has reduced methane by 10 percent from a year ago, so we are seeing progress.

On Tuesday, we saw an article that stated U.S. fuel exports, specifically diesel, have surged under President Obama but this was harming the climate.

Yet, in 2013, Time Magazine stated exports of Ultra-Low Sulfur Diesel to Latin America were responsible for improving air quality.

In 2014, we read that Ultra-Low Sulfur Diesel exports to Europe double in the first half of this year over 2013.

I have to believe that U.S. production, transport, and refining employ the best, cleanest technologies in the world resulting in the cleanest possible product.

We should continue to focus on the economic and environmental benefits of domestically produced natural resources.

As we review the information we receive today, however, it's important we find the right balance to keep all these sectors running at the highest efficiency.

Mr. GREEN. And I think it is no doubt that, in fact, the CBO report that was just released talked about a policy shift in exporting crude would pinch refiners' profit margins but also harm foreign oil producers.

But let me go down the list about we are exporting oil now, but it fits the definition of a condensate, that there actually is a mechanism where you get that lighter sweet out of the ground, you run it through what I would call a very limited refining process, but it fits the definition that we can export right now. How does EIA classify lease condensate, is that exporting?

Mr. SIEMINSKI. Mr. Green, there are at least four big ways of trying to define condensate. The way EIA has historically done this is literally based on the location. If it is produced on an oil lease and is mixed back into the crude oil stream, we counted it as lease condensate and measured it in barrels.

Mr. GREEN. Is that the same definition as the Department of Commerce for export?

Mr. SIEMINSKI. The Department of Commerce is looking at it from a different standpoint. And reportedly, the Commerce Department is now through letters to the individuals who asked for a ruling on it, allowing processed condensate. So, if you take this very light crude oil, process it through a distillation tower, it would qualify as a product, and products under U.S. law right now can be exported.

Mr. GREEN. OK. Would it help to have a uniform definition for Government agencies, particularly if lawmakers wanted to craft better regulation or legislation, to have one definition for condensate?

Mr. SIEMINSKI. At EIA, we have been trying to understand the different definitions. And I suspect that a one-size-fits-all might not actually work perfectly. At EIA, for example, we would want to make sure that we are able to count this process condensate so that we don't double count how much of the material is in the system. And that is a complication of the existing rules.

Mr. GREEN. Does EIA track exports of condensate production now—or production and exports, do you track any of that production?

Mr. SIEMINSKI. The export data is provided to EIA by the Customs people, so we do not have that. We do our own survey of imports. Interestingly, you think about all of the history that has been brought up here today. We wanted to do our own survey of imports, because that was what was really big and that was what was supposed to grow, and we don't have a survey of exports.

Mr. GREEN. How readily available is that information?

Mr. SIEMINSKI. That information actually is available from the Customs people, and we have been working with them on speeding up EIA's ability to get that data.

Mr. GREEN. Dr. Ebinger, I know your testimony in your briefing book "Big Bets and Black Swans" in early 2014, you authored a section to lift the ban on U.S. oil exports. You state that unrestricted exports, in combination with increased investment in infrastructure, are expected to generate income, jobs, and taxes through the production change.

Do you think domestic transportation of oil is a major factor facing our energy sector? A good example, limitations of pipelines.

Mr. EBINGER. Yes, sir, I do. I think the fact that we have not built some major pipelines, Keystone being one of them, has certainly led to a more dangerous transportation system, by rail particularly, but also by truck and barge. A more expensive transportation system than would be needed if we built some pipelines.

So I think if as a Nation we are going to accept unconventional oil and gas drilling, which I certainly do, then we need to build the intended infrastructure as cost-effectively as possible to get that to market.

Mr. GREEN. Mr. Chairman, thank you.

Mr. WHITFIELD. At this time, I recognize the gentleman from Kansas, Mr. Pompeo, for 5 minutes.

Mr. POMPEO. I thank you, Mr. Chairman.

I did a little work in the run up to this hearing to see which of you had predicted \$63 oil on December 11th, 2014. None of you did. You should know you should count yourself among the many. I couldn't find anyone who did. I saw a few traders who make a claim that they were in the market and the right place; they were on the short side and got to the right spot. And I mention that only because as I hear you talking about more data and more information in the hands of Government and all that, I think if we unleash markets, glorious things will happen.

So I have heard multiple things today. I have heard folks talk about an export ban lifting, which seems right to me as a good direction. I have heard folks talk about the Jones Act. We have imposed enormous costs on our refiners with their renewable fuel standards, and we have seen a Government agency totally incapable of dealing with the transition of what happened in the marketplace there. Can't get a set of rules out to deal and tell folks what to build, I mean, based on some prediction that Congress set, some levels Congress set. As we all as policymakers think about how we are going to handle this, we should not be at all certain that \$63 is here for tomorrow, let alone for 2 months or 3 months. No one mentioned the greenhouse gas rules that are about to hit. America—no one mentioned CAFE standards that have had such a dramatic impact on our transportation and the uses for them.

You mentioned natural gas transportation, Mr. Ebinger, you said, Gosh, if we could get there—I don't know what is standing between us and then. I couldn't tell you—natural gas prices are at prices that you think, gosh, folks would go and want to invest. But the truth is you have markets operating in a state of uncertainty trying to get to the right outcome. We should not have a hubris to think that we have any possibility of getting in front of that place.

As you think about this export ban, I think it is incredibly important that we don't lift an export ban in base because, gosh, today we have certain oil prices that are sitting in the low 60s range. I think we made a mistake putting it in place in the 1970s. I think that is the kind of thing that policymakers should all consider.

I want to ask you, Mr. Sieminski, you did a report a month ago on what impacts gasoline prices. The Saudis changed the world here in the last quarter. Does that change how you think about the study that you put out in any material way?

Mr. SIEMINSKI. No, I believe that that study would probably be still valid in terms of trying to understand what it is that relates the price of gasoline in the U.S. to the global markets for either crude oil or gasoline. Mr. Pompeo, I think that your comment about, did EIA predict \$63 oil, no we didn't. I would like to say in my defense that we—

Mr. POMPEO. No defense required.

Mr. SIEMINSKI [continuing]. That we talk—every month, we publish something that is actually worth thinking about for everybody here. We use the options market for crude oil to work backwards to what the confidence interval is on forecasts for crude oil prices, and 6 months ago, that confidence interval got down to the low 60s.

So we have hit the bottom of the 95 percent confidence range. And for the committee here today, I just looked at some numbers. For West Texas Intermediate, the 95 percent confidence range—you know, will it fall in there?—for April of the coming year is \$50 to the low side and about \$90 to the high side. And that is telling you that the people who are in those markets, they are not really sure, either.

Mr. POMPEO. Yes, yes. Folks with real capital at risk. I will ask anyone who may want to answer this, I have read lots of articles just recently—they are pop news more than anything else—about whether OPEC still exists. It is still the same force that when I was a little bit younger could impact markets in material ways. We talked about how these markets have changed. Does anybody care—today want to say today that OPEC is dead?

Mr. PUGLIARESI. I think market power by some big producers waxes and wanes, but if you have enough production outside of these other low-cost, high-volume producers, their market power gets reduced, and that is what you are seeing now. The distribution of crude oil outside of these few players, which North America is a big force today, is undermining the capacity of other folks to constrain output and charge higher prices. That is just the reality of it. That is the one—that is a huge benefit of this North American platform, that is why we ought to pay attention to how it performs. Make sure we have a regulatory environment that doesn't hurt it.

Mr. POMPEO. Thank you.

My time has expired. Thank you, Mr. Chairman.

Mr. WHITFIELD. At this time, I recognize the gentleman New York, Mr. Engel, for 5 minutes.

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

You know, last week, I moved my office. We hadn't moved in 10 years, and so we were throwing out all kinds of things. And there was this huge chart which said, "The World According to Oil." And it either shrank or increased the map of different countries based on the powerhouse of oil. And it is interesting because that was probably about 15 to 20 years old. The United States was very, very tiny. Saudi Arabia and Venezuela were very, very big. I couldn't help but thinking that, if we did that map today, how different it would be. And I think that is a good thing.

Mr. McNerney asked about the geopolitical impact of it. And as the ranking member of the Foreign Affairs Committee, which I am, I care very much about the geopolitical aspects of it.

I like the idea of countering Mr. Putin. European countries are reluctant to stand up to him, because they need his oil. They could buy our oil. They might actually develop a backbone. So I have looked at this in a totally different approach than I looked at before. But everything, of course, is still a balancing act. I care about the environment. We want to make sure that we can continue to export and increase the export, but I think it is a balance.

So I want to say, Dr. Ebinger, I read the findings in your report, which finds that lifting the ban on crude oil would boost U.S. economic growth and put downward pressure on world oil prices. Larry Summers also called for lifting the ban.

Let me ask a few questions to anyone who cares to answer: Department of Commerce has granted licenses during the past year to a few oil companies to export a relatively small amount of an ultralight crude—as Mr. Green mentioned, it is condensate. I believe condensate comes from shale plays. So, please, correct me if I am wrong. And so, therefore, increased production of condensate would mean more fracking, would it not?

Mr. EBINGER. Yes, sir, it would.

Mr. ENGEL. It would. Among the companies exporting condensate are Pioneer Natural Resources and Enterprise Products Partners. Which shale plays are they getting their condensate from, do we know?

Mr. SIEMINSKI. The Eagle Ford, Texas.

Mr. ENGEL. OK. And where did it go? Are there existing refineries in friendly parts of the world that would take and refine this additional crude?

Mr. PUGLIARESI. I can answer. I think most of the shipments went into the Far East, probably Korea, maybe the Singapore market. I don't actually have the—the Department of Commerce has a much different policy towards handling data than EIA. This is considered proprietary information so I don't think it is publicly available yet.

Ms. GORDON. I would just add, it is petrochemical feedstock that condensates largely so it is going to—it is not going to refining. It is going to making petrochemicals so the Far East makes sense.

Mr. ENGEL. Thank you. I am asking these questions because, obviously, in addition to economics, there are environmental conditions, and geopolitical factors that merit consideration and I really think the whole thing—I think there is a balance. But I do think that this is something that we should look at very seriously. It makes sense to me, again, because I think the United States obviously being a world power has to be concerned with the geopolitics of it. I know that when we are trying to get some of our allies in Europe, Germany and some of the other countries to stand up to Putin and his aggression to Ukraine, there was some reluctance there because they rely on Russia for their energy resources. I can't help but thinking if they relied on us or if we were available, we could exert more pressure. And I think that would be an important policy goal of the United States. Again, I think it has to be balanced with environmental concerns and other concerns as well.

Thank you all. Thank you, Mr. Chairman.

Mr. WHITFIELD. The gentleman yields back.

At this time, I recognize the gentleman from Nebraska, Mr. Terry, for 5 minutes.

Mr. TERRY. Thank you. So one of the reasons I ran for Congress 16 years ago was the high level of reliance on foreign fuel to full our economy and wanted to change that. So I am pleased to see that we are down to 33 percent. We are only 33 percent of our fuel needs of oil is imported now. So, in a geopolitical sense, why do we still have 33 percent import of oil into our country? And I will start with Mr. Sieminski.

Mr. SIEMINSKI. Mr. Terry, what we are talking about mostly here today is oil, but within a year and a half, the U.S. is likely to be a net exporter of natural gas. We are already a net exporter of coal. We don't really import very much electricity. A little bit of that comes from Quebec, and Canada, and from Saskatchewan. So, on the oil side, we are a net exporter of oil products. The only thing that we are still importing is crude oil. Those numbers—

Mr. TERRY. Right.

Mr. SIEMINSKI [continuing]. Will come down. But if you say, well, do you want that to go to zero, the answer would be, well, not necessarily because—

Mr. TERRY. Well, that's the ultimate question, is can we and should we—

Mr. SIEMINSKI [continuing]. Those refineries import oil and sell product.

Mr. TERRY. And particularly Venezuelan oil bothers me, but do we have a geopolitical responsibility to allow some importation of Venezuelan oil?

Mr. SIEMINSKI. I will stay away from the policy decision of what we would want to do with Venezuela or not. But I would say that Venezuela is at the top of EIA's list of what could go wrong in the global markets. It could push prices up. You have got Iranian sanctions issues. You have the ISIS problems in Iraq. Maybe OPEC will at some point decide to reduce production. You can have difficulties in Russia even.

There are lots of things that could make prices go up. Prices could come down, too. What really triggered prices coming down I believe over the course of the last few months was the combination of the unexpected recovery of oil production in Libya, at the same time that the economy in China was slowing down and demand forecasts began to recede.

And in that background of increasing U.S. oil production, the combination of all of those things, I think, was just was a tipping point and changed everybody's mind about what the future looked like.

Mr. TERRY. Mr. Pugliaresi.

Mr. PUGLIARESI. I guess one of the things I would encourage the members to is to look at this through North American lens. When you put Canada in the mix—

Mr. TERRY. Absolutely.

Mr. PUGLIARESI [continuing]. We really don't like the self-sufficiency approach to thinking about energy security. We really say, look, we want this platform to be productive, U.S., Canada, large continental lands.

Mr. TERRY. And Mexico. Let's think of it as North American independence.

Mr. PUGLIARESI. There may be efficient solutions for the platform which allows both exports and imports, because refining configurations are all different kinds. We have a lot of very capital invested in processing heavy crude. And so that heavy crude ought to come from Canada and get processed where—that is where it is most valuable.

Mr. TERRY. And that makes sense to me. So, in our refining capacity in the United States—I will follow up on your comment here, do—are we ready to be able to expand or do we need to expand refining capabilities in the United States if we are going to have a mix of more sweet and then the heavier crude from Canada? Who wants to go with that one?

Mr. SIEMINSKI. Well, it is difficult to convince refiners to expand capacity when the demand here in the U.S. is going down. Typically refineries are built closer to where consumers are. But we have got a terrific advantage in both technology and low natural gas prices—natural gas is used as the refinery fuel—that make our refineries the best in the world. And taking advantage of those situations I think is what the refiners are doing exporting products into the global market.

Mr. TERRY. Ms. Gordon.

Ms. GORDON. Yes, I would just say that in terms of the—as I said earlier, the global production has become very—it is not site specific anymore. It is happening all over. But this is also going to happen in refining. The country that added more refining capacity to the world market than any other last year was Saudi Arabia. So we are seeing China adding refining capacity, Saudi Arabia adding refining capacity. And demand, as we have just said, is really in the developing world. So to move that demand closer, refine products closer to people that will consume—we are talking Latin America, the Middle East, Africa—that is where future demand growth is, throughout Asia. So the whole market is really shifting somewhat. I don't think you can really draw a circle around North America very easily in this market.

Mr. TERRY. Although I want to.

Ms. GORDON. I know.

Mr. TERRY. Thank you.

Mr. WHITFIELD. At this time I recognize the gentleman from New York, Mr. Tonko, for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair.

In a number of the hearings I have attended, I have noticed that where the subject is an environmental public health or consumer regulatory issue, there are a number of questions about the estimates of the cost and benefits of the policy in question, and that is fine.

Those questions explore the assumptions made in the analyses, the relative uncertainty or certainty of the estimates, and how sensitive the results are to changes in the assumptions, initial conditions, or data that go into the model.

Frankly, this is a major focus of most of our conversations about the projections on climate change, with much emphasis on the uncertainties and what we don't know and little emphasis on all the

things that we have learned and the generally robust conclusions of climate models.

Economic forecasts don't receive the same scrutiny and, frankly, they often miss very significant changes. We have spilled blood and treasure over this commodity. As we all know, it still plays a major role in fueling our economy. We need to understand fully the implications before we make this change.

I note in Administrator Sieminski's testimony, when he provides the results of the EIA's latest short-term energy outlook, that he includes the disclaimer, "Of course, the recent dramatic declines in crude prices may affect our outlook in the coming months."

So I would like to better understand how robust these benefits—benefit estimates provided in the studies refer to—are likely to be.

Dr. Ebinger paints a very positive picture resulting from lifting the crude oil export ban, reporting a gain in GDP over the next 25 years of \$600 billion or—billion to 1.8 trillion. That range is dependent upon which EIA scenario is used. These are model results based on other model results, EIA's model results.

What are the assumptions, I would ask the panel, about the world price of oil in the underlying EIA scenarios? And how would changes in that world price impact those given estimates?

Honorable Sieminski, if you could, please.

Mr. SIEMINSKI. Congressman, we will be looking at this and will have a lot more to say, I think, when we publish the annual energy outlook early next year. I think what I could say is that lower oil prices, if they were to remain, will slow down this growth in U.S. oil production. I mean, that is supply-and-demand pricing.

The other possible effect it could have is to make it less profitable for companies to export natural gas in the form of LNG from the United States, and the reason for that is exports of LNG from the U.S. generally are predicated on selling into a market where that gas in Europe or Asia is priced at an oil equivalent. And with lower oil prices, the spread or profitability of exporting U.S. LNG into the global markets would be reduced. And so that might change those dynamics a little bit.

So there are going to be a lot of places, you know, in our forecast, I think, where building in a possibility that lower prices could stay for a while would have an impact, and we will have plenty to say about that in the coming months.

Mr. TONKO. Thank you.

Ms. Gordon, do you have anything to add to that?

Mr. EBINGER. If I could add, sir, if we look at past situations where we have had precipitous price declines, I think you can look internationally and say that the price declines at some point become the engines of renewed growth because the Chinas and Indias and Brazils of the world, all of a sudden, if they start seeing \$50 oil, they start saying, "Let's rejuvenate some of our economies and rev up projects that didn't make sense at \$100 oil."

And remember that—I think it was in 1998—that the price of oil fell, I think, from 117, 118, something like that, down to \$38 in 7 months, but it came rapidly back up. I believe, if I remember correctly, at least into the 70s and then worked its way up to where it was before the current price drop.

So, you know, low oil prices for those countries that are huge oil importers and fast-growing populations we have talked about in Asia—low oil prices are a boom, and, at some point, it will rejuvenate the Chinese and Indian economies and bring, hopefully, the rest of the world along with it as demand for good and services, once again, intensify.

Mr. TONKO. Mr. Chair, I yield back. My time is up.

Mr. WHITFIELD. The time is up.

At this time recognize the gentleman from Virginia, Mr. Griffith, for 5 minutes.

Mr. GRIFFITH. Thank you, Mr. Chairman. I appreciate that. Petroleum coke. I always love coming to these hearings and listening because I learn all kinds of things.

Ms. Gordon, tell me about petroleum coke. And you said earlier in your testimony that it was worse than coal. I am assuming that means from a pollution standpoint.

Can you explain that to me, please.

Ms. GORDON. So petroleum coke is the bottom of the barrel. It is when you wring all of the liquids out of the heavy oil. It comes out of every refining process, but in very small amounts.

But with heavy oils, you have a lot of these high-carbon bottom-of-the-barrel. And so, when you put in coking capacity that actually cleaves these molecules, you get more liquids out, which is good, but then you get more solid out of your refinery.

Petroleum coke is a solid fuel. If it is a very, very high-quality petroleum coke, which doesn't come out of refineries, it goes into steel and glass and ceramic manufacture.

If it is low-quality coke, high in sulfur, high in heavy metals—this is what comes out of the oil production process—that goes into power production and steam, and then you are basically burning coal.

It has about 10 percent higher greenhouse gas emissions than coal and higher nickel, vanadium, sulfur, than some of the worst coals, and it runs a bit counter to coal.

So when coal is priced high, as it had been recently and before we were exporting a lot of our coal, China was wanting the petroleum coke because it was an economic benefit for them to burn coke instead of coal. Now prices of coal are low. And so coke is a little bit out of favor.

And, if you remember, there was a news release last year about—it was in Detroit. There was a pile of petroleum coke that got a lot of attention in the press. It is very—it is black. It is voluminous. They are spreading in Alberta.

It has spread for miles because they haven't—it is landlocked. They can't really export it. So it ends up being a problem. They are going to want to send us the heavy oil so that we export the petroleum coke because we are closer to ports of call.

Mr. GRIFFITH. OK. Now, let me go back on your testimony just a little bit in there.

You said that it is now cheaper or more expensive than—

Ms. GORDON. Than coal.

Mr. GRIFFITH [continuing]. The coal product.

Ms. GORDON. Coal prices have come down. So petcoke is more—it is really priced to sell. It is very hard to get data on petcoke, ac-

tually. It is not traded. It is traded, you know, in the trade—with traders. It is very person to person, company to company.

But because it is a byproduct of refining and no one really wants to make this petcoke, it builds up and you have to get rid of it. So, of course, you know, refiners want to get a lot of money for it. But, if they can't, they still have to put it into the market. So the price is relatively volatile.

Mr. GRIFFITH. OK. So from an environmental standpoint, we would be better off exporting low-sulfur coal from the United States, say, Central Appalachia, that I happen to represent and Mr. McKinley represents, than we would be flooding the market in China with this petcoke. Am I correct?

Ms. GORDON. Petcoke's worse.

Mr. GRIFFITH. I appreciate that very much.

Pipelines were brought up earlier, about whether or not we should be building them and the safety of bringing the oil.

And I think I understood from the comments—just from the tenor of the comments that the consensus or the general understanding was that the oil is going to find a way to the United States coming out of Canada whether it is by pipeline or by truck or by train. Is that a fair assessment?

And each one of you can answer that.

Mr. PUGLIARESI. Yes. I think it will. The question is cost. Right. The reason the pipelines—I mean, there is a real value to rail. There is a lot of optionality where the markets are not settled. But, you know, when capital gets deployed, it is quite interesting.

If you want to build a major transloading facility—rail transloading facility, you just get a local permit. You don't have a NEPA review. If you want to build a pipeline, you are going to cross Federal land or you are going to do some action that is going to trigger a NEPA review.

So we have a regulatory program that is somewhat unbalanced. You can put a rail facility and move things out pretty quickly. You want to build a pipeline, you have got a mountain of paperwork and intervenors before you.

Mr. GRIFFITH. Yes. I appreciate that.

I was—there was one of these questions that I don't think has been asked in relationship to the international situation, and that deals with the U.S. recently won a trade case against China over their export ban on rare earth.

How does that case then appear, at least from a public perception standpoint, when we are banning the export of our oil products?

And does that weaken the President's hand in these discussions with other countries about exporting rare earth and the U.S.'s position on oil?

Anybody want to take that one?

Mr. EBINGER. It has been raised by a number of people, at least in the think tank community, as an issue. And I know a number of international trade lawyers that think it is quite possible that someone might bring an action against the United States for the continued ban on crude oil exports on the same premise, that it is an unfair barrier to trade.

Mr. GRIFFITH. All right.

Ms. GORDON. I would just add that, because China's oil tends to be heavier, their refining capacity isn't really well-suited to our light tight oil. And because we can export product—a lot of product and there is no ban on that, substantively—

Mr. GRIFFITH. You do not see China bringing an action, but in the think tank world, at least, there is some concern that somebody else might bring an action.

Mr. EBINGER. It may not be China, but it may be someone else.

Mr. GRIFFITH. May be someone else. I appreciate that.

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

Mr. WHITFIELD. Thank you, Mr. Griffith.

That concludes the questions.

And did you want to ask some additional questions, Mr. Green?

Mr. GREEN. Mr. Chairman, I would just like to follow up with Ms. Gordon on the—

Mr. WHITFIELD. I will recognize you for 5 minutes.

Mr. GREEN. Oh. Well, thank you.

The Energy Policy and Conservation Act of 1975 you discussed, importantly, EPCA also addressed vehicle standards, energy efficiency, conservation, and created a Strategic Petroleum Reserve.

If the next Congress addresses the export issue, should there be an effort to address the other sections like the Strategic Petroleum Reserve?

Ms. GORDON. I think we are in a transition when it comes to oil, and that has been very obvious. And so oil policy, energy policy, is going to be an important new chapter that follows that.

Mr. GREEN. OK. Well, most of that Strategic Petroleum Reserve actually is just east of where I live in southeast Texas, and it is important.

But, again, if we are producing what we are—although we are still not producing enough oil for our own consumption mainly because of the types of oil we have.

And, like I said earlier, the refineries that I have represented over the years have been retooled to do the heavier crude, and it would take, you know, billions of dollars to go back to do the lighter sweet. And just like—I mean, it is an investment decision if that happens.

In your testimony, you discuss environmental risk and that, stated earlier, you have seen conflicting climate articles discussing U.S. refined products, exports.

Is the U.S. refined product better or worse than the product currently consumed in other parts of the world? Do we produce gasoline or diesel better than India or China, for example? And I know we compete with Europe on the product, too.

Ms. GORDON. Well, from a climate perspective, it is carbon. It would be similar. From an air quality perspective, it depends on the refining specifications.

And they are, you know, lower in Europe than the specifications might be lower in Asia. But from a climate perspective, I don't think there is a difference between our products and theirs.

Mr. GREEN. And I know that, if there is a ton of carbon going up in China, that is the same as a ton of carbon going up in east Harris County. And that is why some of us would like to see some

kind of national agreement so we don't compete with one hand behind our back.

As the U.S. produces more light sweet crude and exports condensate, the ultralow-sulfur diesel. And I mentioned it earlier, but I just want—that is benefiting some of our trading partners in Latin America, particularly, and, I assume, Europe because we have low-sulfur diesel. And I know it went—the refining industry went through some problems through it. So they are actually doing very well in exporting it.

Does that help the climate, at least the pollution issues in other countries?

Ms. GORDON. Not climate, but air pollution.

Mr. GREEN. Not climate, but air pollution.

Ms. GORDON. Yes. Sulfates that are in the air. So it would be much more of a respiratory issue and not climate.

Mr. GREEN. Well, that is probably more immediate than rise in the sea level and things like that. So—but it does have a benefit for those countries.

Now, let me talk about petroleum coke for the last minute.

The highest point in my district is either a landfill or the tons of petroleum coke, and it is shipped out.

And in the 2005 energy bill where we set up loan guarantees through Department of Energy for a number of things, including wind and solar—and my colleague Joe Barton is not here—we put in there for research and what we could utilize petroleum coke for other than just shipping it to China and India to burn, which, again, puts carbon in the air, but also the local.

Is—is there any support for trying to use something alternative?

I got involved with coal ash because it was used for roadbeds. Is there anything else we could use for—petroleum coke for? Because it is—we can't burn it here because it is so bad.

Ms. GORDON. Exactly.

You know, it is a matter of taking the bottom of the barrel where there is no economics left and putting more money into it.

There are definitely things you could do with that petroleum coke, the fuel-grade petroleum coke. You could take heavy metals and the sulfur out and make it actually a beneficial industrial by-product, but it is going to cost money to do that.

Mr. GREEN. Yes. So it is not economical.

Ms. GORDON. It is not economical.

Mr. GREEN. It is much cheaper to put it on—

Ms. GORDON. Not if no one will take it.

Mr. GREEN [continuing]. A ship and send it to someone else to burn it?

Ms. GORDON. Uh-huh.

Mr. GREEN. OK.

Mr. PUGLIARESI. You know, Mr. Green, I am only going to say one thing about the SPR, the Strategic Petroleum Reserve.

I think it is important to remember this is a strategic asset. We are still connected to the world oil market. We might have to change the way we distribute the SPR because of the huge flow of crude oil into the Gulf Coast, but I don't think—I think we should—you know, and I am sure we are going to study this carefully.

But, you know, things can change in the world. We are not going to get rid of the 82nd Airborne and we are not—and I think we ought to look at the SPR that way. The world could change and we may need that. Even if we are relatively independent, a price spike in the world oil market for some catastrophe somewhere could do a lot of damage to the American economy. We will want that asset at that time.

Mr. GREEN. And that is correct.

And where I come from, the goal of that was to buy that oil and put it in that when it was low. And then when we release it because—when oil goes up because of embargo or whatever else it does.

But Mr. Chairman, you have been more than kind today. Thank you.

Mr. WHITFIELD. I also want to mention Bill Flores is here, a member from Texas who was recently elected chairman of the Republican Study Group. He is going to be a member of the Energy and Commerce Committee in the 114th Congress and a member of this subcommittee.

And since, Bill, you sat there so patiently for all these hours, do you want to ask a few questions before we get out of here?

Mr. FLORES. Well, I think that I just heard the voting buzzer go off. So I will, first of all, thank you for recognizing me and thank you for allowing me to have the time. I will keep my comments short.

One of you—well, more than one of you on the panel talked about the cumbersomeness of having Federal policy trying to interfere with free markets. And I think that is something that we on this side of the room need to always remember, that anytime that we try to violate the laws of economics, it is like violating the laws of physics.

And you can think about gravity as an example. The more you violate the laws of gravity, the harder the impact at the end. And that was one of the first things that my economics instructor taught me back when I was in college.

And so I think that we on our side, again, need to be constantly reminded that the free market works best when it lets the—when the Federal Government doesn't have too heavy a hand.

There was some conversation here about the transparency related to the oil markets, and I would vigorously disagree with those comments because of this.

If you say there is no transparency, that means that the buyers and sellers that are out there taking this oil and refining it know nothing about it, and that is not the case.

That oil is being moved around. It is being trans—I mean, it is being bought and sold and refined and put into finished product and being sold to an end user and being consumed.

And so to say that there is no transparency in the market is just false because buyers and sellers are out there. They are happy with the level of information that they have.

If they weren't, then there would be no trading. There would be no commerce in those products. And so I would not like the panel to get too affixed to those comments because they just are not true.

And, with that, I yield back, Mr. Chairman. And thank you.

I hope everybody has happy holidays and Merry Christmas.

Mr. RUSH. Mr. Chairman, I would really ask for unanimous consent to allow Ms. Gordon to respond to that because—

Mr. WHITFIELD. Without objection, go ahead.

Ms. GORDON. There is certainly some transparency in the market. I mean, it is working. But I think the best example of why there isn't enough information in the market is the explosiveness of the rail cars taking Bakken oil.

The market really didn't know the composition of that oil, and the equipment wasn't really designed to deal with that oil.

So I think that we are seeing physical manifestations of the fact that there isn't enough transparency in this market.

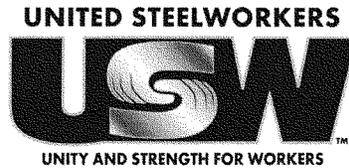
Mr. WHITFIELD. Did you want to ask for unanimous consent?

Mr. RUSH. Mr. Chairman, I also want to ask for unanimous consent that this report from the—ostensibly, from the United Steelworkers—that it be included into the record.

And, also, I have here an article from a Mr. Mason Inman entitled, "The Fracking Fallacy." I would like for that to be included into the record.

Mr. WHITFIELD. These will be included in the record.

[The information follows:]



Crude Oil Exports – Lost Jobs, Lost Growth

The Issue

Advances in hydrocarbon extraction in the last three years have dramatically decreased the United States' reliance on foreign crude. With domestic crude oil production likely increasing to over eight million barrels per day in 2014 it is critical that the country take stock of the policies to make sure America gets the highest economic, environmental, and national security benefit from increased crude oil extraction.

If forecasts prove to be accurate, United States oil production will have increased 46 percent over the three years from 2011 to 2014. There has not been a three-year increase that large since before the Depression. The United States is producing more oil today than at any point in the past 20 years.¹

However despite the dramatic increase in crude oil extraction, the U.S. still is not self-sufficient in oil. According to the Energy Information Administration (EIA), the U.S. consumed 18.49 million barrels per day of oil in the last year, nearly double the most optimistic estimates of the amount of crude expected from increased production.²

A critical component of the U.S. oil industry that can add value to this increased production is our nation's massive, technologically advanced refining capacity. Because the U.S. has the capacity to refine essentially all the new crude it is producing it enhances the job creation potential of the resources boom. This will allow our country to continue its growth as an exporter of value-added petroleum products, with all the job creation benefits this status brings. Maintaining controls on crude oil exports has the potential to maintain and increase domestic job creation while providing additional economic value in the United States.

Benefits of Maintaining Export Controls

The recent advances in extraction technology combined with the current crude oil export controls provides a unique opportunity to align domestic refining capacity to domestic crude production, decrease environmental impacts, increase value-added exports, and maximize job creation from well head to gasoline pump.

¹ <http://www.nytimes.com/2014/01/25/business/us-oil-production-keeps-rising-beyond-the-forecasts.html? r=0>

² <http://www.eia.gov/tools/faqs/faq.cfm?id=33&t=6>

U.S. refiners have benefited from the increased supply of domestic oil because it has reduced their raw material expenses. In the last few months the price for U.S. crude has been as much as \$20-\$25 a barrel lower than that of international crudes. This decreased cost has enabled refiners like Philadelphia Energy Solutions (PES) to operate and upgrade infrastructure at their facilities. PES operates the former Sunoco refinery in Philadelphia, which was slated for closure in 2012 because of high crude oil prices from overseas.³

Refiners face the implementation of a number of regulatory standards in the near future which will require investment in facility upgrades, Tier 3 automotive and fuel standards, the Renewable Fuels Standard, EPA state implementation plans, and other regulations will require significant but attainable modernization efforts. The domestic crude export control system will provide independent refiners with a significant cost advantage to allow modernization that will ensure long-term viability for U.S. refineries.

Domestic refining capacity should align to the varieties of crude available in the United States for both economic and national security reasons. Reducing reliance on foreign crude oil from unstable areas of the world is critical but where crude is refined into products is equally important. The United States currently is the global leader in refining capacity. However, economic and political rivals China and Russia are the next largest refiners in the global market. Maintaining crude oil export controls ensures domestic refiners reliable and affordable crude.⁴ And, greater domestic supplies will provide less pressure on a foreign policy decisions that often are influenced by energy demands.

Domestic refining capacity is currently running at an 88.7% utilization rate, indicating that current refining capacity could incorporate additional crude into the system. In addition, export controls have provided a window for new job creation in reopened tea-pot refineries and new grassroots refineries.

For example, MDU Resources and Calumet Specialty Products are about 30% complete with building the 20,000-bpd Dakota Prairie plant near Dickinson, North Dakota, which will be the first completely new refinery in the U.S. since 2008.

Domestic refining contributes significantly to the economy in the areas where refining takes place. The U.S. Bureau of Labor Statistics (BLS) reports approximately 117,000 jobs in the refining and coal processing sector as of December 2013 with the dominant portion in refining. The loss of even 10 percent of these jobs would have a devastating effect in refinery communities all across the United States.

An economic analysis on the loss of east coast refining in the Philadelphia area showed an impact of more than 36,000 jobs and over \$550 million in lost revenue for state and local entities.⁵ Removing export controls will jeopardize the ability of regional refineries to compete and could cost significant direct and indirect job loss.

³ <http://www.usw.org/news/media-center/releases/2014/usw-opposes-export-of-u-s-crude-oil-cites-resulting-job-loss-other-factors>

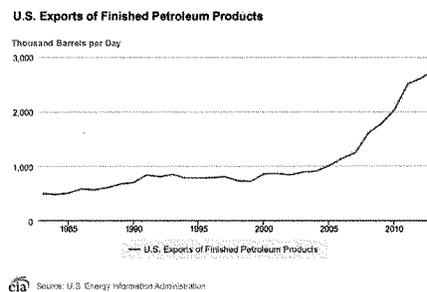
⁴ <http://www.quandl.com/energy/crude-petroleum-refinery-capacity-all-countries>

⁵ http://www.doleta.gov/performance/results/AnnualReports/2011_economic_reports/pa_economic_impact.pdf

Not all refiners currently support changing the U.S. export control system. Large refiners such as Valero and smaller refiners such as Philadelphia Energy Solutions have invested billions into domestic refining production for domestic use and export and oppose changing the current system.

Labor and safety standards in the U.S. refining sector also are significantly stronger than those of most countries that would seek to import U.S. crude. BLS statistics indicate an annual mean wage of \$64,460 dollars a year.⁶ These rates are related to the dangerous nature of refining and the collective bargaining the workers have done with the industry over the years.

Finally, as refiners meet domestic demand for refined products, the excess product is increasingly sold abroad. By refining crude domestically, refiners add value to crude oil, turning it into products such as diesel fuel, home heating oil, jet fuel, gasoline, asphalt, lubricants, and many others. By exporting excess product the U.S. maintains domestic refining jobs and provides a greater economic return than would be realized from exporting the crude itself, if export controls were lifted. As can be seen in the below EIA chart, U.S. exports of finished petroleum products have increased significantly to 2.757 million barrels per day in 2013.



Conclusion

The inability of the U.S. to be self-sufficient in crude oil means that America still will be a crude oil importer if export controls are lifted. Domestic crude prices likely would rise to global levels, and with too-high crude prices, domestic refining capacity would be at risk. The risk would be not only to refinery jobs and the communities in which the refineries are located, but also to national security in an increasingly perilous age. The higher environmental standards our industry operates under also lead to a cleaner global environment. U.S. export controls help maintain significant job, economic and national security benefits for the country.

For all of the reasons above the USW believes exporting crude oil is poor policy and harmful both to the U.S. economy and to national security.

⁶ <http://www.bls.gov/oes/current/oes518093.htm>

NEWS FEATURE

THE FRACKING FALLACY

The United States is banking on decades of abundant natural gas to power its economic resurgence. That may be wishful thinking.

When US President Barack Obama talks about the future, he foresees a thriving US economy fuelled to a large degree by vast amounts of natural gas pouring from domestic wells. "We have a supply of natural gas that can last America nearly 100 years," he declared in his 2012 State of the Union address.

Obama's statement reflects an optimism that has permeated the United States. It is all thanks to fracking — or hydraulic fracturing — which has made it possible to coax natural gas at a relatively low price out of the fine-grained rock known as shale. Around the country, terms such as 'shale revolution' and 'energy abundance' echo through corporate boardrooms.

Companies are betting big on forecasts of cheap, plentiful natural gas. Over the next 20 years, US industry and electricity producers are expected to invest hundreds of billions of dollars in new plants that rely on natural gas. And billions more dollars are pouring into the construction of export facilities that will enable

BY MASON INMAN

the United States to ship liquefied natural gas to Europe, Asia and South America.

All of those investments are based on the expectation that US gas production will climb for decades, in line with the official forecasts by the US Energy Information Administration (EIA). As agency director Adam Sieminski put it last year: "For natural gas, the EIA has no doubt at all that production can continue to grow all the way out to 2040."

But a careful examination of the assumptions behind such bullish forecasts suggests that they may be overly optimistic, in part because the government's predictions rely on coarse-grained studies of major shale formations, or plays. Now, researchers are analysing those formations in much greater detail and are issuing more-conservative forecasts. They calculate that such formations have relatively small 'sweet spots' where it will be profitable to extract gas.

The results are "bad news", says Tad Patzek, head of the University of Texas at Austin's department of petroleum and geosystems engineering, and a member of the team that is conducting the in-depth analyses. With companies trying to extract shale gas as fast as possible and export significant quantities, he argues, "we're setting ourselves up for a major fiasco".

That could have repercussions well beyond the United States. If US natural-gas production falls, plans to export large amounts overseas could fizzle. And nations hoping to tap their own shale formations may reconsider. "If it begins to look as if it's going to end in tears in the United States, that would certainly have an impact on the enthusiasm in different parts of the world," says economist Paul Stevens of Chatham House, a London-based think tank.

The idea that natural gas will be abundant

A rig drills for natural gas using hydraulic-fracturing methods in a Pennsylvania shale formation.

JIM LO SCALZO/GETTY IMAGES

SOURCE: EIA; U.S. ENERGY INFORMATION ADMINISTRATION; GOLDMAN SACHS; WOOD MACKENZIE; NAVIGANT

is a sharp turnaround from more pessimistic outlooks that prevailed until about five years ago. Throughout the 1990s, US natural-gas production had been stuck on a plateau. With gas supplying one-quarter of US energy, there were widespread worries that supplies would shrink and the nation would become dependent on imports. The EIA, which collects energy data and provides a long-term outlook for US energy, projected as recently as 2008 that US natural-gas production would remain fairly flat for the following couple of decades.

Then the shale boom caught everyone by surprise. It relied on fracking technology that had been around for decades — but when gas prices were low, the technology was considered too costly to use on shale. In the 2000s, however, prices rose high enough to prompt more companies to frack shale formations. Combined with new techniques for drilling long horizontal wells, this pushed US natural-gas production to an all-time high, allowing the nation to regain a title it had previously held for decades: the world's top natural-gas producer.

RICH ROCKS

Much of the credit for that goes to the Marcellus shale formation, which stretches across West Virginia, Pennsylvania and New York. Beneath thickly forested rolling hills, companies have sunk more than 8,000 wells over several years, and are adding about 100 more every month. Each well extends down for about 2 kilometres before veering sideways and snaking for more than a kilometre through the shale. The Marcellus now supplies 385 million cubic metres of gas per day, more than enough to supply half of the gas currently burned in US power plants.

A substantial portion of the rest of the US gas supply comes from three other shale plays — the Barnett in Texas, the Fayetteville in Arkansas and the Haynesville, which straddles the Louisiana–Texas border. Together, these 'big four' plays boast more than 30,000 wells and are responsible for two-thirds of current US shale-gas production.

The EIA — like nearly all other forecasters — did not see the boom coming, and has consistently underestimated how much gas would come from shale. But as the boom unfolded, the agency substantially raised its long-term expectations for shale gas. In its *Annual Energy Outlook 2014*, the 'reference case' scenario — based on the expectation that natural-gas prices will gradually rise, but remain relatively low — shows US production growing until 2040, driven by large increases in shale gas.

The EIA has not published its projections for individual shale-gas plays, but has released them to *Nature*. In the latest reference-case forecast, production from the big four plays would continue rising quickly until 2020, then plateau for at least 20 years. Other shale-gas plays would keep the boom going until 2040 (see 'Battle of the forecasts').

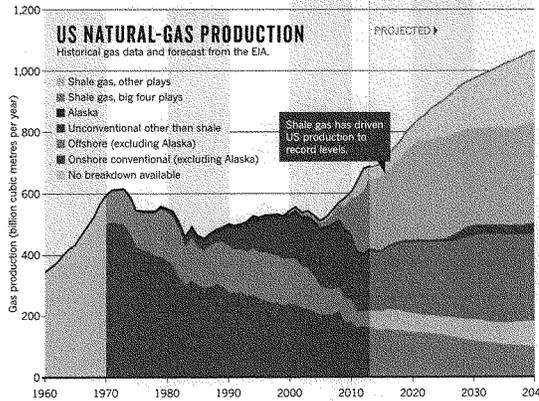
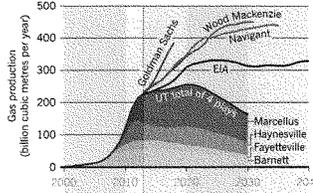
Petroleum-industry analysts create their

BATTLE OF THE FORECASTS

Production of natural gas in the United States is climbing rapidly, and the US Energy Information Administration (EIA) predicts long-term growth. But studies by the University of Texas (UT) challenge that forecast.

BIG FOUR SOURCES

The Texas team made forecasts for the four most productive shale-gas formations, or plays. Those forecasts suggest that gas production will peak soon and quickly drop, a much more pessimistic outlook than those offered by the EIA and several companies, such as Goldman Sachs.



own shale-gas forecasts, which generally fall in the neighbourhood of the EIA assessment. "EIA's outlook is pretty close to the consensus," says economist Guy Caruso of the Center for Strategic and International Studies in Washington DC, who is a former director of the agency. However, these consultancies rarely release the details behind their forecasts. That makes it difficult to assess and discuss their assumptions and methods, argues Ruud Weijermars, a geoscientist at Texas A&M University in College Station. Industry and consultancy studies are "entirely different from the peer-reviewed domain", he says.

To provide rigorous and transparent forecasts of shale-gas production, a team of a dozen geoscientists, petroleum engineers and economists at the University of Texas at Austin has spent more than three years on a systematic set of studies of the major shale plays. The research was funded by a US\$1.5-million grant from the Alfred P. Sloan Foundation in New York City, and has been appearing gradually in academic

journals¹⁸ and conference presentations. That work is the "most authoritative" in this area so far, says Weijermars.

If natural-gas prices were to follow the scenario that the EIA used in its 2014 annual report, the Texas team forecasts that production from the big four plays would peak in 2020, and decline from then on. By 2030, these plays would be producing only about half as much as in the EIA's reference case. Even the agency's most conservative scenarios seem to be higher than the Texas team's forecasts. "Obviously they do not agree very well with the EIA results," says Patzek.

The main difference between the Texas and EIA forecasts may come down to how fine-grained each assessment is. The EIA breaks up each shale play by county, calculating an average well productivity for that area. But counties often cover more than 1,000 square kilometres, large enough to hold thousands of horizontal fracked wells. The Texas team, by contrast, splits each play into blocks of one square mile

NEWS FEATURE

(2.6 square kilometres) — a resolution at least 20 times finer than the EIAs.

Resolution matters because each play has sweet spots that yield a lot of gas, and large areas where wells are less productive. Companies try to target the sweet spots first, so wells drilled in the future may be less productive than current ones. The EIA's model so far has assumed that future wells will be at least as productive as past wells in the same county. But this approach, Patzek argues, "leads to results that are way too optimistic".

The high resolution of the Texas studies allows their model to distinguish the sweet spots from the marginal areas. As a result, says study co-leader Scott Tinker, a geoscientist at the University of Texas at Austin, "we've been able to say, better than in the past, what a future well would look like".

The Texas and EIA studies also differ in how they estimate the total number of wells that could be economically drilled in each play. The EIA does not explicitly state that number, but its analysis seems to require more wells than the Texas assessment, which excludes areas where drilling would be difficult, such as under lakes or major cities. These features of the model were chosen to "mimic reality", Tinker says, and were based on team members' long experience in the petroleum industry.

ALTERNATIVE FUTURES

The lower forecasts from Texas mesh with a few independent studies that use simpler methods. Studies by Weijermars⁸, as well as Mark Kaiser⁷ of Louisiana State University in Baton Rouge and retired Geological Survey of Canada geologist David Hughes⁹, suggest that increasing production, as in the EIAs forecasts, would require a significant and sustained increase in drilling over the next 25 years, which may not be profitable.

Some industry insiders are impressed by the Texas assessment. Richard Nehring, an oil and gas analyst at Nehring Associates in Colorado Springs, Colorado, which operates a widely used database of oil and gas fields, says the team's approach is "how unconventional resource assessments should be done".

Patzek says that the EIAs method amounts to "educated guesswork". But he and others are reluctant to come down too hard. The EIA is doing "the best with the resources they have and the timelines they have", says Patzek. Its 2014 budget — which covers data collection and forecasting for all types of energy — totalled just \$117 million, about the cost of drilling a dozen wells in the Haynesville shale. The EIA is "good value for the money", says Caruso. "I always felt we were underfunded. The EIA was being asked to do more and more, with less and less."

Patzek acknowledges that forecasts of shale plays "are very, very difficult and uncertain", in part because the technologies and approaches to drilling are rapidly evolving. In newer plays, companies are still working out the best spots

to drill. And it is still unclear how tightly wells can be packed before they significantly interfere with each other.

Representatives of the EIA defend the agency's assessments and argue that they should not be compared with the Texas studies

"WE'RE SETTING OURSELVES UP FOR A MAJOR FIASCO."

because they use different assumptions and include many scenarios. "Both modelling efforts are valuable, and in many respects feed each other," says John Staub, leader of the EIA's team on oil and gas exploration and production analysis. "In fact, EIA has incorporated insights from the University of Texas team," he says.

Yet in a working paper⁹ published online on 14 October, two EIA analysts acknowledge problems with the agency's methods so far. They argue that it would be better to draw upon high-resolution geological maps, and they point to those generated by the Texas team as an example of how such models could improve forecasts by delineating sweet spots. The paper carries a disclaimer that the authors' views are not necessarily those of the EIA — but the agency does plan to use a new approach along these lines when it assesses the Marcellus play for its 2015 annual report. (When *Nature* asked the authors of that paper for an on-the-record interview, they referred questions to Staub.)

BOOM OR BUST

Members of the Texas team are still debating the implications of their own study. Tinker is relatively sanguine, arguing that the team's estimates are "conservative", so actual production could turn out to be higher. The big four shale-gas plays, he says, will yield "a pretty robust contribution of natural gas to the country for the next few decades. It's bought quite a bit of time."

Patzek argues that actual production could come out lower than the team's forecasts. He talks about it hitting a peak in the next decade or so — and after that, "there's going to be a pretty fast decline on the other side", he says. "That's when there's going to be a rude awakening for the United States." He expects that gas prices will rise steeply, and that the nation may end up building more gas-powered industrial

plants and vehicles than it will be able to afford to run. "The bottom line is, no matter what happens and how it unfolds," he says, "it cannot be good for the US economy."

Forecasting is difficult for the United States, which can draw on data for tens of thousands of shale-gas wells, the uncertainty is much larger in countries with fewer wells. The EIA has commissioned estimates of world shale potential from Advanced Resources International (ARI), a consultancy in Washington DC, which concluded in 2013 that shale formations worldwide are likely to hold a total of 220 trillion cubic metres of recoverable natural gas¹⁰. At current consumption rates — with natural gas supplying one-quarter of global energy — that would provide a 65-year supply. However, the ARI report does not state a range of uncertainty on its estimates, nor how much gas might be economical to extract.

Such figures are "extremely dubious", argues Stevens. "It's sort of people wetting fingers and waving them in the air." He cites ARI's assessments of Poland, which is estimated to have the largest shale-gas resources in Europe. Between 2011 and 2013, the ARI reduced its estimate for Poland's most promising areas by one-third, saying that some test wells had yielded less than anticipated. Meanwhile, the Polish Geological Institute did its own study¹¹, calculating that the same regions held less than one-tenth of the gas in ARI's initial estimate.

If gas supplies in the United States dry up faster than expected — or environmental opposition grows stronger — countries such as Poland will be less likely to have their own shale booms, say experts.

For the moment, however, optimism about shale gas reigns — especially in the United States. And that is what worries some energy experts. "There is a huge amount of uncertainty," says Nehring. "The problem is, people say, 'Just give me a number'. Single numbers, even if they're wrong, are a lot more comforting." ■

Mason Inman is a freelance writer in Oakland, California.

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Mr. WHITFIELD. And then, also, I would like to put into the record letters from the American Petroleum Institute, the American Fuel and Petrochemical Manufacturers, and the Diesel Technology Forum. Without objection.

[The information follows:]



Louis Finkel
Executive Vice President

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December 10, 2014

The Honorable Ed Whitfield
Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20510

The Honorable Bobby L. Rush
Ranking Member
Subcommittee on Energy and Power
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20510

Dear Chairman Whitfield and Ranking Member Rush:

On behalf of the American Petroleum Institute (API), I write today to commend the House Energy and Commerce Subcommittee on Energy and Power for holding a hearing to reexamine America's outdated export restrictions on crude oil. Revisiting these 1970s-era trade policies is a critical step toward maximizing the benefits of our energy revolution.

As you know, America is now the world's largest natural gas producer and, in 2015, is expected to become the world's largest oil producer. This is the result of innovations in hydraulic fracturing and horizontal drilling. By opening the doors to free trade, America can harness this energy abundance to create jobs, grow our economy, and cut the trade deficit. Furthermore, exports will expand America's geopolitical influence, helping our allies abroad and diminishing the influence of foreign suppliers that dominate other markets.

Study after study agrees that exports are good for consumers and will grow our economy. Estimates analyzed by the Government Accountability Office projected that exports would put downward pressure on consumer prices by increasing the global supply of fuel, saving U.S. consumers 1.5 to 13 cents per gallon on gasoline. Most recently, the Energy Information Administration confirmed the same link between global crude prices and gasoline costs for consumers here in the U.S.

According to ICF, the free trade of U.S. crude also could prompt up to \$70 billion in additional U.S. investment by 2020, leading to an increase in crude oil production of 500,000 barrels per day and 300,000 new jobs. In addition, ICF estimates that crude exports would contribute to the administration's goal of doubling exports by cutting the trade deficit as much \$22 billion annually by 2020.

As we have seen in recent weeks, America's growth as an energy superpower has been a game changer, creating a more competitive global market, where one group cannot easily control prices. Our competitive position is strong because U.S. producers are at the forefront of innovation and continually improving efficiency. To ensure that America maintains that momentum, we should adopt modern trade policies that allow producers to access a free market for America's crude.

By opening the door to foreign markets – as well as turning aside duplicative regulations and permitting access to energy on federal lands – Congress can help to protect U.S. economic growth and energy security. Once again, we would like to thank the subcommittee for its attention to this critical issue, and we look forward to working with you in the months ahead to advance America's growth as a global energy superpower.

Sincerely



Louis Finkel



Charles T. Drevna
President

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December 10, 2014

Chairman Ed Whitfield
United States House of Representatives
Energy and Commerce Committee
Energy and Power Subcommittee
2184 Rayburn House Office Building
Washington, D.C. 20515

Ranking Member Bobby Rush
United States House of Representatives
Energy and Commerce Committee
Energy and Power Subcommittee
2268 Rayburn House Office Building
Washington, D.C. 20515

Re: Energy and Power Subcommittee Hearing Entitled, "The Energy Policy and Conservation Act of 1975: Are We Positioning America for Success in Era of Energy Abundance?"

Dear Chairman Whitfield and Ranking Member Rush:

The American Fuel & Petrochemical Manufacturers (AFPM) applauds the Energy and Power Subcommittee for holding a hearing to examine the impacts of our nation's outdated energy laws, something we believe is long overdue. When Congress enacted the Energy Policy and Conservation Act of 1975 (EPCA), the United States was reacting to the 1973 oil embargo that created significant problems for the U.S. economy. Although much of the economic upheaval was self-induced by federal interference in the market via price controls and production limiting distortions that in essence turned a manageable nuisance into a major event, EPCA established a federal energy policy that was designed to protect the nation from supply disruptions. Among many other things, EPCA placed a ban on the export of crude oil from the United States.

However, the policies under EPCA were drafted in an era where the energy outlook for the United States was much different than it is today. Our nation has witnessed extensive changes in the energy landscape over the last 40 years. Policymakers and the public have seen concern over a lack of refining capacity turn into a scenario where domestic refiners can make all the fuels to meet America's needs, while also producing surplus refined petroleum products to export. Assumptions of exponentially rising demand and diminishing oil production have proven wrong; today, domestic transportation fuel demand is declining while oil production at home is now on track to surpass all other countries. These shifts have led to call for lifting the oil export ban, which some have pointed to as a barrier to a free market.

AFPM's position is that a free market should drive all U.S. policy, including energy policy. While we do not oppose lifting the existing restrictions on U.S. crude oil exports, we believe Congress should look at all barriers to the free market, including the Renewable Fuel Standard (RFS) and the Jones Act. Taking a holistic approach in such a way will ensure policies are not advanced in a manner that would not only disadvantage domestic refiners in a global marketplace, but could ultimately result in severe economic disruption for large regions of the nation. I am confident that you will agree that the nation cannot



afford to repeat the miscalculations of 1975 where energy policy was established without a full understanding of the entire dynamic.

The United States faces major changes in our energy markets with little history to guide us on how to adapt to those changes. Today, domestic petroleum supply, distribution, storage, refining and demand are all making large shifts, greater than at any other point in our history. In order to have a meaningful discussion on our energy future, policymakers must consider how lifting the ban affects all parts of production, distribution and refining. Along these lines, the debate should be informed about the facts regarding U.S. capacity to refine additional domestic crude oil. One common misperception is that there is currently a glut of light crude oil and that the United States has “maxed out” on its ability to process this supply. The reality is that such a glut does not currently exist. Utilization adjustments and new investments alone will allow the domestic refining complex to process at least an additional million barrels per day of light crude oil. This figure does not take into account our ability to continue backing out existing imports of light sweet crude oil. In short, there is plenty of room for processing light sweet crude oil in our domestic refining complex and this capacity is likely to grow further. Policy discussions on modernizing our energy laws need to recognize this reality and its positive implications for U.S. energy security.

As production in the United States has increased, so too has waterborne movement of crude oil, shipments of which are subject to the Jones Act, or Merchant Marine Act of 1920. This law requires that vessels used for domestic shipping must be built in the United States, owned by U.S. citizens and crewed by at least 75 percent U.S. citizens. The Jones Act, which only applies to the transportation of goods via ships, costs our economy \$200 million per year according to the World Economic Forum. These costs could grow even higher as demand for certified tankers and barges increases while Jones Act vessels remain limited in number.

Today, shipping crude oil via a Jones Act ship costs a U.S. refiner about \$5 to \$6 per barrel compared to just \$2 to \$3 per barrel from a non-Jones Act ship intended for a European port. This puts domestic refiners at a significant disadvantage, especially when you consider the potential regional disparities this policy incentivizes. Several years ago, East Coast refineries, representing over half of the region’s refining capacity, faced closure due to rising crude oil feedstock costs and increasing competition from imported transportation fuel. However, the low cost of U.S. oil production from the Bakken region has been instrumental in keeping the remaining refineries competitive. Because domestic refiners operate in a global market, lifting the crude ban without addressing the Jones Act will give foreign competitors access to U.S. crude more cheaply than U.S. East Coast refiners, once again putting those refineries in jeopardy.

In addition to the Jones Act, U.S. refiners are also subject to the broken mandates in the RFS, another policy that inhibits a free market and should be examined when reviewing the export ban. This law requires refiners to blend increasing amounts of biofuel into the U.S. fuel supply regardless of consumer demand, what existing vehicles and infrastructure can safely handle, or if the fuels even exist in viable, commercial quantities. Foreign competitors do not face the lopsided cost and compliance scenarios that domestic refiners face with respect to this ill-crafted and harmful mandate.

While AFPM is not opposed to lifting the crude export ban, we believe that a holistic look at our energy policy in this country is critical. Currently, our energy policy is, at best, a disjointed collection of reactionary legislation that has been enacted in response to a crisis or perceived need for protection of a U.S. industry. No example is greater than the EPCA of 1975, which was a reaction to the 1973 Arab oil



embargo, and the Jones Act, which was enacted based on certain wartime considerations irrelevant in the modern era.

The United States has an opportunity to become the world's top energy producer and realize a manufacturing renaissance, but only with policies that promote the free market. Congress, therefore, should pursue U.S. policies that promote a free marketplace for all competitors and we look forward to working with you to address all anti-competitive policies.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Drevna". The signature is fluid and cursive, with a prominent initial "C" and a long, sweeping tail.

Charles T. Drevna
President



December 10, 2014

The Hon. Ed Whitfield
Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
Rayburn House Office Building, Room 2184
Washington, DC 20515

The Hon. Bobby Rush
Ranking Member
Subcommittee on Energy and Power
Committee on Energy and Commerce
Rayburn House Office Building, Room 2188
Washington, DC 20515

Dear Chairman Whitfield and Ranking Member Rush:

Thank you for holding the hearing titled *The Energy Policy and Conservation Act of 1975: Are We Positioning America for Success in an Era of Energy Abundance?*

Diesel power is the lifeblood of the global economy. With its unmatched combination of energy density, fuel efficiency, power and performance, diesel engines are the primary technology driving 15 key sectors of the U.S. economy, from agriculture and construction to goods movement and warehousing.

The new generation of ultra-low sulfur clean diesel fuel and clean diesel engines and equipment are two of America's greatest success stories; ones that are not only delivering real-world benefits here at home today, but are leading export technologies helping to advance environmental improvements and energy efficiency gains in developing countries around the world.

While there is considerable attention being placed on the possibilities for export of natural gas from the U.S., you should know that ultra low sulfur diesel fuel is today America's number one petroleum export earning significant export revenues. Advanced clean diesel engines represented 4.4% of US exports in 2010, with an export-to-value ratio 5 times higher than the national average.¹ Clean diesel fuel is vital to help the U.S. achieve current and future clean air and climate goals. Demand for clean diesel fuel will only increase around the world as other countries' economies grow, driving demand for powerful modern diesel engines that will also improve air quality and reduce carbon emissions.

By way of background, the Diesel Technology Forum serves as a not-for-profit educational and advocacy organization raising awareness of the latest clean diesel innovations along with the importance of diesel fuel,

¹ Diesel Powers the US Economy (2011). Aspen Environmental and M-Cubed. <http://www.dieselforum.org/about-clean-diesel/powering-the-u-s-economy>

engines, vehicles and equipment to the economy. Our members represent the leaders in clean diesel technology including engine, vehicle and equipment manufacturers who have invested billions to develop the latest clean technologies.

Diesel Fuel is A Key Component of America's Energy Abundance and Puts Us on the Path to Energy Security
Newfound oil and gas reserves has helped the U.S. achieve energy abundance. The U.S. Energy Information Agency (EIA) recently announced that proven petroleum reserves in the U.S. exceeded 36 billion barrels for the first time since 1975.² While much attention has been focused on natural gas reserves, the U.S. is now a net exporter of petroleum products for the first time since 1949 thanks to these recent discoveries of petroleum reserves. Ultra Low Sulfur Diesel fuel (ULSD) with 15 part per million (ppm) or less sulfur content is the largest single petroleum products exported in 2013. U.S. refiners exported almost 319 million barrels of clean diesel fuel abroad representing 25% of all petroleum products exported. World wide demand for US clean diesel fuel earns significant export revenue.

International experts predict that diesel is on course to remain the number one global transportation fuel. The International Energy Agency recently stated that diesel is expected to overtake gasoline as the top transportation fuel used in passenger vehicles and in the freight transportation sector.³ One of the largest global oil producers, ExxonMobil, recently confirmed diesel's expected dominance while also stating the much of the anticipated growth in diesel will come from emerging economies.⁴

**Top 5 U.S. Petroleum Product
Exports (2013)**

Petroleum Products	Barrels	Share of Total Petroleum Product Exports
U.S. Exports of Distillate Fuel Oil, 0 to 15 ppm Sulfur	318,893,000	25.1%
U.S. Exports of Petroleum Coke	191,218,000	15.0%
U.S. Exports of Conventional Motor Gasoline	136,147,000	10.7%
U.S. Exports of Residual Fuel Oil	132,153,000	10.4%
U.S. Exports of Liquefied Petroleum Gases	121,058,000	9.5%

SOURCE: U.S. Energy Information Agency.
Total Crude Oil and Product Exports by
Destination

The Clean Diesel System Depends on Clean Diesel Fuel to Deliver Climate and Clean Air Benefits

The benefits of clean diesel are not limited to clean fuel. A regulatory pathway established in 2000 by the U.S. Environmental Protection Agency (EPA) understood the enormous clean air and fuel savings benefits of a variety of clean diesel technologies. This regulatory pathway called for the production and distribution of ULSD beginning in

² <http://www.eia.gov/naturalgas/crudeoilreserves/?src=home-b1>

³ "World Energy Outlook: 2014". International Energy Agency. November 2014.

⁴ "Outlook for Energy: A View to 2040". ExxonMobil. December 2014.

http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-Outlook-for-Energy__print-resolution.pdf

2006 along with new engine emissions standards for heavy duty vehicles applied in 2007 and further tightened in 2010. Similar standards, the "tier 4" rules, were established for new off-road engines, such as those found in construction and agricultural equipment, beginning in 2014 and for high horsepower applications such as large marine, mining and stationary industrial engines beginning shortly in 2015.

Significant resources were invested by engine, vehicle and equipment manufacturers to develop technologies to deliver these near-zero emissions benefits. These technologies reduce emissions of particulate matter, or soot, and oxides of nitrogen, a smog forming compound, over 90%. It takes 60 heavy duty trucks manufactured in 1988 to generate the same emissions as one clean diesel truck today. The clean diesel system of modern engine designs and advanced emissions controls, including filters and catalysts, may only operate properly when fueled with ULSD with a sulfur content of 15 ppm or less.

Clean Diesel is On the Road Today Saving Fuel for Truckers and Delivering Clean Air for Everyone

According to state vehicle registration data for 2013, almost 3 million of the roughly 8.8 million Class 3-8 heavy-duty vehicles on the road across the country are deployed with an engine that meets the first 2007 clean diesel standard. Another 1.2 million vehicles is deployed with an engine that meets the stricter 2010 standard. These vehicles range from Class 3 vocational pickups, to school and transit buses, delivery trucks, first responder vehicles, up to large Class 8 over-the-road tractors. By way of reference, there are only roughly 150,000 registered Class 3-8 natural gas powered vehicles on the road.

Clean diesel vehicles on the road today are delivering real-world benefits for communities and vehicle owners. According to research commissioned by the Diesel Technology Forum, the almost 3 million clean diesel trucks on the road today since 2007 have reduced NOx emissions by 27,000 tons and particulate matter by 1 million tons. Fuel savings technologies deployed as a part of the second 2010 emissions milestone results in a reduction of 5.7 million tons of carbon emissions while reducing petroleum consumption by 13.3 million barrels. This carbon reduction is equivalent to reducing 1.2 million passenger vehicles from the road for one year. While we all benefit from the clean air attributes of diesel technology on the road today, vehicle owners also benefit from these technologies. According to research commissioned by the Diesel Technology Forum, the owner of a typical Class 8 tractor on the road for about 130,000 miles per year will see fuel savings that total about \$3,500 each year. This is substantial savings for vehicle owners.

Heavy duty clean diesel vehicles are delivering more than their required clean air benefits. According to the Advanced Combustion Engine Study (ACES): Phase 2 research conducted by the Southwest Research Institute and the Coordinating Research Council, heavy-duty clean diesel engines result in real world emissions below the regulated threshold.⁵ This study analyzed the emissions from three heavy duty vehicle engines manufactured in 2010 and found that emissions of PM were more than 80% below the 2010 requirement and emissions of NOx 60% below the standard.

Clean Diesel Passenger Vehicles Provide More Clean Air Benefits and Promote Energy Security

Access to clean diesel fuel also engendered the introduction of similar technologies deployed on passenger vehicles to deliver significant fuel savings benefits to owners and clean air and climate benefits to everyone. Today, there are about 252 million registered diesel powered passenger vehicles representing about 2.8% of total passenger vehicles according to state registration data for 2013. According to the EPA, a diesel powered passenger vehicle delivers a 20% to 40% improvement in fuel economy along with a 10% to 20% reduction in emissions compared to a comparable gasoline powered vehicle.

⁵ <http://www.healtheffects.org/Slides/AnnConf2013/Khalek-TuesPM.pdf>

Growing consumer interest in diesel passenger vehicles is providing significant clean air and fuel savings benefits today. According to research commissioned by the Diesel Technology Forum, the number of diesel passenger vehicles on the road since 2005 have reduced carbon emissions by over 7 million tons and reduced petroleum consumption by 29 billion barrels of crude oil. Baseline estimates take the share of diesel passenger vehicles from about 2.8% of the market today to 7% by 2020 providing another 7 million tons of carbon reduction and reducing petroleum consumption by 31 million barrels of crude oil.

Cleaner Fuel Also Helps Improve Emissions from Older Engines Still In Use

Many older diesel engines found in a wide variety of applications are also in-use thanks to the inherent longevity and durability of the diesel powertrain. With the widespread availability of ULSD, retrofit devices may be applied to these older engines to improve the emissions performance and provide clean air benefits. In certain applications, diesel particulate filters may be applied to significantly reduce particulate emissions while in other instances a series of catalysts and other technologies may be applied to reduce oxides of nitrogen. All of these technologies may only be applied when fueled with ULSD.

There are a variety of federal programs to help the owners purchase these retrofit devices to improve the emissions profile and provide clean air benefits to communities. The Diesel Emission Reduction Act (DERA) program, managed by the EPA, is one of the most successful federal programs providing incentive funding for owners to make these retrofit purchase decisions. Since implementation, DERA has become one of the most cost-effective clean air federal programs. Every \$1 in federal assistance is met with another \$3 in non-federal matching funds, including significant investment from the private sector to provide \$7 to \$18 in clean air and economic benefits. The program has helped retrofit a wide variety of engines, vehicles and equipment from a large number of school buses across the country to ferry boats in New York City, switch locomotives in Chicago railyards and almost 200 pieces of construction equipment in Kentucky.⁶

Federal retrofit activities have not kept pace with need. Applications for DERA assistance has exceeded available funds by 7 to 1 suggesting that there is still a large population of older vehicle and equipment in use. While need for retrofit assistance continues, funding for the DERA program has diminished since 2009. The current year appropriation at \$20 million is a fraction of the level authorized for the program established at \$100 million. The Department of Transportation also manages a retrofit program to improve the emission profile of older construction equipment in use on federal aid transportation projects located in areas of poor air quality. However, the Federal Highway Administration has not issued any policy guidance concerning that program contained within the *Congestion Mitigation and Air Quality Program (CMAQ)* that would help interested state Departments of Transportation retrofit construction equipment and improve air quality for communities surrounding public works projects.

U.S. Exports of Clean Diesel Fuel Can Help Mitigate the Impact of a Warming Planet

One of the enormous benefits of the clean diesel system rests on its virtual elimination of black carbon emissions. Black carbon has been identified as a *short lived climate pollutant* that acts much as a greenhouse gas by trapping heat in polar and glacial ice. While carbon emissions may stay in the atmosphere for decades, black carbon emissions reside for only a few days. Unlike carbon dioxide emissions, existing and proven technologies exist to nearly eliminate black carbon emissions. Globally, forest fires, charcoal cookstoves and other biomass sources are the largest contributor to black carbon. However, transportation sources of black carbon from light- and heavy-duty diesel engines are one of the larger sources of black carbon from industrialized and emerging economies.

⁶ "Second Report Top Congress: Highlights of the Diesel Emission Reduction Program". U.S. EPA. March 2012. <http://www.epa.gov/cleandiesel/documents/420r12031.pdf>

Thankfully, a cadre of leading climate scientists and international organizations including the United Nations recognize that the clean diesel system can significantly reduce black carbon quickly. Industrialized economies including the U.S., the European Union, Japan, Australia and others have introduced cleaner diesel fuel requirements along with modern engine standards and programs to retrofit older equipment. Industrialized economies have typically adopted a close variation of either the U.S. emissions standards for on- and off-road engines or the European standards. In the U.S., the EPA predicts that particulate matter emissions (a close proxy for black carbon) from diesel sources is expected to fall 70% between 2005 and 2030 due to the further adoption of the clean diesel system.⁷

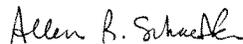
A growing number of emerging and less developed economies are getting on the clean diesel pathway.⁸ Efforts to introduce modern engine emissions standards and retrofit programs for older engines have been hampered by the lack of clean diesel fuel. Growing U.S. exports of clean diesel fuel will go a long way to help these countries adopt clean diesel programs to improve air quality and generate significant climate benefits. The largest market for U.S. clean diesel fuel is Latin America. Even with large petroleum industries throughout Latin America, over 60% of U.S. ULSD exports reach Latin American markets and can help put many of these countries on the clean diesel pathway to improve air quality and help mitigate a warming planet.

Conclusion

We hope that you recognize the important role of diesel fuel in the energy abundance and energy security debate. U.S. exports of clean diesel fuel have tripled in five years from about 85 million barrels in 2009 to 319 million in 2013. Here in the U.S., ULSD has been the cornerstone of the clean diesel system that brought to the market place next generation diesel engines and aftertreatment technologies that reduced to near zero emissions of particulate matter and oxides of nitrogen. These technologies have proven themselves in the market place as well. The clean diesel system is deployed in one-in-three heavy duty vehicles and have reduced NOx emissions by an estimated 1 million tons and particulate matter emissions by 27,000 tons. Further clean air benefits will accrue as more of the heavy-duty fleet transitions to new technology deployed with clean diesel systems. Clean diesel fuel is also playing an important role in improving emissions from older diesel engines still in use by allowing owners to install retrofit devices that provide significant air quality benefits. Growing U.S. clean diesel fuel exports, particularly to Latin America, will enable emerging economies adopt the clean diesel system that includes modern engine standards and programs to improve emissions from older engines. One of the important benefits from the continued global adoption of the clean diesel system will be significant reduction in black carbon emissions. One leading climate researcher estimates that reducing 1 ton of black carbon emissions is equivalent to removing 1,000 to 2,000 tons of carbon dioxide.⁹ Thanks to the clean diesel system, black carbon emission reductions are achievable.

Please feel free to contact me or Ezra Fink our Director of Policy with any questions or concerns at (301) 668-7230.

Sincerely,



Allen Schaeffer
Executive Director

⁷ "Report to Congress on Black Carbon", U.S. EPA. March 2012. <http://www.epa.gov/blackcarbon/2012report/fullreport.pdf>

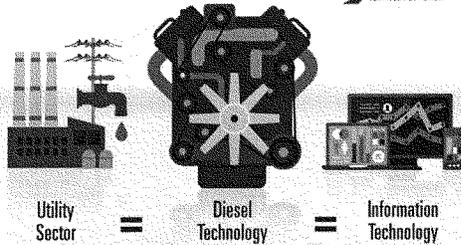
⁸ Global Engine Emissions Standards. http://transportpolicy.net/index.php?title=Category:Emissions_Standards

⁹ Prof. Ramanathan. Remarks to the India California Air Pollution Mitigation Program. 2013.

APPENDIX

Diesel Powers the U.S. Economy

Diesel Technology generates \$275 billion in economic activity per year – about the same as the Utility and Information Technology Sectors.



Diesel Technology provides 1.25 million U.S. jobs

Over 90 percent of the heavy-duty truck fleet is manufactured in the U.S.

Diesel Power Dominates Goods Movement

(Percentage Powered by Diesel Engines)



Mr. WHITFIELD. So that concludes today's hearing.

I want to thank you once again for your testimony and for your patience and responding to our questions.

And we are going to have more hearings on this when we reconvene for the 114th Congress. And the record will remain open for 10 days for additional materials.

So that concludes this.

Mr. RUSH. Mr. Chairman, I want you to join with me in wishing everybody happy holidays.

Mr. WHITFIELD. You think we should?

Mr. RUSH. I think we should.

Mr. WHITFIELD. Merry Christmas. Happy holidays. And enjoy the break.

That concludes today's hearing.

[Whereupon, at 11:50 a.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

**Opening Statement of the Honorable Fred Upton
Subcommittee on Energy and Power
Hearing on "The Energy Policy and Conservation Act of 1975: Are We Positioning
America for Success in an Era of Energy Abundance?"
December 11, 2014**

(As Prepared for Delivery)

As chairman of this committee, I take seriously our obligation to review existing laws as well as consider new legislation. We need to periodically look at the energy laws already on the books to see if they still make sense for the American people in the innovation era. Today, we are taking a look at the landmark Energy Policy and Conservation Act of 1975 (EPCA) in light of the current energy picture and our game-changing abundance.

The landscape in the 1970s was much different, especially with regards to energy. It was a time of Arab oil embargoes, long lines at gas stations, and the overriding fear that America was quickly running out of energy. That's the historical context of EPCA, and it explains many of its provisions.

But today, concerns about energy scarcity have given way to a welcome reality of energy abundance. American oil and natural gas production has been on the rise for nearly a decade, and we still have a way to go. This energy boom has sharply reduced our dependence on foreign oil, created many jobs, and brought down energy prices for consumers and businesses.

Increased domestic energy production is great news, but it does present a host of new challenges. Most significantly, we need to construct an Architecture of Abundance to make full use of this energy bounty and maximize the benefits we can get from it. That means we must take steps to upgrade and modernize the energy infrastructure system, including the Keystone XL Pipeline as well as many other job-creating projects to transport America's energy to the businesses and consumers who need it. We will continue to reconsider existing energy laws and advance new ones in order to fulfill our energy potential.

For example, this subcommittee has devoted a great deal of time to the issue of natural gas exports. After extensive analysis and numerous hearings, we concluded that natural gas exports would be a net jobs creator while also providing substantial geopolitical benefits. As a result, we passed legislation to expedite the approval of LNG export facilities, which we consider to be an important component of the Architecture of Abundance.

We will continue the fight for LNG exports, but today we initiate the process of asking similar questions about oil exports, which are currently restricted under the 1975 law. We fully recognize that oil is not the same as natural gas, both as a commodity and in its impact on consumers, and thus the conclusions we draw about oil exports may or may not be the same as those for natural gas exports. But the time is ripe to commence a thoughtful dialogue.

We will be interested in a wide range of perspectives — including the economic and geopolitical implications — but the perspective that matters the most is the impact on American consumers. These are complex issues, and we will take the time to hear from all sides.

This hearing is the beginning of our review of the four decades old oil export restrictions included in the Energy Policy and Conservation Act, and it is focused on a look back in order to better understand how we got where we are today as we seek to determine the proper role exports should play in our nation's energy future.

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