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ENERGY INFORMATION ADMINISTRATION'S FORECASTS FOR OIL AND GASOLINE PRICES

HEARING

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

SPECIAL HEARING

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ENERGY INFORMATION ADMINISTRATION'S FORECASTS FOR OIL AND GASOLINE PRICES

WEDNESDAY, JUNE 25, 2008

U.S. SENATE,
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:35 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Byron L. Dorgan (chairman) presiding.

Present: Senators Dorgan, Murray, Feinstein, Domenici, Bennett, Craig, and Allard.

OPENING STATEMENT OF SENATOR BYRON L. DORGAN

Senator DORGAN. I am going to call the hearing to order. This is a hearing of the Appropriations Subcommittee on Energy and Water Development, an oversight hearing on the Energy Information Administration's fiscal year 2009 budget request, as well as a discussion of forecasts on oil and gasoline prices.

Mr. Caruso, the Administrator, we appreciate your being here. I know that from watching the news reports, you have been in Saudi Arabia for the meeting called by the Saudis that was held, involving people from around the world. We know that you have traveled a lot of miles recently and are perhaps weary, but we appreciate, nonetheless, your coming to this discussion.

The Energy Information Administration is a very important agency and department, and the President has requested increased funding for the EIA. The EIA, as you know, produces reports and information that is quoted by sources all across this country on the issue of energy supply, energy demand, energy price, and many related matters. So what you do and say and think and evaluate is very important in this country. You make short-term forecasts of energy prices. These are presumably to be benchmarked as to the direction of critical energy resources and their relationship to our economy.

I want to go through some charts today. The purpose of calling you here is not to pass judgment on your agency. I think your agency is enormously valuable and important. I will say to you, Mr. Caruso, we have had the opportunity to sit across the dais from each other in the Energy Committee at hearings you have attended, and I know what you think, by and large, of what is happening in the marketplace. You know what I think.

But I want to go through a series of charts, and I am going to ask questions of you following your statement and the recognition

of others who will wish to make statements. But I do that because, as we begin a discussion about the EIA and what has happened at the EIA recently, I want to describe the at least beginning point for me of what I try to understand is happening in the marketplace.

The price of oil and gas has skyrocketed. The last 12–14 months, the price of oil has doubled. I cannot see anything in the fundamentals of supply and demand or the acknowledgement of what might or might not happen or be necessary in the future with respect to India and China, two large potential consumers in the future. I see nothing that has fundamentally changed or altered things sufficiently so that it would justify a doubling of the price of oil.

That being the case, I want to go through a few charts, and I will do this very briefly. This chart describes in graphic form what has happened to the price of oil, as it has nearly doubled in a year. It is pretty startling when you think about it, that the price of oil would double in a year. And the question is what has happened in the construct of this graph—what has happened in the middle of that that would encourage or support, from a fundamentals standpoint, the doubling of the price of oil?

We will go on to the next one. This is a chart. I went back and took a look at what the EIA has predicted in each case, and this is a very interesting chart. It is not meant to say I told you so at all, but it is, based on what I could find, what the EIA has predicted would happen.

In May 2007, last year, oil was about $65, and that line on the bottom is where you thought oil would go. July 7, that is where you thought oil would go. September that is where you thought it would go. And you go right up the line.

And in fact, take a look at the red line which is where the price of oil has actually gone, and we will see that for whatever reason—I assume the EIA is looking at the fundamentals, supply, demand, all kinds of things in the marketplace and evaluating what you think would justify what price. So you make a projection. But what has happened here is the projection is way, way, way off, not even close because the price of oil has gone up like a Roman candle.

So I am going to save that chart because we will talk about that more.

But I was interested in another chart as well that I put together. It is a chart that shows the projection of Goldman Sachs. Now, that is a big, old player in this marketplace. And they evaluated where they thought—and they would make public pronouncements where they thought the price of oil would go. Those gray areas represent their range. Interestingly enough, they came a lot closer because they were in the marketplace and had some ability to figure out where this was going or maybe even the ability to help make it go to where they were projecting. But those gray areas are where they were predicting the price to be. And the last gray area is a new announcement by Mr. Murdy from Goldman Sachs, the possibility of $150 to $200 a barrel for oil, very different projections from a very big player in the marketplace.

Why are they hitting their gray areas even after they announce them and their projections are so very different than the EIA?

Let me go on, if I might, to a study that was done by the House of Representatives released a couple days ago. It said the explosive growth of speculation in the oil futures market—2,037 percent of the activity in that market was by speculators. In 2008, 71 percent, that was a House Subcommittee on Oversight and Investigations, so a dramatic growth in speculation in the futures market.

Next, this month, the past month, Secretary Bodman said the reason we are looking at these very high prices for oil is strictly supply and demand.

The next quote is from you, Mr. Caruso. "Our view is that fundamentals are pulling the market along and the investors are looking at the same factors we are and saying they think this market has more up-side potential."

Finally, this past week in Saudi Arabia, Secretary Bodman says, "There is no evidence that we can find that speculators are driving futures prices for oil."

Now, I describe all that to you because I happen to think most of it is inaccurate, and the EIA is especially important to this country. The work you do is important. The work your employees do is important to this country. And I am hoping that we can have a discussion today not only about your budget, but also about the fundamentals and what is happening with the prices.

My own view is very different than yours, I think, and also Secretary Bodman's. My view is that there is no other explanation, no other conceivable explanation in the last 12 to 14 months that would justify a doubling of the price of oil. Fourteen months ago, was there an expectation that the Chinese would like to drive more cars? Sure. People from India would like to drive more vehicles? Sure. Are they going to need gas stations? You bet. We knew all of those things 14 months ago.

In fact, over the last 14 months, people have been driving less in this country. We are prodigious users of energy, but people are driving less. You have seen the reports, 4.5–5 billion fewer miles, and therefore there is less gasoline going through the carburetors. Demand is down, and for the first 5 months of this year, crude oil inventories were up. So if supply is up, and demand is down, one would expect prices to moderate. In fact, prices continued to go up.

The Saudis announced that they are going to produce 700 million barrels or maybe even 800 million additional barrels of oil per day for a period. One would expect if supply goes up, prices come down. Yet, prices go up instead.

There is a lot happening here that I think is attributable to unbelievable excess speculation occurring in the marketplace, and I am trying to understand it. Others are, and some people strongly say that's not the case. I believe strongly it is. And I am hoping we can have a discussion about that, Mr. Caruso, today.

Let me call on my colleague, the ranking member, Senator Domenici.

OPENING STATEMENT OF SENATOR PETE V. DOMENICI

Senator DOMENICI. Well, thank you very much, Mr. Chairman.

I think you know how much I respect you and how much I appreciate the ability to work with you after you took over and we still continue down the same steps, for the most part, and walk up the

same steps. And we seem to be hitting on the same wavelengths more times than not.

But I too have been thinking that what you are trying to express here may be the case, but I can tell you I have come to the opposite conclusion. I wish you well, but I do not believe that there is any body of experience or authority out there that would say that speculation and speculators have the biggest role or even a big role in the price of oil as it moved up during the last 2 years.

Now, I want to be careful to say that there are factors that are at play that are unusual for this commodity. As I see it, I choose to read people like Daniel Yergin—I guess you know of him, do you not, Mr. Caruso? And he is one of the foremost energy experts. I do not believe anybody has ever said he has any interest other than the facts. And the Energy Information Agency and many other experts have attributed this 300 percent increase of crude oil since 2003 to the following supply and demand fundamentals in the marketplace.

First is an increase in demand. World oil consumption continues to increase as a result of the double-digit economic growth in China and India. And this fundamental growth that everybody sees as the first of a number of demand fundamentals, that the more those people on the outside look at that, the more they see that the demand is going to continue and the demand is going to grow. And that has a very big impact on what they legally bid for the oil.

Second, world surplus production capacity is at just 1.7 million barrels a day. Surplus capacity is 1.7. This is half the capacity we had from 1996 through 2003. Reduced capacity leaves world oil markets vulnerable to supply disruptions and unable to effectively respond to price increases.

My third point is geopolitical instability is one of those factors that must be taken into consideration, and it is very hard for anybody to measure that. But clearly, it has a big impact, positive or negative, and in this case, in the top oil-producing countries and the instability that goes on there contributes to greater uncertainty and for good reason, reasons like the disruption in Nigeria—that was a big one, 1.4 million barrels a day. Iraq, 500,000 barrels a day.

And the fourth proposition is that U.S. crude oil inventories are falling. You stated to the contrary, but you were careful to talk about a specific period of time. I am talking generally. Today we are below the 2007 inventory levels and are falling below the 5-year average as well.

And finally, the decline in the value of the dollar has also had an impact on the value and price of oil. The U.S. dollar has fallen 30 percent against major currencies, increasing the price of U.S. imports, including oil.

So it is apparent from your testimony that our national oil crisis is a global one. However, I believe there are things that the U.S. must do to increase supply and reduce demand and reduce our dependence. Failure to address the high price will have a crippling effect on our economy.

The American people are ahead of us, and by overwhelming majorities, they tell us we should produce more of the energy that we own now. The Albuquerque Journal, a respected newspaper, pub-

lished an editorial suggesting that we need to have a domestic production plan "and self-confidence to use it." According to MMS—that is another great source of information and manager of large oil properties—only 2.4 percent of the total offshore acreage is being leased and 85 percent of the continental offshore is under moratorium and represents 574 million acres.

So, Mr. Chairman, I appreciate your willingness to examine this issue. I know you are even interested in the offshore drilling situation in our country and the moratorium that exists. I hope that in the not too distant future we might work together on that problem and see what we could do.

I would like to put the editorial from my hometown paper in the record. And, Mr. Chairman, I want to be very frank with you. I read a lot of editorials and I would be pleased to read any from your State. But I truly believe this editorial that I am going to put in the record deserves your attention when this hearing is over. I think it should be read by policymakers here in the United States Senate. They are not a political paper. They are not Democrat or they are not Republican. But I think they have come up with the role that we as policymakers ought to take during this crisis that we have in this country.

As I view it, I will put it this way. We are going to move from the kind of economy we are now, using crude oil derivatives to run our transportation system, which is what is eating it up, to something different. It will not be run by crude oil, something different.

But from now till that time comes—it may be as long as 30 to 40 years—that is what the experts say. I call that the bridge, the bridge from now to that future point. And I say that this editorial has caught the significance of that bridge. If we as policymakers do not insist that as we go over that bridge, that we use as much of our own crude oil as possible, we are shirking our responsibility. In other words, we cannot avoid using a certain amount of crude oil derivatives, crude oil, and diesel fuel, as we move over this bridge for the next 30 or 40 years, and if we do not understand that the cost is going to be destructive of our economy—the costs we are paying will approach $500 billion a year at the current price of oil or slightly lower. If that stayed for a year, we will export $500 billion. I can stop. It is not goods. It is just dollars. What we get for it is nothing more than some heat out of the pipes of automobiles and trucks and buses. That is all we get for what we send across that bridge.

I think we must relook at the inventory of assets and go out and get them during this intervening time because we are not going to solve the CO_2 problem as we go across the bridge. We have got to cross the bridge with crude oil and crude oil derivatives. And we will be destroyed long before global warming has any impact if we do not do something about the demand on our side by substituting local domestic supply.

And I thank you.

Senator DORGAN. Senator Murray?

STATEMENT OF SENATOR PATTY MURRAY

Senator MURRAY. Mr. Chairman, thank you. I will submit my statement for the record.

Let me just say this is extremely timely. As my colleagues know, I go home to Washington State every week, and I am shocked at the rising price that I pay. I paid $4.45 on Sunday to fill up my tank. This has a huge impact on our neighbors as they see more and more of their paycheck going to pay for their gas to get to work, go to the grocery store, or to do their chores. It is taking a bite out of all our small business budgets, our trucker budgets, and our school districts which are paying more for gas for their buses. Our farmers are telling us that they are paying as much as $500 a day. That is up 60 percent from last year on diesel fuel alone. We are going to be heading into the winter months and the price of natural gas and heating oil is going to be hitting those pocketbooks again.

PREPARED STATEMENT

I appreciate your having this hearing. I think it is very important that we understand this issue from a variety of different perspectives, and I hope we can all learn something from today, thank you.

[The statement follows:]

PREPARED STATEMENT OF SENATOR PATTY MURRAY

Mr. Chairman, I want to thank you for calling this hearing today. I think it is very timely. I go home on the weekends, and the price of gas at the local station just keeps rising. It was $4.45 for a gallon of regular unleaded last weekend. Now, I fill up my tank when I'm home and I know that $4.45 a gallon is substantially higher than the national average. And when it takes $50 to fill the tank on even a small, fuel-efficient car, its clear that hard-working Americans are being confronted with difficult choices to make ends meet.

But these skyrocketing fuel prices are not just affecting consumers. I am hearing from many small businesses and family farmers in my State. I am hearing from my State's farmers, some of whom are spending $500 per day—up about 60 percent from last year—on diesel costs alone. And as we enter the harvest season, those costs are only going to go up. And this is on top of other rising costs that they must put into their crops.

And Mr. Chairman, I'm concerned about the rising cost of natural gas as well. During these hot summer months, many folks aren't thinking about how much it will cost to heat their homes this winter. If natural gas prices continue on this upward trend, millions of Americans—particularly low-income families and seniors—could face a double whammy of high gas prices and high heating costs this winter.

When you combine this with the rising cost of food and health care, declining home values and overall economic uncertainty, many are simply finding it impossible to make ends meet.

That is why it's so important that we're meeting today to hear from the Energy Information Administration about its forecasts for oil and natural gas prices, and what it sees moving forward.

Senator DORGAN. Senator Murray, thank you very much.

Senator Allard, do you have a statement?

STATEMENT OF SENATOR WAYNE ALLARD

Senator ALLARD. Mr. Chairman, I do.

First of all, I would like to thank you for holding this hearing today. This is very timely. I agree that we are dealing with an issue that impacts everybody in this country. It is going to affect the services, whether you are in the service industry. It is going to affect product development, whether you are in manufacturing or not. And I think that we have an obligation as a part of this legis-

lative body to at least try and understand the problem and see if we cannot come up with a solution based on the facts.

I believe that we need to take steps that are necessary to move us out of this problem as quickly as possible. I am of the view personally that we simply should not take any of our options off the table for the consumer. I mean, we should not try and put all our eggs in the renewable energy basket. As Senator Domenici pointed out, we are through a bridge time. Obviously, the future—we do not know what kind of energy is going to be available, but right now, what we have most available is the hydrocarbons, oil and gas and coal. And hopefully at some point, maybe we can redevelop our nuclear energy sources.

But I would like to just take a moment to talk about this issue as to whether there is speculation in the market. So in order to better understand the facts, I have gone to another agency that keeps track of what is happening in the markets, and that is the CFTC, Commodity Futures Trading Commission. If you look at this chart here, there does not show any evidence based on their records of speculators driving the futures prices. If you look at that, that is pretty much a straight line. You can see where speculation, in 2002 when gasoline prices were relatively stable, was at a higher level than it is now. So the fact is there was a lot of variation in the year 2002.

Then you get into 2003. The highest point probably was between 2004 and 2005. If you look at that, it is a relatively stable fluctuation curve. Now this is on crude oil futures.

Then if we go to the next chart that I brought up, again, this is CFTC, Commodity Futures Trading Commission. Speculators, they do not think, are driving up spot prices because they do not have any records that show what has happened. In fact, they show that commercial inventories have declined indicating no speculative hoarding. And I think that is the key word, "speculative hoarding." Now, there may be hoarding in other sectors. You know, if I was a farmer or rancher today and I had crops to put up in August, I think I would fill my diesel tank right now as full as I possibly can, anticipating the thing. So there is no record of that happening.

And there is no record of what is happening in the foreign markets. I mean, this is more than just a domestic market. It includes worldwide markets. We do not have records of what is happening in Japan and what is happening in China, whether they are hoarding fuel or not in their plan.

So this is one agency that we were able to get some information from. I think it needs to be a part of our discussion.

And so I compliment you for this hearing to give us an opportunity to kind of look at what is happening throughout the world and this country. And whatever we come up with as a solution should be based on facts. I think transparency is important. I think understanding, getting the records available out there—and that is what this hearing is all about—is very important so that we can make the right decision. So we need to make sure that we can get the facts, one way or the other, as best we possibly can, where we can get them. Obviously, there are limits as to what we can require of foreign countries because they have their sovereignty issues and whatnot, but at least make our best guess based on the facts.

Thank you, Mr. Chairman.

Senator DORGAN. Thank you very much.

Senator Bennett?

STATEMENT OF SENATOR ROBERT F. BENNETT

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

This is the second such hearing I have been to today. This morning, under the chairmanship of Chuck Schumer, in the Joint Economic Committee, we had a hearing on exactly the same subject with a different panel of witnesses. And I will not rehearse everything that came out of there but share with you several things that I learned at that hearing that added to my understanding of this.

You made reference in your opening statement, Mr. Chairman, about, gee, we knew this was coming or we knew these circumstances would be in place. One of the witnesses this morning said—and I had not focused on this—when Nigeria went down as a result of the activities that occurred with the insurgents or terrorists or whatever we call them, they cut the amount of world oil supply as much as the Saudis raised it, so that everything the Saudis put on the market to try to lower the price was offset by taking Nigeria off line. And he said one of the things you could do, if you are talking about trying to bring the world price down, would be diplomatic efforts to try to get Nigeria back on. And he used that as an example to demonstrate how uncertainties in the world oil market were a major reason why we see these prices being paid.

I had known and they stressed the fact that per capita consumption in the United States has come down dramatically since the 1970s and the oil shock that occurred with OPEC's boycott. That means that consumption in the United States percentage-wise has less an effect on the world market than it used to. If our per capita consumption is coming down—yes, our total number of population is going up. So the national consumption of oil is going up but very slightly compared to other countries and particularly compared to China, which means American leverage on the overall market is continuing to shrink. I found that to be an interesting thing to think about.

Now, the one that I had not thought of, although I guess I really understood it, was the impact of the lack of people and equipment. One of the witnesses stressed that we cannot get the people to man the ships to go out to offshore drilling. We cannot get people to do much of the work. There is a labor shortage in this field. And as a consequence, we also do not have equipment in many, many places. That resonated with me because we have oil being produced right now in eastern Utah that is not being refined, and the reason it is not being refined—it is just growing in inventory—is that there is not any refinery capacity to deal with it.

Now, we have refineries in Salt Lake City that are going absolutely full blast. What are they doing? They are refining Canadian crude. As the Canadians increase their production out of tar sands, the easiest way for the refineries in Salt Lake to get crude to refine—it is cheaper and easier to have it come down by a pipeline from Canada than it is to bring it where there is no pipeline from eastern Utah. So producers in eastern Utah are producing oil that is growing in the inventory without the refining capacity, and this

one witness said a large part of the bottleneck is not overall production. Although he did agree that worldwide you needed more production. He said it is the inability to turn it into usable product because of a shortage of both people and equipment.

And I thought I would share with you that insight that came out of this morning's hearings. And I look forward with great interest to what we are going to learn this afternoon.

Senator DORGAN. Senator Bennett, thank you very much.

This will be an interesting hearing, frankly. I would observe you can put together whatever hearing you like. Actually I could fill the table with experts, I would say to Senator Domenici. There are experts who have testified before the Senate Energy Committee and in other committees who have worked in this industry for 30 years who say that there is an unbelievable amount of speculation, that the price of oil should not be above $60 or $70 a barrel at this point. The market is broken. It is not working. So I could fill these chairs with experts on that side of the issue, and you all could fill chairs with people who say what speculation, are you kidding me?

So we have chosen instead to have Administrator Caruso who represents the agency, the Energy Information Administration that works on these issues for us. Mr. Administrator, thank you for coming. We will recognize you for a statement, after which I think we will have an interesting occasion to discuss these issues.

Senator DOMENICI. Mr. Chairman?

Senator DORGAN. Senator Domenici?

Senator DOMENICI. Before you proceed, could I just—would you permit me an observation? You just indicated that on this side would be those who say there is no speculation. On that side, there would be those who say there is. I would hope that you would not do that. I do not think we are on the side that says there is not and your side that says there is. I think we are genuinely trying to find out what is going on and what we can have an impact on. It is in that context that we look at speculation or no speculation.

I could make an easy case that if we went after speculators and did this and this and this, we would save a whole lot of money for the American people. The point is I do not know how to do that because every time I try to find out, I am told there is no way, which leads me to think it is very hard to prove speculation. And that is all I mean when I talk on my side. It is hard to prove it. If it is there, I would join you. I would be right behind you if it is there.

And I thank you for letting me talk. I will shut up now.

Senator DORGAN. Well, Senator Domenici, my reference only was to listen to the statements, and my point was that there are some on this subcommittee perhaps, as there is on every committee, who believe very strongly that this is the cause of speculation, a dramatic run-up in prices. There are others who believe that is not the case. I think all three of you expressed great doubt that that is the case. And so that was my only reference. It was not try to separate us versus them. I think you know that.

Senator BENNETT. It is a matter of degree, Mr. Chairman. Certainly I think the hearing is well timed and the point of the hearing is appropriate.

Senator ALLARD. And where it might be occurring.

Senator DORGAN. Well, let us proceed to listen to Administrator Caruso. As I said, I think we will have an interesting hearing, and it is not about us versus them on any panel. It is about what is happening. What on earth is happening to the American people here, and what are its consequences and what are its causes? Let us spend some time talking about that.

Mr. Caruso, proceed.

STATEMENT OF GUY CARUSO, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, DEPARTMENT OF ENERGY

Mr. CARUSO. Thank you, Mr. Chairman and members of the committee. I, once again, appreciate this opportunity to appear before you today to discuss the factors that the Energy Information Administration considers when making our short-term forecasts on crude oil and gasoline prices. I especially appreciate your opening remarks and the confidence in the hard-working men and women of the Energy Information Administration.

We are the independent statistical agency of the Department and we do not promote or advocate policy and do not represent the administration's views necessarily or the Department's, so I hope we can have a very open discussion.

Since I testified before you in December 2007, crude oil prices have increased, as your chart indicated, from $92 per barrel in December to actually $133 before I left the office today. They were down several dollars.

Our current forecast is for crude oil to average $122 for the full year of 2008 and increase a bit to $126 for 2009. So we are looking at continued high crude prices relative to the history.

Also, regular-grade retail gasoline prices have risen from $3.02 in December 2007 to a national average of $4.08 last week. We are forecasting the price of regular gasoline to average $3.78 per gallon for 2008 on a national average basis, and, as Senator Murray pointed out, in some regions like the west coast, it is much higher than that. We expect prices to be high as well in 2009; $3.92 is our national average projection for 2009.

As highlighted in our most recent monthly projections, several factors are combining to cause oil supply to struggle to keep up with the demand growth, as I am sure was discussed at this morning's hearing as well, thereby accounting for much of the upward trend in oil prices. Our analysis to date suggests that market fundamentals—strong demand, disappointing supply growth, concern over actual or perceived supply disruptions, relatively low inventories, and most importantly, very limited spare production capacity and global refining capacity constraints—are the primary drivers of global oil prices. The current very tight oil market balances and the possibility of further supply disruptions are causing prices to rise to unprecedented highs.

Of course, we recognize that commodities markets are increasingly complex, as indicated by the charts that were put up before in the opening statements, and notwithstanding our views regarding the fundamentals as the dominant factors driving oil prices higher in today's markets, we share this committee's interest in exploring how information from markets in energy derivatives could be used to improve forecasts of crude oil and gasoline prices.

One of the key challenges we face is that current measures that are used as proxies for speculative activity, such as the total open interest in the NYMEX—one chart was shown here today—the net long positions of noncommercial traders in the NYMEX futures market and investment in commodity index funds all have limitations. We really do not know the total size and nature of commodity index fund activity and speculation. The development of better activity measures and more transparent information regarding activity in markets for energy-related financial derivatives would facilitate additional econometric analysis of these issues.

We welcome the comments from several members of the committee asking for greater data transparency. EIA relies on a number of tools to project crude oil prices, including an econometric model of oil production, inventories, and spare capacity. We also estimate how disruptions could affect prices and past oil forecast errors and extensive expert judgment on domestic and international markets are also relied upon. Therefore, better information, greater data transparency would inform all of those efforts.

We continually strive to improve our short-term forecasts in the face of considerable data gaps in key countries, particularly those of the emerging economies, such as China and India. We also rely on data on changes in demand and supply that are not reflected in timely data, industry changes, new methods of estimation and forecasting, and more recently, financial factors that may be affecting the run-up of oil prices.

Turning to gasoline prices, it is clear that crude oil prices are a dominant factor. A crude oil price of $135 per barrel alone translates into a cost of $3.20 per gallon before taxes or other costs and profits associated with refining, distribution, and marketing. In addition to the cost of crude oil, motor gasoline prices also include the wholesale margin, which is the difference between the wholesale price of a gallon of gasoline and a gallon of crude oil, a retail margin reflecting the cost and profits associated with distribution to and sales by retail outlets, and taxes at the State, Federal, and local levels. EIA's short-term forecasts also incorporate information on market conditions and events that cause the wholesale gasoline margin to vary significantly over time. For example, gasoline margins were high relative to historic norms last summer, but are much lower this summer.

Recent experience with very high and rapidly rising oil prices and large deviations of actual prices from forecasts, as highlighted in the chairman's opening remarks, highlight the challenges faced by EIA and other forecasters. While EIA's recent forecasts have missed the mark in absolute terms, they have outperformed the monthly forecasts by a number of top consultancies in the industry over recent years. We also track our projections versus the New York Mercantile Exchange futures contract, and we have consistently been equal or better than the NYMEX at predicting oil prices 6 months into the future.

As a side note, if you had replaced the EIA forecasts in your chart with the NYMEX futures prices for those exact same months, it would look almost exactly the same, just as a point of information, Mr. Chairman.

EIA has already acted to improve both its short-term and long-term modeling capabilities. In the short-term model, for example, we have added more regional detail and included expected levels of weather-related supply disruptions based on NOAA's seasonal weather forecasts. Our fiscal year 2009 budget request proposes additional improvements in both the data quality used as input to models and the modeling tools themselves. The budget request also supports several initiatives mandated in the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, including tracking and reporting of refinery outages, which I know you are very interested in, Mr. Chairman, and the fuller integration of ethanol and other biofuels in our energy data surveys.

Let me conclude by placing EIA's role in the broader context of data collection and analysis for both physical and financial markets. EIA clearly has the lead role in collecting and analyzing data regarding physical energy markets. Our energy data collection programs are widely viewed as a model for others throughout the world in developing transparent, timely, and high quality data. However, as highlighted in our budget request, there are important needs for improvement in this area.

Turning to data on energy-related financial derivatives, EIA does not have the lead role, but we are actively supporting efforts by the CFTC and other agencies to improve that data. EIA is a member of the CFTC's Energy Markets Advisory Committee, and we are staffing and advising the Department on the interagency policy task force. Once reliable data on energy derivatives become available, I would expect EIA to be a key user of that data as we explore ways to improve our forecasting activities by incorporating it alongside the energy and economic data we already use in our analysis activities.

PREPARED STATEMENT

This completes my oral testimony, Mr. Chairman. I would be glad to respond to any questions that you and any other members of the committee may have. Thank you very much.

[The statement follows:]

PREPARED STATEMENT OF GUY CARUSO

Mr. Chairman and members of the committee, I appreciate the opportunity to appear before you today to discuss the factors the Energy Information Administration (EIA) considers when making our short-term forecasts of oil and gasoline prices.

EIA is the independent statistical and analytical agency within the Department of Energy. While we do not promote, formulate, or take positions on policy issues, we do produce objective, timely, and relevant data, projections, and analyses that are meant to assist policymakers, help markets function efficiently, and inform the public. Our views are strictly those of EIA and should not be construed as representing those of the Department of Energy or the administration.

As requested in your invitation letter, my testimony focuses on recent forecasts for oil and gasoline prices and the factors that are considered in making these forecasts. It also touches briefly on our forecasting record and elements in our fiscal year 2009 budget request that will contribute to better forecasting and analyses.

To briefly summarize the main points addressed in this testimony:

—Since I last testified on this issue in December 2007, crude oil prices have increased from a monthly average of $92 per barrel (December 2007) to more than $135 per barrel in June 2008. Our current forecast is for crude oil prices to average $122 per barrel in 2008 and $126 per barrel in 2009. In addition, national average regular-grade retail gasoline prices have risen from $3.02 per gallon in

December 2007 to $4.08 per gallon as of June 23, 2008. We are forecasting the price of regular-grade gasoline to average $3.78 for 2008 and $3.92 for 2009.

—As highlighted in our most recent monthly projections, several factors are combining to cause oil supply to struggle to keep up with demand growth, thereby accounting for much of the upward trend in oil prices. Our analysis to date suggests that market fundamentals—demand, supply (including actual or perceived supply disruptions), inventories, and spare production capacity—are the primary drivers of global oil prices. The current very tight oil market balances and the possibility of further supply disruptions are causing prices to rise to unprecedented highs.

—While fundamentals are the primary drivers of current oil markets, we are thinking about possible ways to use information about activity in the markets for energy derivatives to improve our forecasts. One of the challenges we face is that current measures that are used as proxies for speculative activity, such as total open interest in the New York Mercantile Exchange (NYMEX) futures market, net-long positions of non-commercial traders in the NYMEX futures market, and investment in commodity index funds, all have limitations. The development of better activity measures and more transparent information in these areas would facilitate our efforts.

—EIA relies on a number of tools to project crude oil prices, including an econometric model of oil production, inventories, and spare capacity; estimates of how disruptions affect or could affect prices; past oil price forecast errors; and extensive expert judgment on domestic and international oil markets.

—We continually strive to improve our short-term forecast in the face of considerable data gaps in key countries, changes in demand and supply that are not reflected in timely data, industry changes; new methods of estimation and forecasting; and more recently, financial factors that may be affecting the run-up of oil prices.

—Crude oil prices are the dominant determinant of gasoline prices. Motor gasoline prices also include the wholesale margin (the difference between the wholesale price of a gallon of gasoline and a gallon of crude oil), a retail margin reflecting the costs and profits associated with distribution to and sales by retail outlets, and taxes at the Federal, State and local levels. EIA's short-term forecasts incorporate information on market conditions and events that cause the wholesale gasoline margin to vary significantly over time, for example, gasoline margins were high relative to historical norms last summer but are much lower this summer.

—Recent experience with very high and rapidly rising oil prices and large deviations of actual prices from forecast values highlight the challenges faced by EIA and other forecasters. While EIA's recent forecasts have missed the mark in absolute terms, they have outperformed the monthly forecasts by top consultancies in the industry over the past couple of years. We also track our projections versus the NYMEX futures contract, and we have consistently been equal or better than the Exchange at predicting oil prices 6 months into the future.

—EIA has already acted to improve both its short- and long-term modeling capabilities. In the short-term model, for example, we have added more regional detail and included expected levels of weather-related supply disruptions based on National Oceanic and Atmospheric Administration (NOAA) seasonal weather forecasts. Our fiscal year 2009 budget request proposes additional improvements in both the data quality used as input to models and in the modeling tools themselves. The budget request also supports several initiatives mandated in 2005 and 2007 energy legislation, including tracking and reporting of refinery outages and fuller integration of ethanol and other biofuels into our energy market data surveys.

EIA'S CURRENT OIL AND GASOLINE PRICE FORECAST AND MARKET ANALYSIS

Each month EIA produces its Short-Term Energy Outlook (STEO), which provides a 13–24 month projection of U.S. and, where appropriate, global energy supplies, energy demands, and prices. The price of oil, in particular, the price of West Texas Intermediate (WTI) crude oil, the U.S. benchmark crude oil price, is one of the prices for which we provide monthly projections. Since I last testified on this issue in December 2007, WTI prices have increased from monthly average of $92 per barrel (December 2007) to current levels of more than $135 per barrel. In our June STEO, we are forecasting WTI crude oil prices to average $122 per barrel in 2008 and $126 per barrel in 2009. In addition, national average regular-grade retail gasoline prices have risen from $3.02 per gallon in December 2007 to $4.08 per gallon

as of June 23, 2008. We currently are forecasting the price of regular gasoline to average $3.78 for 2008 and $3.92 for 2009.

As highlighted in EIA's June STEO, several factors are combining to cause oil supply to struggle to keep up with demand growth, thereby accounting for much of the upward trend in oil prices. Based on our analysis to date, we believe that market fundamentals—demand, supply (including actual or perceived supply disruptions), inventories, and spare production capacity—are the primary drivers of global oil prices. The current very tight oil market balances, the possibility of further supply disruptions, and continued strong economic growth in emerging markets are causing prices to rise to unprecedented highs.

In recent months, there has been growing concern about the role oil futures and swaps markets are playing in the increase in WTI prices. In particular, what is causing the increase in the volume of trades? What is causing increased influx of index funds in the market? Is the increasing participation driving oil prices higher? Or are oil prices increasing participation? Is the inflow of speculators an appropriate focus of regulatory concern? Is the oil price best described as an asset price bubble?

Not surprisingly, there is a growing body of inconsistent opinion on the many issues surrounding futures market behavior and oil prices, and little systematic and comprehensive economic analysis. The Commodity Futures Trading Commission (CFTC), which has done extensive work in this area and is responsible for oversight and regulation of U.S. commodity futures markets, recently announced several initiatives to enhance the oversight of energy and agricultural futures markets, including creating the formation of a CFTC-led interagency task force. The task force, which includes representatives from the CFTC, Federal Reserve, Department of the Treasury, Securities and Exchange Commission, Department of Energy, and the Department of Agriculture, is examining investor practices, fundamental supply and demand factors, and the role of speculator and index traders in the commodity markets.

As outlined above, EIA's view is that oil markets today are characterized by strong demand, limited supply growth, and low spare capacity and that in the near-term, both the supply and demand curves for oil are now near-vertical. Any small shift in demand or supply, or even the perception of a supply shift due to possible supply disruptions, will result in significant price increases. However, the increased inflow of funds and participants in the futures markets, which I discuss below, may indeed affect oil prices to some degree in the short run, but are more likely symptomatic of the tight market conditions and resulting high prices, not the cause. Additional analysis is clearly needed, though we suspect it will be difficult to isolate precisely the impacts on oil prices. We hope our forecasts, and more importantly the thinking behind them, help everyone better understand the complexities of these continuously changing markets, the critical need for better and more transparent supply, demand, and trading data, and the need to constantly test new hypothesis with good analytic tools.

ANALYTICAL METHODS

Oil Price Modeling

At EIA, we rely on a number of tools to project WTI prices, including an econometric model of oil production, inventories, and spare capacity; estimates of how disruptions affect or could affect WTI prices; past oil price forecast errors; and extensive expert judgment on domestic and international oil markets. We continually strive to improve our short-term forecast in the face of considerable data gaps in key countries, changes in demand and supply that are not reflected in timely data, industry changes; new methods of estimation and forecasting; and more recently, financial factors that may be affecting the run-up of oil prices.

Econometric Model.—EIA has developed and documented an econometric model that looks at the crude oil market over the past 16 years. The model is one part of the information used to establish the STEO crude price projection each month. The model is regularly updated to reflect changing market conditions. For example, during the 1990s, much of the variation in crude oil prices could be explained by fluctuations in Organization for Economic Cooperation and Development (OECD) petroleum inventories.[1] During this time, there was the typical negative correlation

[1] See for example, "Forecasting Crude Oil Spot Price Using OECD Petroleum Inventory Levels," Ye, Zyren, Shore, International Advances in Economic Research (2002) 8: 324–333; "A Monthly Crude Oil Spot Price Forecasting Model Using Relative Inventories," Ye, Zyren, Shore, International Journal of Forecasting (2005) 21: 491–501; and "Forecasting Short-Run Crude Oil Price Using High- and Low-Inventory Variables," Ye, Zyren, Shore, Energy Police (2006) 34: 2736–2743.

between inventories and price (high prices, low inventories) in the period that ran from January 1992 through June 1999. Following the collapse in oil prices in 1999, the Organization of the Petroleum Exporting Countries (OPEC) acted to reestablish control of the crude oil market, pulling back on production, and pushing the price to $30 for a barrel of crude oil. Still, the negative correlation with inventories persisted. However, around June 2004, this relationship shifted again, this time demonstrating a positive correlation between inventories and crude price. This implied additional market activity was likely not captured by the simple inventory-price relationship model.

Another market variable, excess crude oil production capacity, helps to explain the changing price behavior.[2] While EIA's analysis of crude oil prices found that the excess capacity variable added little additional explanatory power during the 1990s, in recent years, this variable improves the explanatory power of the model.

The situation continues to change. The current crude oil market seems to represent a condition of unstable equilibrium. The ultimate price path exhibits an upward-ratcheting or see-saw pattern around the underlying trend, rather than a smooth trajectory. This pattern is typical of commodity markets under these conditions. EIA is pursuing further work in this area that shows that recently the relationship between excess capacity and price becomes asymptotic, where small reductions in capacity can generate large price increases.[3] This behavior is well recognized in economic literature for industries in which large capital investment costs are required to develop new capacity and there is little scope for substituting other products to satisfy demand. For crude oil, it indicates that, somewhere in the range of 1 to 2 million barrels per day of spare production capacity, the market effectively approaches the industry's production limits, leaving only price to rebalance markets as demand grows.

The current version of the model reflects these changing market conditions and contains OECD industrial total petroleum inventory levels, excess crude oil production capacity, and a ratchet variable to capture recent behavior. But there is also room for improvements, and EIA is currently exploring ways to measure and forecast oil price volatility[4] and working to better understand trader behavior and measure its impact on crude oil prices changes, as discussed below.

Disruptions Model.—EIA uses its Disruption Impact Simulator (DIS), which is a spreadsheet-based tool to estimate the impact of world oil supply disruptions on world oil prices and on the U.S. economy, to inform the short-term price path. Given the size of the disruption, DIS is able to project changes in world oil prices, the U.S. real gross domestic product (GDP), the U.S. unemployment rate, and the U.S. inflation rate. DIS relies on parameters specified by EIA economists, but is flexible to allow us to alter any of the parameters used in the model calculation to examine a range of "what if" cases. The DIS model is used in conjunction with other models when estimating the WTI price path; if there are concerns about potential disruptions, the DIS model helps us examine the impact on oil prices, which can be incorporated in the forecast.

Hurricane Assessments.—EIA also develops an annual hurricane assessment, which we publish along with the STEO in May. The assessment, using NOAA's prediction regarding storms during the upcoming hurricane season (June 1 to November 30), estimates the amount of oil and natural gas that could potentially be shut in during the hurricane season. These estimates are taken into consideration when determining our near-term price forecast.

Motor Gasoline Price Modeling

Retail motor gasoline prices in the STEO model are forecast as a markup over the projected cost of crude oil. The difference between the pump price of gasoline and the price of crude oil is made up of three components: (1) the wholesale margin, which equals the gasoline wholesale spot price minus the refinery average cost of crude oil; (2) the retail margin, which reflects the costs and profits associated with distributing gasoline to retail outlets and selling it to consumers; and (3) Federal, State and local taxes.

The wholesale margin is modeled as a U.S. average while five regional equations are maintained at the Petroleum Administration for Defense District (PADD) level for both the retail margins and taxes. U.S. average retail margins and taxes are cal-

[2] "Short-Run Crude Oil Price and Surplus Production Capacity", Ye, Zyren, Shore, International Advances in Economic Research (2006) 12:390–394.

[3] "The Recent Disconnect in Crude Oil Price and Inventory Relationship", Ye, Zyren, Shore, article to be published in upcoming issue of Journal of Energy and Development.

[4] See, for example, "Volatility Relationship between Crude Oil and Petroleum Products," Lee and Zyren, Atlantic Economic Journal (2007), 35:97–212.

culated by weighting regional margins by each region's estimated share of total U.S. gasoline consumption. In addition, PADD region finished gasoline and motor gasoline blend component inventory equations are also included. Consequently the STEO model for gasoline prices includes 26 separate regression equations.

The difference between the retail price of gasoline and the average refiner cost of crude over the last 5 years (January 2003 to December 2007) has ranged from a low of $0.73 per gallon (January 2003) to a high of $1.68 per gallon (May 2007). The greatest source variation in monthly margins is in the wholesale margin and the least variation is in taxes (Table 1).

The STEO model attempts to capture several market conditions and events that contribute to the observed variations in price margins. These include seasonality in demand; lags in the pass-through of crude oil prices to wholesale prices and from wholesale prices to retail prices; inventories that may be higher or lower than desired; and unusual one-time events that represent outliers that could bias the model results, e.g., 9/11, hurricanes.

However, no model can perfectly predict future price margin variation as current market events unfold in ways that have never been observed before. For example, EIA expected the current weakness in gasoline consumption and growth in ethanol supply would contribute to lower wholesale margins than had been seen over the last two summers. However, this combination of events had never been observed before, and wholesale gasoline margins so far this summer have been even lower than expected.

Oil Price Forecast Errors

Recent experience with very high and rapidly rising oil prices and large deviations of actual prices from forecast values highlights the challenges faced by EIA and other forecasters. While EIA's recent forecasts have definitely missed the mark in absolute terms, EIA's forecasts over the last couple of years have outperformed the monthly forecasts by top consultancies in the industry. We also track our projections versus the NYMEX futures contract, and we have consistently been equal or better than the Exchange at predicting oil prices 6 months into the future.

EIA, the other forecasters, and the NYMEX futures market have generally underforecast the steady increase in the WTI spot price over the last 5 years, but EIA's average 6-month forecast error is the smallest. WTI forecast errors over the last 5 years have tended to increase for all forecasters and NYMEX as the forecast horizon lengthens, but EIA's forecast error compares favorably to others for all horizons between 6 and 24 months.

MARKET FUNDAMENTALS

Supply, Demand, Inventories and Spare Capacity. In EIA's view, recent price increases are an extension of oil market developments originating in the 1990s with relatively high inventories, ample surplus production capacity, and oil prices fluctuating around $20 per barrel. When spot prices moved above or below this level, the price of futures contracts requiring delivery in distant months generally traded close to the $20 level, consistent with a market expectation that producers would ensure that spot prices would eventually return to that level.

However, as leading OPEC member countries shifted towards a tight inventory policy and global oil demand recovered from the slowing effect of Asia's financial crisis, the global market balance tightened, and inventories declined sharply at the beginning of the present decade. Oil prices rose to $30 per barrel, in what might be seen as the first leg of the upward trend. By 2003, inventories were drawn down sufficiently such that subsequent increases in global demand stretched oil production to levels near capacity. The large, unexpected jump in world oil demand growth in 2004, fostered by strong growth in economic activity in Asia and the United States, reduced excess production capacity significantly.

Now, in mid-2008, oil prices have increased by almost 300 percent since January 2003, but despite higher prices, world oil demand growth remains relatively strong. Since 2003, world oil consumption growth has averaged 1.8 percent per year (Figure 1). Non-OECD countries, especially China, India, and the Middle East, represent the largest part of this growth, while at the same time overall non-OPEC supply growth has slowed (Figure 2). In the past 3 years, non-OPEC supply growth has been well below levels seen just 4 years ago. As a result, the world oil market balance has tightened significantly (Figure 3). World oil consumption growth has simply outpaced non-OPEC supply growth every year since 2003. This imbalance increases reliance upon OPEC production and/or inventories to fill the gap.

World surplus production capacity remains low, at an estimated 1.7 million barrels per day for 2008, which is well below the 1996–2003 annual average of 3.9 million barrels per day (Figure 4). This puts additional upward pressure on prices,

leaving world oil markets vulnerable to supply disruptions. In addition, this surplus capacity is highly concentrated in a few countries, with Saudi Arabia holding almost all of this capacity. Without significant surplus capacity, market participants can no longer rely on increased production from key members of OPEC to offset supply disruptions and restore balance to avoid significant price changes, as they did in the 1990s. Industry recognizes the need for new capacity investments, but those additions are costly and come with a significant lag.

As for inventories, OECD stocks were at record lows in 2003, following the strike in Venezuela. Preliminary OECD inventory data for the first part of 2008 show that OECD stocks have again fallen below the levels seen in 1996–2002. Because oil use has been growing over time, inventories are even tighter when considered on a "days of supply" basis. In addition, U.S. inventories for crude oil and key petroleum products are all relatively low. After remaining relatively high for much of 2006 and the first half of 2007, U.S. crude oil inventories have fallen towards the bottom end of the average range, even as refinery throughputs have been low so far this year.

Geopolitical Uncertainty.—There is currently a high degree of uncertainty in world oil markets due to fears of the availability of oil supplies. EIA takes these factors into consideration when we produce the monthly STEO report.

Current world oil supplies are highly concentrated. In 2007, the top ten oil producers represented about half of total world supply. In addition, geopolitical risk surrounds many of these top producers, either because of current supply disruptions (Nigeria and Iraq) or the perceived threat of a disruption (Iran and Venezuela). Finally, as previously discussed, there is very little surplus production capacity available to offset any disruption. In May 2008, there was an estimated 1.4 million barrels per day of surplus production capacity, all located in Saudi Arabia, which represents just 2 percent of world oil demand. The combination of these factors means that prices react very strongly to any actual or perceived supply disruption (Figure 5).

Supply disruptions are a frequent occurrence in the oil industry. During the past 24 months, there have been almost two dozen supply disruptions, lasting from a few days to many weeks, which affected world oil production and exports. These were caused by power failures, workers strikes, pipeline leaks and explosions, cyclones and hurricanes, saboteurs, and civil wars. Over half of these resulted in oil production outages of over 100,000 barrels per day. The most significant disruption resulted from the ongoing strife in Iraq and Nigeria. These disruptions have varied in size over time, with Iraq losing over 500,000 barrels per day of exports in March 2008 and Nigeria reaching over 1.4 million barrels per day of shut-in production at one point in April.

While actual supply disruptions directly affect world oil markets due to a loss of physical barrels available to the market, much of the impact of supply disruptions is due to market perception of the situation. This situation is reinforced by the limited amount of spare production capacity available. As long as potential disruptions, both real (e.g., Iraq and Nigeria) or perceived (e.g.., concerns about the potential loss of supply from Iran), exceed the amount of additional production capacity that can be brought online quickly, geopolitical concerns will weigh heavily on oil markets.

When constructing our short-term outlook, we take into consideration the current disruptions and the potential for additional disruptions, including the probability that severe weather could impact oil and natural U.S. production, refining, and transport operations as it did in 2005. The specific impacts of these effects vary from month to month.

Value of the U.S. Dollar.—Between January 2007 and March 2008, the value of the dollar against the Euro fell by 29 percent while the price of WTI crude oil rose by 93 percent. Some analysts have pointed to these common trends as an indicator that the declining value of the dollar has contributed to higher oil prices. However, during other periods we have seen oil prices rise even as the value of the dollar remain unchanged or even rose. For example, between November 2004 and November 2006, the value of the dollar strengthened by 12 percent against the Euro, while the WTI spot price rose by 35 percent. Since early March 2008, the dollar has held its value against the Euro while WTI spot prices increased from $102 per barrel to a peak of over $138 per barrel.

Exchange rates, like oil prices, are signals that transmit information on underlying fundamentals. As in the international oil market, where changes in oil prices bring oil demand into balance with oil supply, changes in exchange rates are among the signals, along with interest rates, that equate the demand for money and credit with their supply.

There has been no systematic and stable relationship between oil prices and exchange rates over time, which makes econometric analysis problematic. In the current economic environment, it is difficult to parse out econometrically the effects of

constrained oil supply growth, strong world GDP growth, and the decline in expected rates of return on U.S. assets and their greater risk relative to foreign assets as reflected in the weaker dollar. Furthermore, inconsistent price signals caused by the global patchwork of petroleum product subsidies may limit the effect of high relative oil world prices on demand, particularly in the developing world.

FINANCIAL MARKETS AND OIL PRICES

Financial investments in commodities have surged over the last few years as commodities are increasingly being used for portfolio diversification and as a hedge against inflation and the weakness of the U.S. economy and the dollar, in addition to their traditional roles as providing opportunities to hedge or speculate on price changes. Commodities have become attractive as financial assets because of the continued tight balances within many commodity markets (i.e., strong demand for commodities in emerging markets, sluggish supply response to higher prices, low inventories, and low spare capacity), leading to uncertainty about future prices.

Of particular interest has been the growth in commodity index funds. Traditionally, commodities have been "bought to use" rather than "bought to hold." In other words, a hedging company would buy or sell oil with the intent to make use of it in a specified time frame. A trader would buy or sell to later sell or buy before some specified time frame. An investor in equities such as a commodities index fund, on the other hand, will buy to hold, or even bequeath. Investors in equities will adjust their exposure to various risks based on a portfolio that changes with price, but not very directly.

Econometric estimation of the influence of futures market participation or speculation on oil prices is problematic because of the difficulty in measuring the volume and direction of speculation. Current measures that are used as proxies for speculative activity, such as total open interest in the NYMEX futures market, net-long positions of non-commercial traders in the NYMEX futures market, and investment in commodity index funds, all have limitations. For this reason, we really do not know the total size and nature of commodity index fund activity and speculation. The development of better activity measures and more transparent information in these areas would facilitate additional analysis of these issues.

Turning to the measures, albeit imperfect, that are available today, open market interest on the NYMEX for light sweet crude oil futures and options contracts has increased from about 666,000 contracts (each contract is for 1,000 barrels of crude oil) on June 24, 2003, to 3,150,000 contracts on May 13, 2008. Over this period the price of WTI crude oil has increased from $30 to $125 per barrel.

One could expect the futures market to affect oil prices over the very short run (hours and days) through the transmission of new information that may be distorted through the participation of uninformed investors or "herding" behavior. However, over the longer run (months and years), it is not obvious that speculation or increased participation in the futures market "causes" higher prices in the physical market. Instead, increased futures market activity may simply be a response, in the same way oil prices are, to continuing tightness and uncertainty in the physical markets.

Though one might expect that the level of open interest on the NYMEX is correlated with speculative activity, the relationship between total open interest and price is unclear. For example, if speculators entered the market expecting prices to rise, they would presumably attempt to take long positions on oil futures contracts, bidding up the price. However, if speculators entered the market expecting prices to fall, they would presumably attempt to take short positions on oil futures contracts, driving down the price. While both of these scenarios would increase open interest, they would each have opposite effects on the price of oil futures contracts.

Because of the ambiguity of total open interest as a measure of the direction of speculation and its price impact, the relationship between long contracts and short contracts held by non-commercial traders, traders who do not claim to be hedging at all, has been used as a proxy to indicate the direction of speculative interest. When non-commercial traders are "net long" (the number of long contracts exceeds the number of short contracts), it is presumed that speculators are betting on increases in price. If a preponderance of them are making these bets, then the price can increase based solely on their own demand. However, the distinction between commercial and non-commercial traders is weak. For example, speculative investments in commodity index funds are categorized as commercial rather than non-commercial trades.

The non-commercial net long positions in crude oil have not been consistently correlated with oil prices. Over the first half of 2007, both non-commercial net long positions in light sweet crude oil and crude oil prices increased. However, the number

of net-long positions at the end of May 2008 was no higher than they were in June 2007 even though oil prices have almost doubled over this period. Moreover, in the natural gas market, between November 2006 and January 2007, non-commercial positions fell from a net long 29,000 contracts to a net short 113,000 contracts while natural gas prices rose slightly.

The third proxy for speculative activity in commodity markets is the total amount of money invested in commodity index funds. However, under the Commodity Futures Modernization Act of 2000, the total amount of money invested in commodity index funds is not publicly reported. Thus, estimates of assets under management in index funds and the share of those funds that are hedged on the NYMEX crude oil futures market vary widely, making any statistical analysis using these data suspect.

CONCLUSION

Mr. Chairman and members of the subcommittee, EIA has already acted to improve both its short-term and long-term modeling capabilities. Further significant improvements in both the data used as input to models and modeling tools are proposed in our fiscal year 2009 budget request. The budget request also supports several initiatives mandated in 2005 and 2007 energy legislation, including tracking and reporting of refinery outages and fuller integration of ethanol and other biofuels into our energy survey systems.

While EIA believes that fundamental factors such as strong demand growth, a dramatic decline in global surplus crude oil production capacity, and global refining capacity constraints are the major factors driving oil prices higher, we share your interest in exploring how information from markets in energy derivatives could be used to improve forecasts of oil and motor gasoline prices. One key challenge to pursuing this line of analysis is the difficulty in measuring the volume and direction of speculation and commodity fund activity with currently available proxies. We really do not know the total size and nature of commodity index fund activity and speculation. The development of better activity measures and more transparent information in these areas would facilitate additional econometric analysis of these issues.

This concludes my testimony, Mr. Chairman and members of the committee. I would be glad to answer any questions you may have.

TABLE 1.—MINIMUM AND MAXIMUM MONTHLY AVERAGE PRICE MARGINS, JAN. 2003–DEC. 2007

[Cents per gallon]

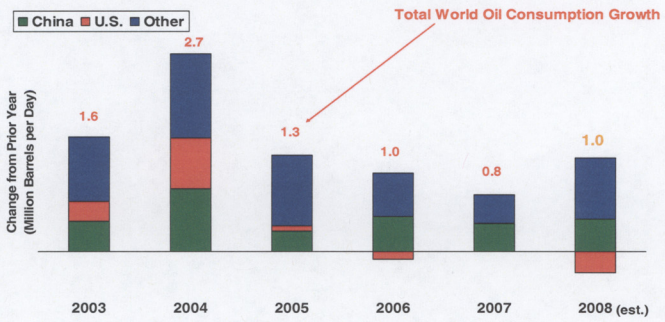
	Minimum Monthly Margin	Maximum Monthly Margin
Wholesale margin	22.0	102.8
Retail margin	8.2	26.0
Taxes	42.3	53.9
Total retail gasoline—crude oil margin	73.1	167.8

The minimum and maximum margins may not sum to the total margins because they may occur in different months.

Figure 1

Despite higher prices, world oil demand growth is strong

- Since 2003, world oil consumption has growth has averaged 1.8% per year.
- Non-OECD countries, especially China, India, and the Middle East, represent the largest part of this growth.

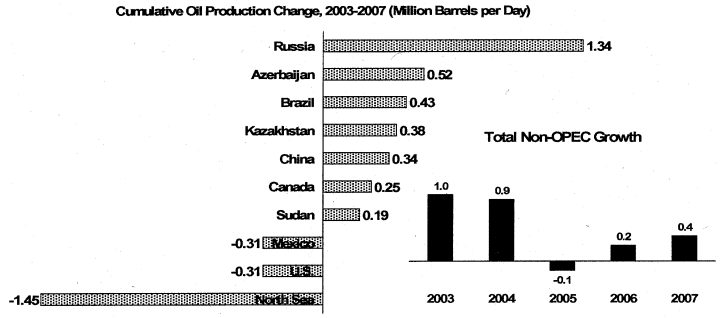


Source: Energy Information Administration, *Short-Term Energy Outlook June 2008*

Figure 2

Non-OPEC supply growth has slowed in recent years.

- In the past three years, non-OPEC supply growth has been well below levels seen just four years ago.
- Russia drove non-OPEC supply growth during the first part of the decade. However, Russian oil production is down year-over-year in 2008.

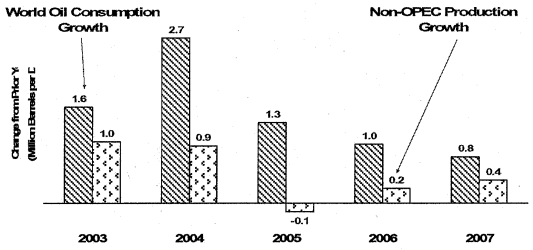


Source: Energy Information Administration, *Short-Term Energy Outlook June 2008*

Figure 3

World oil market balance has tightened significantly.

- World oil consumption growth has outpaced non-OPEC supply growth every year since 2003.
- This imbalance increases reliance upon OPEC production and/or inventories to fill the gap.

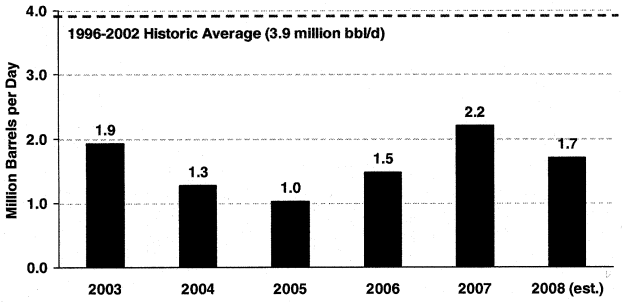


Source: Energy Information Administration, *Short-Term Energy Outlook June 2008*

Figure 4

World surplus production capacity remains low, leaving world oil markets vulnerable to supply disruptions.

- Current world surplus production capacity is below historic levels.
- In addition, it is highly concentrated in a few countries, with Saudi Arabia holding almost all of this capacity.

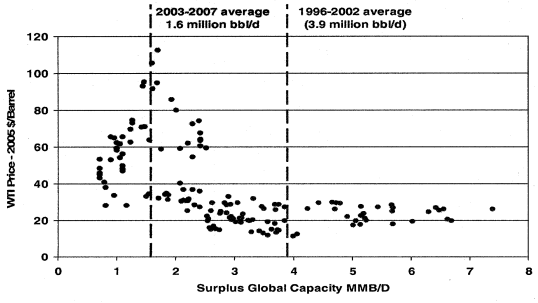


Source: Energy Information Administration, *Short-Term Energy Outlook June 2008*

Figure 5

At low levels of spare capacity, oil prices tend to increase dramatically.

- Prices respond when surplus capacity is low, particularly when geopolitical turmoil or other events such as hurricanes threaten supply.
- Consider the potential for loss of production in any of these countries: Iraq at 2.0 million barrels per day, Iran at 3.8 million barrels per day, Venezuela at 2.4 million barrels per day, Nigeria at 2.3 million barrels per day.



Source: Reuters; EIA

Senator DORGAN. Mr. Caruso, thank you very much.

Let me ask that the chart be put back up with respect to the EIA.

Mr. Caruso, I want to ask a question about this chart, and I want to go to the January 2008 estimate. My understanding is that in your January 2008 estimate, you projected crude oil prices to be $87 a barrel on average this year. You predicted that world consumption of oil this year would be 87.4 million barrels a day. Six months later in June of this year, you said, well, our prediction is not $87. It is going to be $122 a barrel. So that's a $40 a barrel difference.

The most important point is that in 6 months your estimates changed from $87 a barrel to $122 a barrel, but you indicated world consumption is going to decrease. In January, you said world consumption is going to be 87.47 million barrels a day. This month, you said consumption is going to be 86.38 million barrels a day.

So, you know, I am not much of an economist. I taught a little economics in college. I studied enough just to be dangerous, I guess. But tell me how, given supply and demand and other circumstances, one predicts in January $87 a barrel and then in June you say it is going to be $122 a barrel. So it goes up almost $40 a barrel even as you predict that world consumption is going to go down this year. Tell me how that works. I do not understand it.

Mr. CARUSO. Well, on the consumption side, the higher prices are having an effect and that is——

Senator DORGAN. No. I understand that.

Mr. CARUSO [continuing]. The main reason why the consumption projection is lower than it was 6 months ago, in addition to lower GDP.

Senator DORGAN. I understand the relationship of consumption to price. A higher price will tend to have people using less.

What I am asking is, as consumption decreases, why does your estimate of price increase?

Mr. CARUSO. Well, the reason—let me go back to why is the price higher. The price is higher because we have been disappointed, frankly, on the supply response. We are seeing less non-OPEC supply coming on line in 2008 than we projected in January of this year. So we have a tighter supply situation now than I would have presented to you, as I did, in December 2007.

Senator DORGAN. Well, let me read to you an April 2008 Business Week article, and the numbers I have checked. Gasoline reserves are at the highest level since the early 1990s in the United States. The United States used 4 percent less petroleum than we did a year ago. U.S. production is expected to rise by 3.3 percent in the second quarter, 4.1 percent in the third quarter, with a net result that the U.S. buffer for oil production against demand is up 3 million barrels in excess capacity.

Even as all that existed, this line went straight up, and it is pretty clear to me you did not know that was going to happen or you would have told us it was going to happen. You thought something completely different was going to happen in every single circumstance. Yet, that surprised you because your analysis as an economist of supply and demand does not justify that line. Am I correct?

Mr. CARUSO. I think the numbers you repeated there are about the United States, but we looked at it, of course, in a global context.

Senator DORGAN. Okay.

Mr. CARUSO. So we have, as I said, less supply coming into the market than we would have thought in January 2008. That is a big factor.

The other one was mentioned by, I believe, Senator Bennett. We had——

Senator DORGAN. Nigeria.

Mr. CARUSO [continuing]. Nigerian disruption, as well as unexpected declines in Mexican and North Sea production—sharper declines. So what is going on in this global market of 86 million or 87 million barrels a day, whichever number you wanted to use, whether you use the January or the June, is that there is insufficient spare capacity to respond to disruptions on the supply side or to any surprises. There are no cushions in the marketplace.

Senator DORGAN. But, Mr. Caruso, you indicated that supply has not kept pace. I described to you that in fact consumption has decreased between January and June estimates, and so you take a look at one piece of it and say, well, here is where my eyesight is.

My question is a broader question. We are spending about $100 million for your agency, and I am assuming you have great people. I do not want to tarnish or diminish the folks who work for you or you, for that matter.

But I am saying this. If that red line is what the actual experience has been with prices and the yellow line is your best estimate, what on earth happened? You called it a deviation. Look, this is not even in the same county. I mean, this is not missing it by a country mile. Tell me how that red line happens when your best estimates on supply and demand, reserves, carryover, and all those issues,

give you the yellow line every single month you make an estimate. This is unfathomable to me, and I am trying to understand your explanation.

Mr. CARUSO. The explanation is that in a market that has very little spare capacity or excess inventory, that any change in supply or demand requires a large change in price to rebalance the market. In economist's terms, it is very low short-term price elasticity. If there is no more supply available, a 1 percent increase in demand requires a 20 percent increase in the short-term price to rebalance that market.

Senator DORGAN. Well, is there some sort of learning capacity here? Would you make the same mistake every month which you have done? I mean, every single assessment makes the same mistake. Are you describing the same mistake to that particular provision every month?

Mr. CARUSO. As new data comes in, we revise the estimates.

Senator DORGAN. With respect to the Commodity Futures Trading Commission, the one observation I would have about that particular agency is they cannot see what they are unable to see, and to draw conclusions with information they do not have is to provide lack of informed decisions to the Congress. I am very distressed with what the CFTC says. I mean, they say this is not speculation.

I would say, Mr. Caruso, for CFTC and for you, the only logical explanation for that red line has to be something that is happening that you do not see and have never seen or if this is about fundamentals that you should be able to see, then there is something wrong in the agency. We cannot have this. You have either got to be on that line or somewhere close to where we are—I just described that the investment bankers have been closer than your agency. And maybe that is because they are out there predicting where this is going to go because they are all long in contracts. I do not know. But my point is you cannot explain the red line to me, and that bothers me.

I had an investment banker come in, one of the biggest ones, and he spoke for 45 minutes. When he finished talking, I was out of breath. He was one of these guys who just kept yakking. And the fact is he could not explain either. Before he left my office, he could not explain the first question I asked him, and that is what change in fundamentals existed in the last 12 months that justifies the doubling of the price. You have not answered it, and he could not.

Do you want to try one more time?

Mr. CARUSO. Non-OPEC supplies failed to keep up with demand—the supply would be needed to meet demand in a market where there are no cushions. And so you have to have very sharp price increases to rebalance the market—that is the shortest explanation I could come up with.

Senator DORGAN. My time has more than expired, but I think you are missing the elephant in the room. Unbelievable excess speculation that you and I and the Government owe the American people a remedy for. But we will talk more.

Mr. CARUSO. I would agree that we need more information about the speculative activity or really broader than that, really financial market activity in commodities markets. I said that in the testi-

mony. And I think the CFTC is also saying that in their testimony as well.

Senator DORGAN. After denying it for 5 months, they have finally had an epiphany over there.

I have other questions that I will ask in a moment, but I will ask my colleagues to be able to proceed. Senator Domenici.

Senator DOMENICI. Mr. Caruso, let me make sure that I understand. This price that we are talking about that you put up, both predicted and actual, is in dollars. Right, because that is what everybody agrees to use.

Mr. CARUSO. Yes, sir.

Senator DOMENICI. Does China pay the same price essentially as we do for the oil?

Mr. CARUSO. The global price is denominated in dollars. Essentially everyone pays that same price.

Senator DOMENICI. Does India pay the same price?

Mr. CARUSO. Yes, sir. There is a global price for crude oil.

Senator DOMENICI. The point I am trying to get at, when I ask you, it sounds like a very simple question and you answered it very casually and cavalierly—but the point of it is if the speculators are taking advantage—and I hope we can find out who they are and what they are and what instruments they are using—they are doing the same thing to China and to India and to everybody else. Right?

Mr. CARUSO. Yes, sir.

Senator DOMENICI. So if we are getting beat over the head and if our citizens are being denied something in this process, so are the millions of people in China and the hundreds of millions in India. And where are the other big markets in the world that import? India, China, America.

Mr. CARUSO. Japan and——

Senator DOMENICI. Japan. Yes, all the countries that have vibrant economies are stuck essentially with this oil price. Right?

Mr. CARUSO. Yes, sir.

Senator DOMENICI. Do you know right now today, as you talk to us—you are our only expert that I am aware of that we pay substantial money to maintain a vibrant agency. And I have supported you every time. When I was in his shoes, I put even more money in, and so did he, because we needed expertise.

Is there any reason you have to suspect before this committee and in behalf of the American people—you are testifying. You are our servant. Is somebody speculating illegally? Is there some cheating going on that you can hardly help but see because the price is going up so high that you cannot fathom that is there, other than somebody speculating and doing something wrong?

Mr. CARUSO. Obviously, we are not the agency that collects that data, so we would not have enough information to be able to answer that question. That is the role of the CFTC and ultimately the Federal Trade Commission and the Department of Justice.

Senator DOMENICI. Yes, I know that. But you are experts, and certainly if things keep coming out in a way that would appear to experts to be erroneous or unsubstantiated or dramatically unexpected, you would go back and do them over. Would you not? If you

said, look, something is wrong with this. It went up too high. You would go back and take another look. Would you not?

Mr. CARUSO. Yes, sir. We are working with the CFTC on this task force, and there is a report that they are working on, promised by September 15, looking at the issues of whether there is any manipulation in the market.

Senator DOMENICI. I wanted to just ask you this last question. Do you work collaboratively with the Commodity Futures Trading Commission in looking at what is going on in the world markets of oil and exchange information and then discuss various things that are going on? Do you do that?

Mr. CARUSO. Yes. We are members of their market monitoring committee and we are supporting the task force that the CFTC is heading.

Senator DOMENICI. And what is that?

Mr. CARUSO. They have formed a task force among relevant Federal agencies really to try to answer the chairman's question: is there manipulation going on, what is behind the rapid run-up in oil prices, and whether or not they can——

Senator DOMENICI. Okay. How long have you been doing this kind of work?

Mr. CARUSO. We have been working with them on—me personally?

Senator DOMENICI. Yes.

Mr. CARUSO. I attended my first meeting 2 weeks ago.

Senator DOMENICI. How long have you been doing the kind of work you do?

Mr. CARUSO. Oh, me personally? I had to admit it, 42 years.

Senator DOMENICI. And how long have you been the head of an agency that is in charge of giving information to the American people and to the Government like you are now?

Mr. CARUSO. About 6 years.

Senator DOMENICI. Six years. What did you do before that?

Mr. CARUSO. I was a career civil servant in the Department of Energy and then an energy economist at the CIA.

Senator DOMENICI. All right. With all that background and you see this going on, do any buttons come on, or do you just assume that what we see is what we get?

Mr. CARUSO. I have my concerns and that is why I think we need more information. I am not adamant that there are no other nonfundamental factors. We just do not have enough information. What we do know is the physical data on physical markets, and we look at that and we try to apply the best economic principles and come up with—we think we can explain most of the price increase, but I am certainly open-minded and would like to see more data.

Senator DOMENICI. Thank you very much.

Thank you, Mr. Chairman.

Senator DORGAN. Senator Murray.

Senator MURRAY. Thank you, Mr. Chairman, and Mr. Caruso, thanks for being here.

In your testimony and in responding to questions, you talk about the physical forces in the market, supply and demand, as being the primary drivers of these skyrocketing prices that we are all seeing. In March of this year, you testified before the Senate Energy and

Natural Resources Committee that the price of oil, which was $112 per barrel, should have been $90 based on that supply and demand. So it is clear there were other forces in play in March and a lot of those forces are remaining in effect today.

You have talked about how the EIA faces challenges in measuring speculative efforts, and you mentioned that your agency needs to develop some better measurements of these speculative activities, and more transparent information. I think we all are saying we need more transparency. Can you please expand on what type of information you are referring to and where do you plan to get that information?

Mr. CARUSO. Well, I think it is the information that the CFTC has requested with respect to commodity price index funds. There was really a lack of information about how large that market is because some of its activities are not regulated or not reported to CFTC, and that now has been requested. There is also more information needed on over-the-counter markets and a better understanding of the separation between commercial and noncommercial trades in the commodities markets. I think all of those things are being sought by the CFTC, and we did talk about them in the market monitoring committee, as well as the task force meetings.

Senator MURRAY. This week, Acting CFTC Chairman Walt Lukken told the Homeland Security and Government Affairs Committee that in times like this, the opportunity for market manipulation is ripe. Last week he told a number of us who sit on the Appropriations Committee that manipulation could not be ruled out.

You may remember several years ago my home State of Washington and other west coast States suffered through the western energy crisis, and for years industry representatives and industry regulators came and testified before all of us time and time again that market forces were the source of the skyrocketing electricity costs we were seeing. It was not until the tapes of those traders talking about the manipulative schemes at Enron were discovered that our suspicions of market manipulation were confirmed. So you can see my background and know why I look at this and want to make sure that we are asking the questions to know if manipulation is occurring.

Now, the CFTC is working to monitor our markets, but can you tell me how EIA accounts for potential market manipulation when you do your forecasts and analysis?

Mr. CARUSO. We rely on their data. We would be users of any data that CFTC would make publicly available on that issue. They are obviously the lead and we would use that data, if it were available, in our analysis. We are analytical users of the data collected by CFTC and any other——

Senator MURRAY. Yes, and you indicated that you had been doing this for a number of years. Just from your expertise looking at this, do you see any cause for concern for manipulation in the numbers you are seeing?

Mr. CARUSO. Well, I think we should be concerned and we should do everything we can to avoid a repeat of the very unfortunate experience that you referred to in the——

Senator MURRAY. So we cannot rule it out.

Mr. CARUSO. I would agree with Chairman Lukken. He is certainly in a position to make that statement. And I certainly think we need to look and if we find that, make sure that the perpetrators are properly punished.

Senator MURRAY. I appreciate that.

Thank you, Mr. Chairman.

Senator DORGAN. Senator Allard.

Senator ALLARD. Thank you, Mr. Chairman.

The first question I just would like to ask is in your testimony, you said the primary factors when making cost projections were demand, supply, inventories, and spare production capacity. And I have noted that two things were not in that list. One was market speculation and the other one was the value of the dollar. So as you saw from the chart there, based on the facts that they have now and the information that they collected, they do not believe that speculation had a noticeable impact on oil price. And I am not saying that it is not there, but right now I am saying we do not have the facts to state that it is definitely there.

Do you believe that speculation, based on the facts that you have right now, has an impact on the price of oil?

Mr. CARUSO. We cannot see any evidence, and we, of course, rely on what has been provided to us by the CFTC.

Senator ALLARD. But you are using the same figures that they are using.

Mr. CARUSO. Yes, we are using those figures, and we both admit, both EIA and CFTC, that we would like to see more data. I wanted to make that clear.

Senator ALLARD. Yes, and I understand that. I think they are looking at information on swaps and indexes and whatnot——

Mr. CARUSO. Yes.

Senator ALLARD [continuing]. Because that is not a part of those figures right now.

Mr. CARUSO. That is correct.

Senator ALLARD. Hopefully, we will have that when we come into September.

Mr. CARUSO. Yes, sir.

Senator ALLARD. Now, on the value of the dollar, did you look at the value of the dollar when you were making your projections?

Mr. CARUSO. Yes.

Senator ALLARD. It seems to me like it has had a dramatic impact.

Mr. CARUSO. Well, you know, if you look at the price of oil and the value of the dollar, the depreciation of the dollar has been correlated to the price of oil. In fact, the oil price has gone up. The dollar has been going down.

Senator ALLARD. Does that have sort of a compounding effect?

Mr. CARUSO. Our best economists do not think there is a direct causality between the dollar and oil prices. There may be some indirect effects, and one would be, for example, that countries that have had their currencies appreciate versus the dollar are paying less for the final product, and that certainly increases oil demand with a lower price in Euros, for example. Demand otherwise would have been higher if they had been paying a dollar price instead of

a Euro price. So there may be an indirect impact, but we do not see any direct effect of the dollar—direct correlation and causality.

Senator ALLARD. I had seen a TV show where they were trying to gather facts on the price of oil and they made a quote about what the consumer was paying for a tank of gas or a gallon of gas in Saudi Arabia, around 27–28 cents a gallon. But we are looking at in some areas over $4 a gallon. Is that heavily subsidized in Saudi Arabia?

Mr. CARUSO. It is heavily subsidized in all the oil-producing countries and, as well, in many other emerging economies. Our best data indicates in a world of about 85 million barrels a day of oil consumed, about 30 million of that is under subsidization. So the consumers of the 30 million barrels a day are not paying the full market price.

Senator ALLARD. Now, I would like to understand. I mean, the chairman has an interesting bunch of facts. I am gathering the facts that the chairman is bringing up has to do pretty much with American markets, and you are talking on world markets.

Mr. CARUSO. Yes, sir.

Senator ALLARD. Is it possible for you to get us a chart or facts and compare world markets versus American markets in a relatively short time here?

Mr. CARUSO. Yes, sir.

Senator ALLARD. Maybe in a week or so?

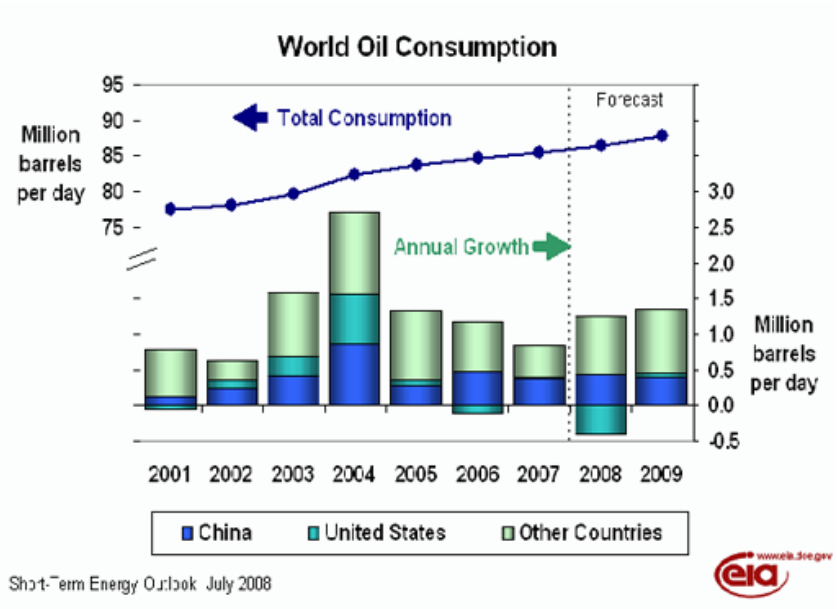
Mr. CARUSO. Yes. We update that on a monthly basis.

Senator ALLARD. I think it would be helpful to me if we could get a chart that compared American markets and world markets. I think it helps us better understand some of the points that the chairman is making and understand some of the facts.

[The information follows:]

ANNUAL OIL CONSUMPTION

Year	China	U.S.	Other	World
2000	4.8	19.7	52.2	76.7
2001	4.9	19.6	52.8	77.4
2002	5.2	19.8	53.1	78.0
2003	5.6	20.0	54.0	79.6
2004	6.4	20.7	55.2	82.3
2005	6.7	20.8	56.1	83.7
2006	7.2	20.7	56.8	84.7
2007	7.6	20.7	57.3	85.5
2008	8.0	20.3	58.1	86.4
2009	8.4	20.3	59.0	87.8



Mr. CARUSO. There is one point that I think is relevant to both of your observations on that, and that is, one of the murky areas is we do not really have good data on China. We have estimates of what they are consuming. We have no good idea of what their inventories are.

Senator ALLARD. And they are a big consumer.

Mr. CARUSO. They could be hoarding. I am not saying they are. They could be hoarding and we would not know it. There is just no data.

Senator ALLARD. Okay.

Have you done any modeling to project future supplies if the resources available in oil shale and the Outer Continental Shelf are tapped? Have you done any of that?

Mr. CARUSO. We have looked at the OCS resource availability. In our Annual Energy Outlook, which goes out to 2030, in the 2007 edition we had an OCS open access case, and we looked at what would the additional supplies be.

Senator ALLARD. Can you share the results of their modeling at least with the Outer Continental Shelf? You do not have anything similar to that on oil shale? Can that be developed?

Mr. CARUSO. We have not done that for oil shale because the economics of oil shale are still, even at these oil prices, relatively unfavorable.

[The information follows:]

OUTER CONTINENTAL SHELF

The EIA Annual Energy Outlook 2007 analysis on opening access to the currently restricted areas of the Outer Continental Shelf (OCS) is EIA's most recent analysis on the issue. The analysis indicates that cumulative domestic production of crude oil from 2012 through 2030 with OCS access is projected to be 1.6 percent higher than in the AEO 2007 reference case and 3 percent higher in 2030 alone, at 5.6 mil-

lion barrels per day. For the lower 48 OCS, annual crude oil production in 2030 is projected to be 7 percent higher—2.4 million barrels per day with OCS access compared with 2.2 million barrels per day in the reference case.

Senator ALLARD. Well, you have not gone through the rules and regulation process. So how do you know what your lease arrangement is going to be or your royalty payments?

Mr. CARUSO. Correct.

Senator ALLARD. So you cannot do that until you get——

Mr. CARUSO. We know the resource is there. It is the economics and technology that, as you know, very directly——

Senator ALLARD. I think that is the frustrating part for the oil producers with oil shale is that they need to get to the point where they can make those projections. And I see you have the same problem.

Mr. CARUSO. Yes, sir.

Senator ALLARD. I see my time is expired. Thank you.

Senator DORGAN. Senator Feinstein?

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

Mr. Caruso, I would like to refer you to the last two paragraphs in your written comments on page 11, if I might. This is, I think, the area that we are all concerned with. "When noncommercial traders are 'net long' (the number of long contracts exceeds the number of short contracts), it is presumed that speculators are betting on increases in price." It is my understanding that that is true to 90 percent of these trades.

"If a preponderance of them are making these bets"—and that is the 90 percent—"then the price can increase based solely on their own demand. However, the distinction between commercial and noncommercial traders is weak." And we know that the CFTC has given the big institutional investors noncommercial status. So they can actually buy very long and very big contracts and not take receipt of anything. "For example, speculative investments in commodity index funds are categorized as commercial rather than noncommercial."

Are you empowered to collect this data?

Mr. CARUSO. No. That is the——

Senator FEINSTEIN. CFTC?

Mr. CARUSO [continuing]. CFTC. One of the things that I propose or at least advocate for is to have greater transparency. That is one of the areas we think makes it very difficult to answer the chairman's question and, indeed, your question. We are working very hard to get that answer to you—the letter you sent me—on what exactly can we disaggregate regarding the impacts of the different effects. Without that data, I think we really cannot do that.

Senator FEINSTEIN. See, I very much agree with what the chairman has said. And I have a real problem. Let us take a big institutional investor like CalPERS, you know, hundreds of millions of dollars. I do not understand when a commodity is scarce like this why these kinds of investors and why swaps should even be permitted. It seems to me that when a commodity is scarce in the futures market, it is one thing for an airline to do it because they receive the commodity. It is another thing for CalPERS or any other institutional investor to do it because it is just making money, and I do not see how it cannot affect the price because ev-

erybody is betting long. And then you admit that it does have a price impact in your written paper.

Mr. CARUSO. It could very well be having a price impact; like I said, if we had more data we might know. Could I respond to that?

Senator FEINSTEIN. Sure, please.

Mr. CARUSO. I think that this may be part of why we are having a little bit of a—not disconnect, but as the chairman has pointed out, how can you reconcile fundamentals versus this financial activity is a broader way to put it. If a financial institution like CalPERS decides it would like to move from 1 percent of its portfolio in commodities to 3 percent, that is a big deal for a pension fund like that. When they look out 1 or 2 years, they see nothing but up-side potential particularly in oil markets.

Now, is that speculation or is that fundamentals? I personally think that they are looking at the fundamentals to make that decision. Now, perhaps——

Senator FEINSTEIN. Could I interrupt you? I think they are speculating, otherwise why would they be there?

Mr. CARUSO. Well, they are speculating——

Senator FEINSTEIN. They are speculating that it is going to go up——

Mr. CARUSO. Yes.

Senator FEINSTEIN [continuing]. And they are going to make money and everybody else is making money. So they go into it. And so everybody has jumped into it in unprecedented fashion. And I think it has really impacted the market.

Now, what do I know? I am just a lowly Senator, but to me it is just common sense. So I wonder, first of all, why the CFTC put them in this noncommercial category, which therefore they have no limits as opposed to being in a commercial category where there is a limit. It is 20 million barrels of oil a contract. That is a lot. And then there is another limit, I guess, in the last 3 days of a contract.

Mr. CARUSO. Correct.

Senator FEINSTEIN. But I mean, this has created a huge special feeding tank for all these institutional investors, and I think it has pushed up the price of oil worldwide.

Mr. CARUSO. Well, certainly as I said in the testimony, we certainly would like to look more——

Senator FEINSTEIN. Yes, because we had in another committee every CEO of every big oil company. We asked them the question. You remember? Is this a supply and demand issue? The answer was no. The Saudis, the answer is no. The figures of the chairman just on consumption, the answer is no.

Then what is the change? The change is the infusion in the marketplace of huge institutional investors with hundreds and hundreds of millions of dollars. How can that not drive up the price of oil? Can you answer that?

Mr. CARUSO. I think it is a combination of the fundamentals being there to inform the investment decisions that are being made, saying, hey, this looks like a no-brainer. This market is nothing but—you know, we've got all these supply problems. We do not see any new oil coming on line. The perception is that we are perhaps even facing peak oil. I think that certainly is influencing these decisions. So I think it is hard to disaggregate those.

Senator FEINSTEIN. My time is up, Mr. Chairman. Thank you.

Senator DORGAN. We are going to have a second round if you are around, Senator Feinstein.

Senator FEINSTEIN. Okay.

Senator DORGAN. Senator Bennett?

Senator BENNETT. Thank you very much.

I would like to continue this conversation because one of the things that was said in this morning's hearing that had not occurred to me on this very issue was the whole question of describing speculators. We have an image of speculators and they are all basically green eyeshade types running pension funds that have ice water in their veins and are driven by pure profit. And in this morning's hearing, the comment was made airlines are in the marketplace in this fashion hedging. We think the hedge funds are terrible, but actually the airline, in order to protect itself against price increases, is in the market hedging through a hedge fund.

Senator FEINSTEIN. There is no problem.

Senator BENNETT. Okay, no problem. But in the aggregate of what we are talking about of commercial and noncommercial, this falls into a definition question of where is the bet being done. This is not an airline buying oil. This is an airline buying in futures to hedge against something that happens in the oil. So the airline is there on both sides of——

Senator DORGAN. Senator Bennett, would you yield on that point——

Senator BENNETT. Sure.

Senator DORGAN [continuing]. So that we can just clear up that point? The market, in my judgment, was established for the purpose of consumers and producers to be able to hedge risk with respect to a physical product.

Senator BENNETT. Sure.

Senator DORGAN. What you have just described is a perfect function of the market——

Senator FEINSTEIN. That is right.

Senator DORGAN [continuing]. Legitimate hedging by airlines which are heavy users of the product.

Senator BENNETT. Yes, and that is my point. How can we identify, in the name of the large-term speculators, how much of that is the legitimate hedging and how much of that is somebody who is buying the product simply to sell to somebody who will buy the product who has no legitimate place in the market?

As I said earlier, I do not in any way, along with Senator Domenici, think it is appropriate to say this side is trying to protect speculators and that side is trying to attack speculators. I think we are all trying to find out, as much as possible. But let us find out by getting some kind of definition of the institutions or the people that are engaged in this activity so that we know what their motives are. And if, indeed, somebody is—a large number of people—this is theoretical, but nonetheless, it is historic. If a large number of people are buying at ever-increasing prices for the sole purpose of selling to someone else at an ever-higher price, then the market is being set up for a classic bubble.

That is exactly what happened in the housing market. People bought houses not to live in them but to sell them to somebody else

who would buy them to sell them to somebody else, and the housing market ultimately collapsed.

That is what happened with dot com stocks. They did not buy the dot com stocks because they were expecting a dividend because they were going to own the company. They bought the stock at $20 so they could sell it to somebody at $30 who was buying it to sell to somebody at $40, and eventually the bubble burst.

So if, indeed, that is going on to the degree that some people suspect, there will be a burst at some particular point. The bubble will burst and things will come down just the way it did in the housing speculation or the dot com speculation.

Do you see any signs of that kind of buying as opposed to other kinds of hedging and activity?

Mr. CARUSO. Well, I think, really going back to Senator Feinstein, trying to get at the data that she just referred to—those types of investments like CalPERS versus a classic hedge, as you pointed out, for an airline—is exactly the type of data that would be useful to answer this question. We just do not have that data.

Senator BENNETT. We do have that data.

That leads me to my next question. Oh, go ahead.

Mr. CARUSO. One other point on that. What is going on here I think is the perception that this is a no-brainer, only an up-side market. And the reason that is relevant is that there is a lack of institutions or individual investors who are willing to take the buy side—I am sorry—the sell side of this.

Senator BENNETT. Yes. So there may be a little bit of both.

Mr. CARUSO. Yes.

Senator BENNETT. And I think that is probably reality. That leads me to my next question.

We obviously need more transparency. We need more information both at the CFTC and perhaps at your agency, and I would support legislation that would increase the number of people available to you as quickly as possible.

Suppose—and I think this is not an unusual suppose—under pressure if people at CFTC or elsewhere say, okay, we are going to crack down, we are going to put in these kinds of restrictions, we are going to have all sorts of regulation, the trading in oil goes offshore, moves from CFTC, moves from America to Dubai or London. Would we not then have less transparency than we have now?

Mr. CARUSO. Yes.

Senator BENNETT. And would the market, therefore, not be more likely to get out of control under those circumstances than it would be now?

Mr. CARUSO. Well, I think if you take the most extreme hypothetical circumstance where much of the volume out of NYMEX moves to Dubai, we would lose a great deal of transparency. That is correct.

Senator BENNETT. So we need to be a little careful about what we do.

Mr. CARUSO. Yes.

Senator BENNETT. Okay. Thank you.

Senator DORGAN. Senator Craig?

Senator CRAIG. Thank you for being with us, Administrator Caruso.

So if we have institutional buying in an up-side market and there is no perception of a down side, if in the process we are creating the bubble that Senator Bennett has spoken to, then let us create a down side by bursting the bubble. We can burst the bubble sooner than the market can if we tell the market that in a 1.5 percent growth market with no spare capacity, we are going to add capacity to the market for the foreseeable speculative future and we bring a few million more barrels a day into the market or we convince the market that we are going to over a fixed period of time.

What does that do to the market if a government, this Government, says we are going to bring on line and make available to the market what are known reserves to be brought to the market in the time it will take to get there, and we will urge that by facilitating it as reasonably possible as the market can respond? What happens?

Mr. CARUSO. I think that if the market was really convinced that however we were——

Senator CRAIG. And I would define convinced as everything we can possibly do, including the signature of a President that we are going to do that.

Mr. CARUSO. I think the market would respond because these pension funds and other financial investors have no interest in whether the price is up or down. They are only interested in being on the right side of the transaction.

Senator CRAIG. Of course. That is by definition who they are.

Mr. CARUSO. So those long positions would very quickly become short positions.

Senator CRAIG. And, of course, we hear the wailing of frustration and the gnashing of teeth at this moment that, oh, my goodness, that is years and years out. Everything in this business is years out. It is the reality of this industry. You do not bring on a new field overnight. But if you are out there drilling and discovering and the market is clearly conditioning you to be there by the price available in the market, at margins, even if they come down 30 percent, still make it a profitable venture, it seems to me that that begins to work.

Now, other things can happen, and I think that we are not yet predicting them effectively. China last week reacted as only China can react. They raised their tax on fuel because they as a government control fuel access to their citizens. And they react differently because their infrastructure, while increasingly dependent on hydrocarbons—it is about 90 percent dependent—they can change because only 1 out of every 1,000 Chinese has a car, and they can quickly discourage the second or third Chinese in 1,000 from buying a car by raising the value. We cannot do that in this country. We have no elasticity. We are very inelastic because we all have them. We not only have one, we have two, or we have three.

And so it is interesting for me to watch everybody try to model the Chinese when the marketplace may be reshaping them in a way we have not yet figured. Especially it has become increasingly unpopular in this world to be a dirty producer, and by definition they are dirty.

It is also fascinating to me that some are suggesting—and you did not suggest it. It would be fair for the record to show that. But

there could be some hoarding going on out there. We were hoarders up until a few weeks ago when we shut the SPR off. That by definition is hoarding. We do not know if other countries are doing that. They are simply buying in a market and receiving. They may be sticking it into the ground like we are. If they are and if we were, that would still the market because that is the demand. Is that not correct?

Mr. CARUSO. That is correct.

Senator CRAIG. Now, you could say it is bad or it is good to hoard. We said it was good to hoard because we were creating a security blanket during a period of crisis, but it was by definition hoarding. And we decided to stop it for a while. And the chairman helped lead the attack and we agreed with him.

So I find it really fascinating in an environment where there is little to no margin left, in a demand growth of 1.5 percent a year and no desire to produce more than that, that the markets would not respond and the opportunity to speculate within the market structure has happened.

I do not ask you to respond to that. I know you are frustrated, as we all are, but we have also got to be honest with ourselves when we keep denying ourselves the production we know we have and are capable of producing. We say as an arrogant nation to the Arabs, you produce it because we do not want to. And we expect you to produce it in the volume we need. Now, go get at it. Turn your valves up. Drill more holes over there because we are not going to because we are clean, pristine, rich, and arrogant. And I do not know of any other way to define it because that is what we are doing in this country.

I am fascinated at the new conversion rate of the new religion, and the new religion is drill at any cost, do it cleanly, do it environmentally soundly. Any cost does not define that because you are burning down my house, my pocketbook, and my family's security.

So thank you for being here.

We will proceed on. I hope, in our effort to solve a problem, we do not decide to destroy the market or send it overseas or send it to Dubai or create a lack of transparency for all consumers. But we have been in the state of denial for 20 years and our denial has come home to roost and it is a very expensive cost. Thank you.

Senator DORGAN. Senator Craig, thank you very much.

I might observe on this issue, I happen to think we should do a lot of things, including opening up more of the eastern Gulf of Mexico. We need to drill more but——

Senator CRAIG. And the chairman and I agree and we are on bills together.

Senator DORGAN. But I might also say that the EIA has projected that the U.S. production will increase every year from now until 2016. So it is not as if we are not producing. We are producing some more.

Senator CRAIG. Mr. Chairman, in relation to what demand? Is it greater than the world demand or greater than the national demand?

Senator DORGAN. Well, I want to talk about that.

Senator CRAIG. If it is not, the market goes up.

Senator DORGAN. I am going to talk about the demand in a minute.

I want to come back to Administrator Caruso's notion that this is the fundamentals, and he has indicated that he thinks that this line is because of change in supply issues.

But before I do that, I brought some charts. I was not going to use them, but because the suggestion has been experts would not predict that this is speculation, I want to put up some thoughts from experts.

Mr. Gheit testified up on the third floor in the Energy Committee. Here is what he said: "There is no shortage of oil. I am convinced that oil prices should not be a dime above $55 a barrel." That was last October. But I have just called him recently and talked to him by telephone. He feels exactly the same way today. He said, "I call it the world's largest gambling, all open 24/7, totally unregulated like a highway with no cops, no speed limit, and everybody going 120 miles an hour." This man has worked 30 to 35 years, top energy analyst for the Oppenheimer Company. I think he is an expert. I have talked to him at some length. He has testified here. I have talked to him on the phone. I think this qualifies as an expert.

Stephen Simon, as I expect—is kind of an expert. He is the Senior Vice President of Exxon Mobil. I do not quote that company often because they are happy to deposit our money in their bank accounts with these prices. But he said the price of oil should be about $50–$55 a barrel.

Clarence Cazalot at Marathon Oil, Chief Executive Officer, he is the CEO of Marathon, one of the large companies. "$100 oil is not justified by the physical demand in the market."

Let me leave it at that, but I have got six or seven more charts.

I want to come back to the point you made, Administrator Caruso. I just went through your estimate of consumption worldwide and production worldwide. And you have told me that you think lack of production is the thing that has changed the fundamentals. If we can have that first chart back up.

It occurs to me that in January of this year, you made an estimate. If we can point to that line, January 2008, that is the estimate of where EIA thought this was going to go. Now, I have looked at what you proposed as estimates for production and consumption, and it appears to me that while production is, in fact, down just a bit, consumption is actually down just a bit more in 2009 and down just about equal to the decline in production. So, in fact, there is virtually no difference in fundamentals that could justify anything on that line. I just went through this as I got the information.

I am trying to understand what you are saying to me. You are saying to me there are—you know, I understand Nigeria and all the daily stuff that goes on, but I am talking about the things that you saw every time you tried to make an estimate with your best economists, best lawyers. I hope you have got some M.B.A.'s, by the way, because that would be best your bet.

Mr. CARUSO. Not enough.

Senator DORGAN. Okay. You need M.B.A.'s down there.

Mr. CARUSO. Yes, sir.

Senator DORGAN. So every time you tried to make an estimate, you not only just missed it, you just were not even on the chart. And I think what you are telling me today is there is some speculation, but mostly it is fundamentals and mostly it relates to world supply. And as I have just looked, world demand/consumption has gone down slightly more than the supply reduction. So, your answer does not add up to me.

Mr. CARUSO. Well, we take into account everything, not only the facts, as you have mentioned—supply, demand, and inventories and productive capacity. I cannot remember which Senator referred to it, but the perception of where the future is headed informs or at least influences decisions being made in the marketplace, what people are willing to pay for the price of oil. If you believe that you are not going to have enough supply in 2009, you would pay more in 2008. So I think there is a combination of factors here. Supply, demand, inventories, productive capacity, and perceptions of where we are headed are influencing this market.

And as I said, I am not saying that this—obviously, I am not going to say it has been perfect.

Senator DORGAN. Well, less than that. I mean, that is a far cry from perfect. And you know, look. Maybe I would have made the same mistake, but the fact is if I were looking at that chart and sitting in the witness chair, I would think how on earth would I explain this. How could I explain missing it? The red line is what has happened. The yellow line is what you thought would happen every single month.

My point is I think you are missing something big. I do not know whether you are reluctant to explain it because Secretary Bodman has said there is no speculation. The President has got another narrative about drilling. I mean, I do not understand it.

But I have not been able to figure out today—I thought you told me in the first round that the purpose of this or the reason for this, the reason you missed it and apparently each time missed it by a mile is worldwide production. And what I have just described is consumption is actually decreased slightly more than production has decreased. So that seems to me that your answer does not fit here. It does not work here.

And I am not trying to brow beat you, Administrator Caruso, because I like you and I like your agency. But I do not like this, and I do not like the fact that a whole lot of people are saying, you know what? If it looks like a duck and quacks like a duck and walks like a duck, it is obviously a pig. There is clearly speculation here and experts that have testified before our committee, it seems to me, know this business pretty well. Many of them have said there is an unbelievable drum beat of speculation.

Mr. CARUSO. Well, I would like to see more data to be able to make that judgment, sir.

Senator DORGAN. Do you think that data would ever exist to allow you to make that judgment?

Mr. CARUSO. I think so.

Senator DORGAN. You said before the Energy Committee you thought this speculation—after I questioned you at some length, you said you thought speculation might contribute 10 percent to the current price of oil.

Mr. CARUSO. Yes. I think in any given day or short term, it could easily be that. Yes. I am just saying that over the longer time frame, the fundamentals can explain most of it.

Senator DORGAN. I will ask one more question. Thank you, Administrator Caruso.

Senator Feinstein?

Senator FEINSTEIN. Why has the Saudi addition of 700,000 barrels a day not lowered oil prices?

Mr. CARUSO. Well, I think it is very hard to get a real handle on what the addition actually has been. As best we can tell, it is probably closer to 300,000 barrels a day. Based on the information we have, they went from 9.4 million barrels a day to 9.7 million barrels a day from May to June of this year. As has been pointed out here, during that same month, we had a decline in Nigerian production, as a result of some rebels who attacked an offshore drilling rig, and I believe it was Shell had to shut it down. That was about 300,000——

Senator FEINSTEIN. Yes, but that might be, but the trend line has been so dominant that even when additional oil is added, it does not make any difference at all.

In your 2007 Annual Energy Outlook, you stated this, and I would like to quote. "The projections in the OCS access case indicate that access to the Pacific, Atlantic, and eastern gulf regions would not have a significant impact on domestic crude oil and natural gas production or prices before 2030. Leasing would begin no sooner than 2012, and production would not be expected to start before 2017. Total domestic production of crude oil from 2012 to 2030 in the OCS access case is projected to be 1.6 percent higher than in the reference case and 3 percent higher in 2030 alone at 5.6 million barrels per day."

Now, in essence, do you stand by that statement today?

Mr. CARUSO. That is our best analysis, Senator Feinstein.

Senator FEINSTEIN. So you are saying drilling in the Outer Continental Shelf effectively will do nothing with respect to price, at least to 2030.

Mr. CARUSO. It will have a small effect, yes, only a small effect.

Senator FEINSTEIN. What is that small effect?

Mr. CARUSO. Oh, I think—I cannot remember precise numbers. I could provide them for the record, but I believe it was less than $1 a barrel.

Senator FEINSTEIN. All right, if you would provide that for the record.

Mr. CARUSO. Yes, I will.

Senator FEINSTEIN. I would appreciate that.

[The information follows:]

OCS PRODUCTION

EIA's Annual Energy Outlook 2007 analysis of expanding Outer Continental Shelf (OCS) access projected that the impact on the domestic oil wellhead price in 2030 would be a reduction of approximately $0.14 (0.3 percent), from $51.25 in 2005 dollars to $51.11. EIA expects that, while the impact in a higher world oil price environment would be greater, the price impact would remain 1 percent or less. Key reasons for the small differences are that oil prices are largely determined on the international market and development of these resources would require considerable time and investment dollars, so greater impacts are not anticipated until after 2030.

Senator FEINSTEIN. I mean, Senator Dorgan asked—you have got to, I think, look for the one thing that is different in all of this. And the one thing that has always appeared to me recently to be different in the marketplace is rampant speculation, one way or another.

One of the things that we learned in the West during the Enron crisis were the depths to which energy traders would go to make a buck, the lack of any kind of a moral compass in that trading community.

And now you have this huge anschluss of hundreds of millions of dollars in the institutional investment community, and that is the only thing I know of that is different.

Do you know of anything else that is different?

Mr. CARUSO. Compared to—I mean, I think in the last 5 years, there is no doubt that there has been a very significant surge in financial capital movement out of equities and other instruments into commodities. Everyone agrees with that. There is a clear correlation. What I think is still missing is the causality, whether we can actually pin it down, and that is where I think, hopefully, the CFTC study that we are working on will shed some light on that.

Senator FEINSTEIN. But you cannot tell me any other major significant thing that has happened other than this, nor can anybody else. And yet, many other people just like you say, oh, it cannot have that kind of price effect, but it is. And it seems to me to debunk it when you do not know—I mean; to me it is just sort of clear like looking at you is clear. This is the elephant in the room that was not in the room before.

Mr. CARUSO. I think another thing that really changed is that in 2004 we had the largest increase in world oil demand that we have experienced since we have been collecting data, and that really limited the amount of spare capacity in the world. That is definitely a change and we still have not recovered from that. So if you wanted to point to a fundamental factor—I am not debunking. What I am saying is I look at what I know and——

Senator FEINSTEIN. It was the incentive for these futures markets to go very long and they did. I do not think anybody expected this kind of effect, whether it is an aberration or not. I have got to believe there is a causal implication.

Mr. CARUSO. And that I hope we can prove.

Senator FEINSTEIN. I hope you can and I think it is really important that you look at it. I think, you know, like Senator Bennett—well, he wants to look at something else. I would like to have staff really look at this, Mr. Chairman, and come back to us. I wrote a letter, I think, on May 22 asking some of these questions, and Mr. Caruso referred to it. I hope I will get a response soon.

Mr. CARUSO. Yes. We hope to get that to you by the end of next week.

Senator FEINSTEIN. Thank you very much. I Appreciate that.

Senator DORGAN. Senator Feinstein, thank you.

The point that Senator Feinstein made about west coast electricity with the Enron Corporation strikes a nerve. I chaired the hearings here in the Senate over in the Commerce Committee. Ken Lay came to my committee, took the oath. We swore him in. He took the Fifth Amendment to all of my questions. He has, of course,

since died. But we know that it was a criminal enterprise. A number of his colleagues are now in prison.

And you know it is interesting. Senator Feinstein was in the hearings that I was in leading up to all of that when the wholesale electricity prices went up like Roman candles and we had the regulators from the Government sitting at these tables. There is nothing going on. Vice President Cheney derided anybody that thought there was some speculation, some manipulation. He was derisive of those of us who were talking about it.

Senator FEINSTEIN. That is right.

Senator DORGAN. There is nothing going on. This is the way the market works. Yes, there is an upward climb that is dramatic. That is the way the market works.

We later found out it was criminal behavior, unbelievable criminal behavior. And the fact is about $10 billion to $15 billion was taken out of people's pockets on the west coast by that criminal behavior.

Senator FEINSTEIN. Forty billion dollars was the cost to California alone of that.

Senator DORGAN. I mean it is pretty unbelievable.

So I tell you that not because I think there is criminal behavior, not because I am alleging anything here. It is just that I am suspicious when agencies come and tell us, well, we see this big line go up, but everything is fine.

The CFTC Chairman came to our committee recently. You know, for 4 or 5 months, he has been saying wherever he could speak that this is just fundamentals. Now, as I said, he had some epiphany after having had a long night's sleep and he woke up and said we have been investigating it for 7 months. Well, which one is true? That you were unconcerned, or was it the fundamentals all this while you have been investigating? I have minimum—minimum—confidence in the Chairman of the CFTC to get to the bottom of anything, let alone this, because he is predisposed to how he already answered it, despite the fact he cannot see what he should know in order to make informed conclusions.

Having said that, I want to go back to one more point, Administrator Caruso. At every point on this run-up—you all make monthly projections. At every point what has happened is we have seen a substantial what you term deviation between what happened and what you expected to happen. Are you saying to me today that in every case it was because there was a change in worldwide production? Because that is what you have largely said, on the production side.

Something obviously happened in every case. What do you think happened in every case to make this so inaccurate in every case?

Mr. CARUSO. Well, I would have to go back and take a look at it, but every month we take a look at every aspect of the fundamentals that we have all been discussing here, seeing whether or not we got it wrong last month, how can we adjust that, have there been any changes in actual data that would change our view, including activities with respect to geopolitical events. So it would be very hard for me, off the top of my head, now to tell you what changed every month, but——

Senator DORGAN. Have you seen a chart like this before?

Mr. CARUSO. Oh, yes.

Senator DORGAN. If I had that chart—have you gone back to your agency and said, hey, guys, what's up? Are you kidding me? We are paying a lot of money to a lot of people to see if we can make projections as best we can and look at what is happening. And I am wondering if you do not have people that say, well, I will tell you what's up, Mr. Administrator. We look at all this data. We see worldwide demand. We see what is happening in terms of consumption. We see the data. That is why we made the projections, but there is something else going on, Mr. Administrator. Do you have anybody inside your agency that says that if you asked them what's up?

Mr. CARUSO. Well, they are looking as hard as they can for what's up, and they are trying to do the best they can every month.

Senator DORGAN. Would you give me the names of the people that are searching for what's up? I mean, you get my point. I do not mean to be a wise guy.

Mr. CARUSO. Sure. The person who is in charge of——

Senator DORGAN. All right. Well, they are good-looking people. And if one of you is in charge of what's up, I am anxious to get periodic reports.

My point is that I would think having studied economics and business and all these issues—I know you do not want this to happen. You are a good agency. This country is advised by your agency. A lot of things happen every month based on your judgment about what is going to happen. And so we need you to get this right. And I do not think it is your fault because something is happening that clearly you do not understand based on this line and probably I do not understand it and Senator Feinstein does not understand it. But I think I know what it is. I do not know the dimensions of it because most of it happens in the dark.

It is called dark money because the CFTC decided of its own volition there are a lot of things happening that they do not want to see. So they do no action letters to say to the Intercontinental Exchange you can trade these commodities to a London-based exchange owned by U.S. companies. You can trade them. In fact, we will let you trade them in Atlanta, Georgia off computer terminals in this country, and we will decide we should not see them. That is unbelievable in my judgment.

But my sense is this is a mistake that you make pretty honestly because it is the way you study economics. Fundamentals should drive price, and it does not have any relationship to price right here. Do you not think that is the case?

Mr. CARUSO. Well, if it is, we definitely are going to do our best to ask you or whoever the proper authority is to give the authority to increase the data collected by the proper people, which in this case is the CFTC, and improve our modeling because bad data, no matter how good the model is, yields bad results.

Senator DORGAN. Well, Senator Feinstein, I appreciate your being here.

Mr. Caruso, let me say, as I said at the start, you are a good person. You run a good agency. Again, I think any qualified person looking at fundamentals would probably come up with the estimates you have come up with, and that is what I regret because

there is dark money out there that no one can understand. So I am just trying to get, as best I can, some notion of what is happening. And I have called you here. My colleagues, I think, have asked good questions.

And I know, as I said, you have traveled around the world with the Secretary to Saudi Arabia. You are weary and tired. Neither you nor your agency probably wanted to come here. Your workers do not want to come here.

I do not mean in any way ever to make fun of your agency, although I do mean to say this line is a far cry from the estimates. But that is because I think something is happening that you cannot see and I cannot see. And I want to find out who is looking for it, and I would like to have a loud amplifier when somebody finds it to be able to hear what they have found.

Mr. Administrator, thank you very much for you time today. I have not talked about your budget so much. As you know, the President has sent us a budget recommendation. We are working on that, but I very much appreciate your time.

Mr. CARUSO. I appreciate your confidence, sir.

ADDITIONAL COMMITTEE QUESTIONS

Senator DORGAN. At this time I would ask the members of the committee to submit for the record any additional questions they have for the witnesses.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR DIANNE FEINSTEIN

Question. On May 22, I wrote to request that EIA analyze oil prices over the past 2 to 4 years in an effort to estimate the impact of the major factors now believed to influence the price of oil, including specifically:

—Changes in geopolitical stability;
—The strength of the dollar;
—Increased oil market speculation;
—The emergence of index fund investments; and
—Market fundamentals such as oil supply, demand, and storage.

EIA models and predicts the future price of oil as one of its primary functions. This analysis will inform Congress as it works to alleviate the burden that currently faces the American people. Considering its great urgency, I am very disappointed that I have not yet received a response. What progress has EIA made in determining the role speculation, the depreciating dollar, and geopolitical instability have played in recent increases in the price of oil?

Answer. On July 2, 2008, the Energy Information Administration (EIA) provided a response to your letter dated May 22, 2008. In short, our analysis to date suggests that market fundamentals—strong demand, disappointing supply growth, concern over actual and perceived supply disruptions, low inventories, very limited spare production capacity, and global refining capacity constraints—are the primary drivers of global oil prices. The current very tight oil market balances and the possibility of further supply disruptions are causing prices to rise to unprecedented highs. Changes in the geopolitical stability of key producers and producing regions—one of the factors cited in your letter—in a supply environment that is already tight also suggest that fear of supply disruptions due to instability is also a fundamental in today's oil market.

Exchange rates are another factor identified in your letter. We find that there has been no systematic and stable relationship between oil prices and exchange rates over time. For example, between January 2007 and March 2008, the value of the dollar against the Euro fell by 29 percent while the price of West Texas Intermediate (WTI) crude oil rose by 93 percent. However, between November 2004 and

November 2006, the value of the dollar strengthened by 12 percent against the Euro, while the WTI spot price rose by 35 percent.

Increased oil market speculation and the emergence of index fund investments are the other factors mentioned in your letter. The increased inflow of funds and participants into the futures markets may affect oil prices to some degree in the short run, but it could also be a symptom of the tight market conditions and resulting high prices, rather than a cause.

Additional analysis is clearly needed, though we suspect it will not be possible to precisely isolate the impacts of various factors affecting oil prices. Notwithstanding our views regarding the role of fundamentals as the dominant factors driving prices higher in today's oil markets, we share your interest in exploring how information from markets in energy derivatives could be used to improve forecasts of oil prices.

Question. In your testimony before the subcommittee, you told me that you are awaiting data from Commodity Futures Trading Commission (CTCF) in order to answer my May 22 letter and that you also stated that you wanted more powers to collect data on your own. Exactly what power are you requesting, does it require legislation, and if so, are you willing to submit draft legislation language?

Answer. In our July 2 response to your letter, we indicated that the increased inflow of funds and participants in the futures markets could affect oil prices to some degree, but also that it might be difficult to precisely isolate the impacts on oil prices. Nevertheless, given its possible use, we are exploring how energy-derivatives trading information could be used to improve oil price forecasts. As I said at the hearing, a challenge we face is that current measures used as proxies for speculative activity, such as total open interest in the New York Mercantile Exchange (NYMEX) futures market, net-long positions of "non-commercial" traders in the NYMEX futures market, and investment in commodity index funds, all have limitations. Ultimately, we really can't quantify the total size and nature of commodity index fund activity, as well as other forms of speculation today. It is our belief that the development of better activity measures and more transparent information regarding activity in markets for energy-related financial derivatives would facilitate execution of a robust econometric analysis responsive to your May 22 letter.

The recently released Interim Report on Crude Oil from the Interagency Task Force (ITF) on Commodity Markets attempted to break down its analysis in more detail, using categories where information is currently available to the CFTC but not publicly reported on a regular basis. That information, though more detailed, still does not break down positions in ways that would allow effective analysis of the index speculation; and so the CFTC has established a "Special Call" for more comprehensive position information from commodity swap dealers and commodity index traders. The ITF indicated in its Interim Report that it expects to add information from the Special Call to its final report. We hope that that additional information and its analysis will allow us to better develop our efforts to incorporate speculative trading information into our forecasts.

However, EIA, which is striving to improve the quality and transparency of physical energy market data, does not have the lead role on derivatives data. Instead, we are actively supporting efforts by the CFTC, the regulator of this activity, to improve the collection of that data. I would expect EIA to be a key user of that data as we explore ways to improve our forecasting activities by incorporating it alongside the energy and economic data we already use in our analysis activities. I do not foresee any difficulty in arranging for appropriate EIA access to such data, nor the need to collect it independently from the CFTC, and consequently, see no need for additional legislation at this time.

Question. In your testimony before the subcommittee, you asserted that increasing speculation may reflect market fundamentals, as investors bet that further shortages will drive up oil prices. However, by definition, institutional traders are long in the oil markets regardless of the market fundamentals because they are using the commodities markets as a hedge against risk in other investments. Why don't you believe that billions of dollars of new investment, all betting that the price will go up could drive up the price? Please explain what effect it's having.

Answer. One of the key challenges we face in answering this question is that current measures that are used as proxies for speculative activity, such as total open interest in the New York Mercantile Exchange (NYMEX) futures market, net-long and net-short positions of non-commercial traders in the NYMEX futures market, and investment in commodity index funds, all have limitations. We really do not know the total size and nature of commodity index fund activity and speculation. The development of better activity measures and more transparent information regarding activity in markets for energy-related financial derivatives would facilitate our analysis of this question. EIA, which is striving to improve the quality and transparency of physical energy market data, does not have the lead role on deriva-

tives data, but we are actively supporting efforts by other agencies such as the Commodity Futures Trading Commission to improve that data. Once such data become available, I would expect EIA to be a user of it as we explore ways to improve our forecasting activities by incorporating it alongside the energy and economic data we already use in our analysis activities.

Question. Do you agree that institutional investors and index traders who never take delivery of oil but own millions of barrels of oil on paper are "speculators?"

Answer. According to the Commodity Futures Trading Commission (CFTC), the distinction between hedging and speculation in futures markets is less clear than it may appear. Traditionally, those with a commercial interest in or an exposure to a physical commodity have been called hedgers, while those without a physical position to offset have been called speculators. In practice, however, hedgers may be "taking a view" on the price of a commodity, and even those who are not participating in the futures market despite having an exposure to the commodity could be considered speculators.

Traditional speculators enter into futures contracts with the intention of reversing their positions before they would be required to deliver (in the case of short positions) or to accept (in the case of long positions) physical delivery of a commodity. Traditional speculators could further be differentiated depending on the time horizons at which they operate. Speculators known as scalpers or market makers operate at the shortest time horizon—sometimes trading within seconds. These traders typically do not trade with a view as to where prices are going and will usually offset their positions soon after entering into them. They typically buy contracts at a slightly lower price than the current market price and sell them at a slightly higher price, perhaps at only a fraction of a cent profit on each contract. Other types of speculators take longer-term positions based on their view of where prices may be headed. Speculators known as "day traders" establish positions based on their views of where prices might be moving in the next minutes or hours, while "trend followers" take positions based on price expectations over a period of days, weeks or months. Through their efforts to gather information on underlying commodities, the activity of these traders serves to bring information to the markets and aids in price discovery.

While hedging and speculation are often considered very different activities, both can promote price discovery in futures markets. In essence, futures prices are a reflection of the opinions of all those entering the market. Moreover, the actions of those who can, but choose not to, enter the futures market are also quite important for price discovery. For example, a commercial trader holding physical inventory, but choosing not to hedge it in the futures market (by taking a short position), will not only withhold a downward pressure on the price, but may also send a signal that prices are expected to rise in the future.

To provide the public with information on the activity of traders in the futures and options markets, the CFTC publishes a weekly Commitments of Traders (COT) report. Traders are classified either as "commercial" or "non-commercial" based on CFTC Regulations. In classifying traders as commercial or non-commercial rather than hedgers and non-hedgers, the CFTC recognizes that the ultimate motivations of traders cannot be observed from the data. That is, while a commercial trader may be matching a futures position against a cash-market price risk, it is not known whether such a trader is doing so on a routine basis in order to minimize ongoing price risks or doing so selectively based on specific market expectations. Thus, some of the trading information captured by the commercial trading category may reflect activity that could be characterized more as speculative rather than hedging.

Question. I have introduced legislation, the Oil Speculation Control Act, to put position limits on institutional investments in oil markets. Please analyze the economic impact of the legislation on oil markets.

Answer. EIA is not in a position to analyze how enforcing limits on commodity market participants would affect trading volumes and/or trading positions. This type of technical analysis is best suited to the Commodity Futures Trading Commission (CFTC), which has the data and expertise needed to address how proposed changes in trading requirements affect market behavior.

Question. In its 2007 Annual Energy Outlook, EIA forecast that "the average world crude oil price declines slowly . . . from a 2006 average of more than $69 per barrel to just under $50 per barrel in 2014 as new supplies enter the market." Did your forecast consider the role of speculation in the energy markets? If not, why not?

Answer. To the extent that trading activity in the forward markets reflects trader expectations about future oil supply and demand fundamentals, EIA's reference price case is intended to capture those factors. The Annual Energy Outlook (AEO) explicitly states that the reference case projection should not be considered a fore-

cast, and the full AEO includes both high and low oil price cases to illustrate the sensitivity of the projection to alternative prices. There are many factors on both the supply and demand sides of the market that affect the price of oil in the short term and the long term. In the short term, unexpected shortfalls of oil due to labor strikes or civil strife, damage to pipelines, changes in inventory behavior, and unexpected increases in demand can all affect near-term oil prices. In developing the out-year prices for the AEO, EIA generally looks at the long-term (to 2030) fundamentals of oil supply and demand. These fundamental factors include the demand for liquid fuels, the expected level of conventional oil production by countries that are not members of the Organization of the Petroleum Exporting Countries (OPEC), the growth of unconventional oil supply, and the expected production decisions of the members of OPEC. It is also worth remembering that the oil price cases for AEO2007 were developed in mid-2006, when spot and futures market oil prices were very different than today's prices. We did not explicitly consider the role of "speculation" in developing the three long-term oil price cases used in AEO2008, since it is very unlikely that forward-market trading activity will affect oil prices over a 20-plus-year time frame.

Question. Does supply and demand explain the rise is oil prices?

Answer. As we stated in our July 2 response to your May 22 letter, and discussed in our answer to your first question, our analysis to date suggests that market fundamentals—strong demand, disappointing supply growth, concern over actual and perceived supply disruptions, low inventories, very limited spare production capacity, and global refining capacity constraints—are the primary drivers of global oil prices. The current very tight oil market balances and the possibility of further supply disruptions are causing prices to rise to unprecedented highs. Changes in the geopolitical stability of key producers and producing regions in a supply environment that is already tight also suggest that fear of supply disruptions due to instability is also a fundamental in today's oil market. The increased inflow of funds and participants in the futures markets may affect oil prices to some degree in the short run, but it could also be a symptom of the tight market conditions and resulting high prices, rather than a cause. We agree that additional analysis is clearly needed, though we suspect it will not be possible to precisely isolate the impacts of various factors affecting oil prices.

Question. EIA's Annual Energy Outlook 2008 forecasts that crude oil prices will decline gradually from current levels to $57 per barrel in 2016 ($68 per barrel in nominal dollars), as expanded investment in exploration and development brings new supplies to world markets. In developing its oil price outlook, EIA explicitly considered growing world consumption, the outlook for oil production, and OPEC behavior. Did EIA consider changes in geopolitical stability, the strength of the dollar, increased oil market speculation, or the emergence of index fund investments in oil futures markets?

Answer. EIA considered these factors differently in the short-term than in the long-term portions of its AEO2008 reference case oil price path. In the first few years of the projection, EIA gives weight to current geopolitical conditions, including the effects of civil unrest and expectations that national oil companies may chose to restrain their investments in oil production capacity. In the longer term, EIA gives increased weight to underlying economics of undeveloped oil resources and allows them to be produced more rapidly than current conditions might allow. EIA also includes projections for lower and higher oil price cases in all editions of the AEO, including AEO2008. One of the major determinants of expected world consumption of liquids is the expected level of economic activity reflected in each country or region's gross domestic product (GDP). In developing the outlook for GDP, the expected strength of the dollar over the projection period and its implications are considered. To the extent that trading activity in the forward markets reflects trader expectations about future oil supply and demand fundamentals, EIA's reference price case is intended to capture those factors. As noted in the answer to a prior question, our reference price case does not capture the extent to which forward markets rise or fall based on other considerations.

Question. The Ten-in-Ten Fuel Economy Act required NHTSA to set fuel economy standards at the "maximum feasible" level from model year 2011 to 2019. To determine the maximum feasible level, NHTSA considers the consumer savings of reduced fuel use and the social benefit of reducing air pollution. Unfortunately, the price of gasoline NHTSA used to calculate its recently released draft CAFE standard was $2.26 per gallon in 2016 and $2.51 per gallon in 2030—far below what consumers are paying at the pump today—based on EIA's estimate. You recently told a House Committee that NHTSA should be using the EIA's high gas price scenario, which estimates prices will range from $3.14 in 2016 to $3.74 in 2030, when it sets its fuel economy standards. Will you write to NHTSA to make this recommendation?

Answer. As I stated at the June 11, 2008, hearing before the House Select Committee on Energy Independence and Global Warming, NHTSA has our high oil price case from the Annual Energy Outlook 2008; and it is the prerogative of that agency as to which price case—reference case or high price case—it chooses to use in its rulemaking. As noted in your question, I also stated that since the market is on a higher oil price path now, I would recommend use of our high price case. Subsequent to the hearing, my office has discussed this issue with Department of Transportation staff.

Question. When will EIA update its Energy Outlook to more accurately reflect changes in the oil markets that have occurred in 2008?

Answer. The Annual Energy Outlook is an annual publication, with the early release (only the reference case) typically posted on the EIA Web site in December and the complete version released in March. The full AEO takes between 6 and 8 months to complete. The oil price cases for the AEO are developed at the beginning of the process, so the three oil price paths considered in the AEO2008 were developed in the summer of 2007. Given the lengthy gestation period for each edition of the AEO, there are no midyear updates of the AEO oil price paths. However, we do update the oil price forecast in the Short-Term Energy Outlook (STEO) on a monthly basis. Unlike the STEO, the AEO provides users with several alternative oil price paths.

Question. When will EIA release an updated high cost estimate?

Answer. In addition to EIA's longer term energy projections, EIA releases a monthly Short Term Energy Outlook (STEO). Our most recent STEO, released on July 8, 2008, stated that global supply uncertainties, combined with significant demand growth in China, the Middle East, and Latin America, are expected to continue to pressure oil markets. We projected that West Texas Intermediate crude prices, which averaged $72 per barrel in 2007, will average $127 per barrel in 2008 and $133 per barrel in 2009. The oil price paths (low, reference, and high) for AEO2009 are currently under development. The AEO2009 reference case is scheduled for release in December 2008, with the other cases scheduled for release in March 2009.

Question. In every EIA estimate since 2005, EIA has forecast that the price of oil has peaked and should soon drop:

—In 2005, EIA estimated that oil prices would decline to $46.90 per barrel in 2014;

—In 2006, EIA estimated that oil prices would decline to $46.90 per barrel in 2014;

—In 2007, EIA forecast that oil prices would decline to just under $50 per barrel in 2014; and

—This year's forecast predicts that oil prices will fall to $58 per barrel in 2016.

To me, this suggests that your analysts, who look at supply and demand, cannot explain why the price of oil keeps going up. Is it possible that EIA's analysis is so consistently wrong because it fails to consider the price of speculation in the marketplace?

Answer. Three points ought to be noted about the observations in the first four bullets above. First, the oil prices quoted for 2014 and 2016 are in real, not nominal, terms. It is true EIA's reference case oil price projections showed a peaking, in real terms, but this was not the case for the nominal price of oil of these outlooks. Second, the upward reassessment of the real oil price by 2014 (and 2016) in the reference case is evidence of the fact that EIA continues to monitor the world oil market, which is rapidly evolving due to changes in geopolitical and fundamental economic factors. The AEO2008 oil price cases were developed during the summer of 2007, when world oil prices in spot and futures markets were much lower than they are today. Third, 2014 and 2016 are several years in the future and thus it is not possible to assess the projection accuracy of EIA's outlook for those years. Lastly, the high oil price and the low oil price cases are presented in both the Annual Energy Outlook and International Energy Outlook to take into account the uncertainties surrounding these factors, particularly the outlook for oil production and OPEC behavior.

Question. On June 22, 2008, Red Cavaney, President & CEO of the American Petroleum Institute, told ABC News that "Every single available drilling rig, drill ship is in use—being used right now. You can't go and drill when you don't have equipment. We are not magicians as an industry." According to data compiled for ODS-Petrodata's monthly World Rig Forecast—Short-Term Trends report, worldwide demand for mobile offshore drilling units will continue to grow throughout the next 12 months, resulting in drilling programs being postponed. If every oil drilling ship and every rig is already in use, would you agree that oil companies already have more access to offshore areas than they have equipment to exploit?

Answer. EIA does not track the availability of drilling ships or rigs. Over time, we would expect the number of onshore and offshore drilling rigs to change in a manner that depends on the relationship between the rental rates and capital costs of the equipment in question.

Question. Would you agree that opening new areas of the outer continental shelf would not increase the amount of exploration?

Answer. The opening of new areas of the outer continental shelf (OCS) to Federal oil and gas leasing is not expected to increase the amount of exploration in the near-term, but would likely increase the amount over the longer term. The opening of Federal offshore moratoria areas provides oil and gas companies more options for exploration and production projects than would otherwise be the case if these moratoria regions remained unavailable. There is a significant volume of undiscovered, technically recoverable oil and natural gas resources in the Pacific, Atlantic, and Eastern Gulf Coast OCS moratoria areas; however, conversion of those resources to production would require both time and money. Another factor slowing development is that the average field size in the Pacific and Atlantic regions tends to be smaller than the average in the Gulf of Mexico, implying that a significant portion of the additional resource would not be as economically attractive to develop. Oil and gas companies are constrained by a number of factors that restrict their ability to fund and develop the number of oil and gas exploration and production projects in any particular year, including the number of onshore and offshore drilling rigs that are currently available in the United States and the limited pool of trained personnel.

Over the longer term, it is expected that opening these areas would expand the size of the industry with resultant increases in the number of rigs and personnel. This would result in additional exploration that would eventually increase domestic oil and gas production.

CONCLUSION OF HEARING

Senator DORGAN. This hearing is recessed.

[Whereupon, at 4:18 p.m., Wednesday, June 25, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

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