AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 109–1133

ENERGY PRICING

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

SEPTEMBER 21, 2005

Printed for the use of the Committee on Commerce, Science, and Transportation

U.S. GOVERNMENT PRINTING OFFICE

66–218 PDF WASHINGTON : 2011

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

TED STEVENS, Alaska, *Chairman*

JOHN McCAIN, Arizona
CONRAD BURNS, Montana
TRENT LOTT, Mississippi
KAY BAILEY HUTCHISON, Texas
OLYMPIA J. SNOWE, Maine
GORDON H. SMITH, Oregon
JOHN ENSIGN, Nevada
GEORGE ALLEN, Virginia
JOHN E. SUNUNU, New Hampshire
JIM DeMINT, South Carolina
DAVID VITTER, Louisiana

DANIEL K. INOUYE, Hawaii, *Co-Chairman*
JOHN D. ROCKEFELLER IV, West Virginia
JOHN F. KERRY, Massachusetts
BYRON L. DORGAN, North Dakota
BARBARA BOXER, California
BILL NELSON, Florida
MARIA CANTWELL, Washington
FRANK R. LAUTENBERG, New Jersey
E. BENJAMIN NELSON, Nebraska
MARK PRYOR, Arkansas

LISA J. SUTHERLAND, *Republican Staff Director*
CHRISTINE DRAGER KURTH, *Republican Deputy Staff Director*
DAVID RUSSELL, *Republican Chief Counsel*
MARGARET L. CUMMISKY, *Democratic Staff Director and Chief Counsel*
SAMUEL E. WHITEHORN, *Democratic Deputy Staff Director and General Counsel*
LILA HARPER HELMS, *Democratic Policy Director*

CONTENTS

	Page
Hearing held on September 21, 2005	1
Statement of Senator Allen	10
Statement of Senator Boxer	8
Prepared statement	9
Statement of Senator Burns	5
Statement of Senator Cantwell	4
Statement of Senator Inouye	2
Prepared statement	2
Statement of Senator Lautenberg	7
Statement of Senator E. Benjamin Nelson	3
Statement of Senator Pryor	6
Prepared statement	7
Statement of Senator Rockefeller	12
Statement of Senator Smith	11
Statement of Senator Snowe	57
Statement of Senator Stevens	1

WITNESSES

Bustnes, Odd-Even, Consultant, Energy and Resources Services, Rocky Mountain Institute	24
Prepared statement and attachments	26
Seesel, John H., Associate General Counsel for Energy, Federal Trade Commission	62
Prepared statement	64
Wells, Jim, Director, Natural Resources and Environment, U.S. Government Accountability Office	76
Prepared statement	79
West, J. Robinson, Chairman, PFC Energy	12
Prepared statement	15

Page

CONTENTS
Energy Pricing—Afternoon Session

Hearing held on September 21, 2005 99
Statement of Senator Inouye 136
Statement of Senator Lautenberg 139
Statement of Senator Pryor 143
Statement of Senator Stevens 99

WITNESSES

Caruso, Guy, Administrator, Energy Information Administration, U.S. Department of Energy 126
Prepared statement 127
Kosh, Ronald W., Vice President, Public Policy and Government Affairs, American Automobile Association (AAA) Mid-Atlantic 130
Prepared statement 132
Slaughter, Robert G., President, National Petrochemical & Refiners Association (NPRA) 104
Prepared statement 106
Slocum, Tyson, Research Director, Public Citizen's Energy Program 120
Prepared statement 121
Wyden, Hon. Ron, U.S. Senator from Oregon 99
Prepared statement 102

APPENDIX

Response to written questions submitted by Hon. George Allen to Jim Wells 169
Response to written questions submitted by Hon. Maria Cantwell to:
John H. Seesel 173
Robert G. Slaughter 177
Jim Wells 172
J. Robinson West 171
Response to written questions submitted by Hon. Ted Stevens to:
Odd-Even Bustnes 155
John H. Seesel 164
Rocky Mountain Institute, supplementary information 165

ENERGY PRICING

WEDNESDAY, SEPTEMBER 21, 2005

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:05 a.m. in room SD–562, Dirksen Senate Office Building, Hon. Ted Stevens, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKA

The CHAIRMAN. My apologies for being a little late. This is the first of two sessions today that will address the issue of energy prices. We'll hear, throughout the day, from representatives of the oil production and refinery sectors to consumer and trade groups, and the Federal Government.

Senator Inouye, and I, thank our witnesses for being here and for agreeing to join us on very short notice.

This hearing examines the short- and long-term rise in domestic energy prices, and will explore whether price-gouging is occurring, or whether the market is controlling prices in response to an abnormal market circumstance.

Over the past 2 years, we've seen prices triple, with oil prices rising to $70 a barrel. The impact of high energy prices can be seen at all levels of our economy. It has resulted in job losses, trade deficits, and constraints on consumer spending and economic growth. The consequences of rising energy costs cannot be underestimated. All Americans feel the economic impact of this crisis. They're paying more at the pump, and businesses are beginning to pass energy costs on to consumers by increasing the prices of basic goods and services. I'm concerned about the allegations of consumer price-gouging in the wake of Hurricane Katrina, particularly with respect to retail gasoline. And today's hearings will explore those allegations.

Senator Inouye?

Let me say that we've indicated that opening statements by Senators will be no more than 2 minutes, and we'll listen to the witnesses, who will each have 10 minutes, then we'll have a round of questions, 5 minutes for each Senator.

Senator Inouye?

STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

Senator INOUYE. Thank you very much. There have been many painful lessons in the wake of the disaster, but two of the most critical fall squarely in the jurisdiction of this committee: runaway gas prices, and our economy's dependence upon oil. While the disruption of the Gulf Shore production was bound to have an impact on the prices, I believe that it fails to explain how, for example, consumers in Atlanta, Georgia, were asked to pay $6 a gallon, more than twice the national average. Many of the markets saw similar sudden increases. These prices, which, in most cases, now are closer to the national average, suggest to some people, that they're taking advantage of a national tragedy to line their pockets, and we need to make certain that the Federal Trade Commission is exercising authority to ensure consumers pay fair prices for fuel, as well as other consumer products. We also need to protect consumers from the excesses of market power concentrated in a limited number of energy companies.

Also, Katrina demonstrated that this country remains perilously dependent on oil, regardless of where it is produced. So, I believe the time is right to re-examine the fuel efficiency standards of our automobiles.

The Senate examined this issue in 2002, and today the circumstances call for us to return to the issue. Oil demand is the key to our dependence, and a major source of our economic vulnerability. And it can be an Achilles Heel for our Nation, or a challenge that prompts policymakers and our corporate citizens to be international leaders in the effort to reduce consumption.

So, I look forward to working with you, Mr. Chairman, to address these needs.

[The prepared statement of Senator Inouye follows:]

PREPARED STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

There have been many painful lessons in the wake of the Katrina disaster, but two of the most critical fall squarely in the jurisdiction of our Committee, runaway gas prices, and even more importantly, our economy's insatiable demand for oil.

Gas prices, already astronomical by U.S. standards, skyrocketed in Katrina's wake, and last Monday, they officially reached an all-time high, even as adjusted for inflation. Before Katrina, there was little doubt that exorbitant gas prices were having a sustained, detrimental impact on our economy, not to mention the finances of every American household.

While the disruption to Gulf shore production was bound to have an impact on prices, it failed to explain how, for example, consumers in the Atlanta market were asked to pay $6 a gallon, more than twice the national average. Many other markets saw similar, sudden increases. These jaw-dropping prices, which in most cases are now closer to the national average, suggest a rank opportunism that cannot be tolerated.

The Federal Trade Commission (FTC) is duty-bound to ensure that consumers are not abused, particularly in times of national distress. The FTC is our Nation's national authority on price-gouging. Americans should have every confidence that the government, through the FTC, will intervene when commercial entities take blatant advantage of national events to gouge consumers, both today or when the next natural, or man-made, disaster occurs.

In addition to protecting consumers against price-gouging, the FTC also reviews mergers in the energy industry, an industry which has seen considerable consolidation in recent years. Many have raised concerns that consolidation has concentrated market power in too few companies and that consumers can do little but accept steady price hikes.

To date, the FTC has taken a minimalist approach to examining the dramatic price changes. The Commission must be vigilant, and it is the responsibility of this Committee to hold it accountable. If the Commission lacks specific, necessary authorities to pursue price-gouging, or views its consumer role narrowly, then we need to provide to them authority and guidance. The FTC's work can have an important effect, and recent price spikes, well beyond Katrina's impact, indicate that its services are needed.

For better or for worse, Hurricane Katrina has shed light on many of our country's shortcomings. Setting aside the immediate issue of price-gouging, Katrina and its aftermath spelled out in no uncertain terms that this country remains perilously dependent on oil, regardless of where it is produced. It is a profound vulnerability that has both economic and national security implications, and we cannot continue to ignore it.

Similarly, we cannot have an honest discussion about energy resources and pricing if we do not examine our country's growing demand for oil, a demand that is further complicated by the burgeoning economies of China and India. Increased domestic production, even under the most optimistic forecasts, does not even begin to dent our escalating appetite for oil, derived primarily from our transportation needs.

One of the most immediate and effective things we can do to remedy this dependence is to increase the fuel efficiency standards of our automobiles in a meaningful way. The technology currently exists to double our oil efficiency, and employing this technology would not only reduce our national dependence, it would reduce fuel costs for every American. The time has come to make this happen for the sake of our long-term economic strength, not to mention our long-term foreign policy.

Fuel efficiency standards are the jurisdiction of this Committee. As many on this panel will recall, we helped to establish the Nation's first corporate average fuel economy (CAFE) standards in 1975, following the oil crisis of the early 1970s and the growing, national concern over the Nation's energy security.

Today, the factors are equally, if not more, volatile: the unpredictability of international supply, the limits of our domestic supply, the growth of our global competitors, our own escalating demand, and Katrina's stark reminder of our dependence and vulnerability. I believe the time is ripe to re-examine the Nation's fuel efficiency standards. It is quickly becoming a national imperative, and this Committee should take the lead.

The Senate took this on in 2002, but we did not have the political will to get it done. Today, the circumstances are different, and the necessity is unambiguous. Oil demand is the key to our dependence and a major source of our economic vulnerability. It can be a vice that drags us down, or the challenge that prompts policymakers, and our corporate citizens, to be international leaders in the effort to reduce consumption.

I look forward to hearing more from our witnesses today about how we can better protect our Nation's consumers from runaway gas prices, and how we can curtail our spiraling oil demand. These are two issues that will make or break America's economic future.

The CHAIRMAN. Thank you.

Senator Nelson, you are next.

STATEMENT OF HON. E. BENJAMIN NELSON, U.S. SENATOR FROM NEBRASKA

Senator BEN NELSON. Thank you, Mr. Chairman. I'll be brief.

Now, I, like many of my colleagues, go home almost every weekend, and I was at home for most of the month of August. When I went around the state, there was one dominating issue that Nebraskans wanted to talk to me about, that was before the unfortunate events brought on by Hurricane Katrina—the high price of gas. And not just gasoline for their cars, but also rising natural gas costs, as well.

Nebraska's people like to talk about what's going on in their lives, and I have the good fortune of hearing a little bit about everything. When nine out of ten people are talking to me about gas prices, I know it's time to find the answers to the questions that they're asking.

I realize that inquiries about gas prices have been conducted in the past, and that they're pretty popular around this time of the year, because price surges always occur around Labor Day. But, as prices begin to fall, interest in determining why they reach record levels sometimes diminishes. But not this year. People continue to ask, and they want to know what's happening.

According to the American Petroleum Institute, Nebraska has the distinct honor of being the only state west of Arkansas, to see prices jump more than 50 cents per gallon since August 30, so I have a serious question. Why Nebraska? And they want to know. And we're going to find out.

In many cases, we saw pump-price increases of 20, 30, 40 cents, and even higher, in a single day. Why such a dramatic increase? We need to find out.

What role do speculators play in establishing price? Let's find out. Many have suggested that speculators and the exchanges are there to try to control and stabilize prices, rather than destabilize prices. These questions and others are important. Every part of our Nation's economy is impacted by these increases, including the natural gas prices. And I'll be brief here, but I received a letter, and I spoke with the Mayor of Fremont, Nebraska, and in his letter he said, "With the high price of gasoline at the pump receiving all the headlines, no one is watching the cost of natural gas." I'm not sure that's the case, but it seems to be the case.

So, we've got a problem here. We've got a problem back in our home states. We need to fix it. Many of us in the Senate, in this particular Committee, have introduced legislation to look into price-gouging, energy prices, and market manipulations. We all have the same end goal: to protect the American consumer. So, we need to find out the answers, and I hope we will make a major start on that today.

Thank you, Mr. Chairman.

The CHAIRMAN. Senator Pryor?

Senator PRYOR. Thank you, Mr. Chairman.

Although, I must say, I think Senator Cantwell was here before me.

The CHAIRMAN. I'm sorry——

Senator PRYOR. I think she was here before I was, Mr. Chairman. Go ahead.

The CHAIRMAN. Very well.

Senator Cantwell?

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Thank you, Mr. Chairman.

Thank you for having this hearing. We had a similar hearing in the Energy Committee about a week ago, and I think it is of the utmost importance to discuss what Congress can do about predatory pricing and helping the American economy.

We've already seen the devastation the cost of fuel, which has been increasing for the last year and a half, has had on our economy. Just recently, we saw the impact on the airline industry, which has experienced a 293 percent increase in jet-fuel prices over the last several years. And, in my state, we've seen gas prices—

even though we're supposed to be an isolated western market—gas prices go from $1.36 a gallon to now over $3 a gallon.

I think it is our responsibility to do something about this, and that is why yesterday I introduced legislation, along with 20 or so of my colleagues, to establish a Federal statute similar to laws already implemented in about 23 states to allow predatory pricing to be addressed at a national level. I think this is something we should have at the Federal level, and we should institute that legislation as soon as possible.

But, in addition, Mr. Chairman, I believe that our committee should conduct a special investigation of the oil industry and on predatory pricing. The reason I say that is this Committee has, in the past, played a vital role on issues such as automobile marketing practices, freight pricing practices, and port waterfront racketeering. One of our colleagues investigated a company in my state in the last year, and it was Senator Dorgan's ability to get subpoena power, when he was the Chairman of the Subcommittee, that allowed us to get some documents in the Enron case that were so valuable. Senator Smith played a vital role in oversight of the Federal Energy Regulatory Commission, in getting them to move on the investigation of the Enron Corporation after they had dropped the ball.

I think it's very critical that this Committee continue to play a role, and I hope you and Senator Inouye will consider moving forward on those special investigations, so that Congress can make sure that we have the oversight role and responsibility to continue to push the FTC and others for getting an investigation done.

Thank you.

The CHAIRMAN. Thank you.

Senator Burns?

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

Senator BURNS. Thank you, Mr. Chairman.

I think there are some questions out there that we have got to ask. In the Commerce, Justice, and Science Appropriations bill, we asked the FTC to start their work on an investigation of the price-gouging or predatory pricing. I don't know how far that will get. It's hard to define. But I know, in my state—and, like Senator Nelson's, that's what they're asking. It's harvest time. The high use of diesel fuel to harvest the crop, get it to market, and then get it to the coast for export—we had an 11 percent surcharge put on our rails. In Montana, we've only got one rail, and I think it spurs the discussion again on captive-shipper. The same thing happened on our coal that comes out of our part of the country, and how that affects the energy price of electricity that is being produced around the country. It also says a little bit to the huge amounts of natural gas that we have in this country that we can't get to. They won't allow us to get to it. And all of these—I think all of these things come together, and Katrina brought them together for us, to see that some of the policies that we've created in this Congress have crippled us in a way to not only—to balance the supply and-demand scale, but also to develop.

We're ahead—again, in agriculture, when you start taking about natural gas, because our fertilizer prices are going to go up another third next year. And let me tell you that I got some scale tickets the other day, from 1948, from a farmer that sold his wheat at the elevator for $2.48 a bushel. That's what we're selling wheat for right now. Now, how much more can the American people ask of agriculture, when we buy retail, sell wholesale, and pay the freight both ways? And it is crunch time.

And I thank the Chairman for holding this hearing.

The CHAIRMAN. Thank you very much.

Senator Lautenberg?

Senator LAUTENBERG. Did we pass Senator Pryor, who was here ahead of me?

The CHAIRMAN. I'm sorry, Senator Pryor. Thank you very much.

STATEMENT OF HON. MARK PRYOR,
U.S. SENATOR FROM ARIZONA

Senator PRYOR. Thank you. Thank you, Mr. Chairman. Thank you, Mr. Lautenberg. Thank you.

The CHAIRMAN. You shouldn't be so gentlemanly.

Senator PRYOR. Thank you very much.

I want to first thank Senator Stevens, and Senator Inouye, for holding this hearing today. I wrote them a letter a few weeks ago, and they've been very responsive, very helpful. And I appreciate your leadership on this. I'm going to echo some of the comments that my colleagues made, but also I want to echo comments I heard in Arkansas when I was home over the last few weeks, especially during the August recess. Like your constituents, mine have gone to the gas pumps in recent weeks, recent months, and they've filled up their tanks at record-high prices. And it's very difficult for them to then open the business page and see that the oil companies are making record-high profits. And that's why I've come back, and I want to thank all of my colleagues who helped in passing the amendment we did on the floor last week about price-gouging in the wake of Katrina.

But this does impact everybody. It impacts farmers and families. And, you know, it impacts state and local government, as well. In Arkansas, we're looking at, say, the Arkansas State Police, that it's busting their budget on their vehicles being on the road, counties who have road crews that, you know, do county roads, et cetera, it's busting their budgets, as well, not to mention school districts, to keep all the school buses going. So, this has a big impact on everybody, every sector of the country, and every section of our U.S. economy. I'm afraid that it won't take very long at all for this to become very inflationary and very hurtful to the U.S. economy.

So, Mr. Chairman, I want to, again, thank you for your leadership on this, and thank Members of the Committee for their leadership, as well.

Thank you.

[The prepared statement of Senator Pryor follows:]

PREPARED STATEMENT OF HON. MARK PRYOR, U.S. SENATOR FROM ARKANSAS

Senator Stevens, Senator Inouye, I want to thank you for holding this hearing today on an important issue which affects consumers and businesses throughout the Nation.

During my travels in Arkansas this past August, I met with Arkansans from every demographic group imaginable, and they all expressed concern and frustration over escalating gasoline prices. This, mind you, was prior to Hurricane Katrina, which wreaked havoc on our Gulf Coast and resulted in a further increase of fuel prices.

Farmers, truckers, parents, business executives from companies both large and small, all feel the consequences of the dramatic escalation in gasoline prices we have witnessed over the last year. Furthermore they are all angry about the substantial price hikes they have faced in the aftermath of Hurricane Katrina.

I am here today to acknowledge those voices, to ensure my constituents that their concerns are not falling on deaf ears, and to work with my colleagues on an adequate public policy response to what could become a severe economic crisis.

Hurricane Katrina exposed more than inadequate government responses to emergency situations; it also exposed the inability of the oil and gas industries to respond to disaster without shortages and unconscionable price-gouging at the pump.

I quote Dr. Mark Cooper of the Consumer Federation of America, who testified yesterday at a similar hearing on gas prices. "If the measure of performance of an economic sector is adequate supplies at stable prices, then this industry has failed the consumer, not just in the wake of Katrina, but also repeatedly over the past 5 years."

During my tenure as Attorney General of Arkansas, our state saw a precipitous rise in gasoline prices after the events of 9/11. Arkansas statutes allowed me to file suit against several retail gas operations who were accused of disruptive trade practices leading to 11 successful prosecutions.

While we, as a Committee, do not have the prosecutorial power wielded by an attorney general, we do have oversight responsibility over Federal agencies, such as the FTC, that are responsible for monitoring energy markets to ensure that consumers are protected from unjust exercises in market power by the oil and gas industry. I look forward to hearing from the FTC and all of the other witnesses here today.

The CHAIRMAN. Thank you. My apology, again, Senator.

Senator Lautenberg?

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Thanks, Mr. Chairman.

And it's not unusual to see you leading a fight back when we see that people are being taken advantage of.

We ought to start in place, number one, by getting tough with the Saudi Arabian/OPEC cartel. They drive the prices up for gas by imposing illegal quotas. Now, for years, OPEC's illegal quotas have kept the price of oil up, by keeping production down. So, OPEC, which sits on 75 percent of the world's oil, only pumps 40 percent of the world's oil production. And that's because they've intentionally slowed down oil drilling and exploration.

And I've introduced a bill that would ask the Administration to immediately bring a formal complaint against OPEC in the WTO. Now, OPEC's tactics are illegal under WTO rules. And the Saudis and a couple of the others are not yet members. They want to be. But there are rules in the WTO that says no cartels, no compact that engineers prices or trade barriers can be a member. So, we want to tell the Saudis that if they want to join the WTO, they've got to play by the rules, and that means no cartel.

Whenever Saudi Arabia has been in trouble, like when they were threatened by Iraq in 1990, they dialed 9-1-1. And what did we do? We delivered over a half a million troops to keep that country from

being overtaken. And what do we get from them in return? Manipulation of the oil markets so we pay more at the pump. And we shouldn't tolerate it.

So, the Administration needs to stop holding hands with the Saudis and start holding them accountable.

And I thank you, Mr. Chairman, for your leadership on this.

The CHAIRMAN. Thank you very much. And I appreciate your limiting it.

For the information of the Senators who have just arrived, we have requested that the opening statements be limited to 2 minutes.

Senator Boxer?

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

Senator BOXER. Yes, I ask that my full statement be placed in the record.

The CHAIRMAN. All statements submitted will be in the record.

Senator BOXER. OK.

So, first let me thank you, Mr. Chairman, because what I've found since the mid-1990s when California started getting hit with higher prices than any other state—and I used to talk to my colleagues about this—what we found is, when we shine the light on what's going on, that, in and of itself, seems to have a good impact on the oil industry. And so, thank you for this. I think it's quite important—and I thank the other committees who are doing the same thing.

I would say that we've learned a few things in California, and I want to share them very quickly in this 2 minutes.

First, we found that when we would contact the FTC, they would be very responsive, but, at the end of the day, whether they were Democratic Administration or Republican Administration, they did very little. We need to put more focus on them and give them, I think, more courage to act. For example, they found, in my state, zone pricing and redlining. They did place very, I would consider, mild conditions on some of the larger mergers. They did not respond to our point that refineries were being taken offline for so-called maintenance, which was very similar to what happened to California during the power crisis with the Enron scandal. We found that, "Oh, gee, there were so many—so many outlets being maintained," when, in fact, it just wasn't true. They were creating artificial shortages.

Now we hear from eight Governors. They wrote to President Bush. And they're very concerned that the oil companies are taking advantage of Hurricane Katrina, and certainly not making any sacrifices. And, as Senator Pryor said, we see record profits, huge amounts of money going to the heads of these organizations. And I have no problem with people getting what they deserve, if it's fair and square. But if our people are suffering, and they can't fill up their cars, it doesn't sound very fair and square to me.

I think that Senator Cantwell has some very good ideas in legislation she'll be proposing. I think we really need to have automatic investigations when these prices just move so quickly, without any reason or rhyme. I think that would have a salutary effect.

And I look forward to hearing from our witnesses.
[The prepared statement of Senator Boxer follows:]

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

Thank you, Mr. Chairman, for responding to my request for holding this hearing today.

The rest of the Nation is now confronting what California has been dealing with over the last few years—extremely high gasoline prices. In California, gasoline at or over $3 per gallon is not a recent event.

Now that the rest of the country is "catching up" to California, let me share with the Committee, how, over the years, I have fought to protect Californians from unfair and unjust gasoline prices. Perhaps there are some lessons to be learned.

The first front on which I fought was in calling for the Federal Government to provide oversight of the oil and gasoline market.

- In 1996, I asked the Energy Secretary to investigate possible price-gouging in California.
- In August 1997, I asked the Energy Secretary and the Attorney General to take the necessary steps to ensure fair gasoline prices for California drivers.
- In March 1998, I asked the FTC to launch an investigation of anti-competitive oil company prices throughout California.
- In August 1998, with several gas station operators, I asked the FTC to open a formal investigation of anticompetitive practices in the California oil industry.
- In May 1999, I asked the FTC to examine whether anti-competitive activities were to blame for slower than anticipated gas price reductions.
- In April 2002, I asked the FTC to investigate possible anti-competitive behavior in the gasoline market.
- In February 2004, I asked the FTC to investigate the high gasoline price situation, focusing on manipulation in the market.

Out of all these requests for the Federal Government to do its job, during both the Clinton and Bush Administrations, the only thing that the FTC did was find evidence of "redlining." But, even then, they did not do anything about it, saying it wasn't illegal.

However, I have found that when I—or others—called for investigations into high gasoline prices and possible market manipulation, gasoline prices went down.

The second front was in fighting to ensure that every merger is carefully examined, so companies do not have too much market power. In some cases, companies were forced to divest assets.

- In June 1997, I asked the FTC to block the proposed joint venture between Shell and Texaco. The FTC agreed with my concerns and required the divestment of gas stations in the San Diego area before allowing the joint venture to proceed.
- In 1998, I opposed the BP/Amoco and the Exxon/Mobil mergers and asked the FTC to oppose both mergers.
- I called on the FTC to require oil companies, as a condition of allowing mergers to proceed, to guarantee access to oil and gasoline for independent refiners and nonbranded gas stations. This would promote competition to keep prices in check.
- In June 2001, I urged the FTC to examine Valero Energy Corporation's proposed purchase of Ultramar Diamond Shamrock Corporation and this sale's potential impact on consumers in California. The FTC required that a refinery be sold as a condition of the merger.
- This year, I told the FTC to oppose Valero Energy Corporation's planned acquisition of Premcor, as consolidation would further decrease competition in the industry and drive up prices.

The third front on which I have fought is to ensure an adequate supply.

- Last year, I opposed the closing of the Bakersfield refinery by Shell. Eventually, contrary to Shell's original intention, the refinery was sold and production continued.
- I have worked to ensure that refineries are not taken off-line under the guise of routine maintenance.

- In the 106th and 107th Congresses, I introduced legislation to ban the exportation of oil from Alaska's North Slope.
- I have repeatedly urged the President to pressure OPEC to increase production and to use the Strategic Petroleum Reserve (SPR). We were repeatedly told that opening SPR would have no effect. Well, SPR is finally being used and so far it appears to be helping.

The fourth front is increasing efficiency. We need to increase CAFE standards, which is in this Committee's jurisdiction, and promote hybrids.

This summer, NHTSA proposed a new CAFE standard for SUVs. However, it is not a meaningful increase. The technology exists for good fuel efficiency. The Toyota hybrid Prius gets over 50 miles per gallon in the city.

Mr. Chairman, these are the lessons of past experience: we should be protecting American consumers with greater oversight of the oil and gasoline industry, by ensuring an adequate supply of oil and gasoline, and by promoting efficiency. What we should not do is just sit by and watch the oil companies' profits increase at the expense of the American consumer.

Let me talk briefly about those profits because there seems to be a complete disconnect between what is happening in the market and oil company profits. Over the same period as last year, 2005 first-quarter profits are skyrocketing: Exxon-Mobil—up 44 percent, BP—up 29 percent, Shell—up 38 percent, and ConocoPhillips—up 80 percent. This is far more than crude oil prices have increased.

Exxon Mobil announced it is raking in profits of $110 million a day, 60 percent higher than its daily profits a year ago. At this rate, the company will achieve a profit of $10 billion this quarter, which, according to the *Boston Herald,* would be more net income than any American company has ever made in a quarter.

We have a responsibility to protect the American consumer. This Committee should begin with the following steps.

First, pass Senator Cantwell's bill that gives the FTC explicit authority to investigate gasoline price-gouging, and new authority to prohibit anti-competitive activities.

Second, pass my bill that would require the Federal Trade Commission (FTC) to automatically investigate the gasoline market for manipulation whenever prices increase at a very rapid rate.

Third, pass legislation to increase CAFE standards.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Allen?

STATEMENT OF HON. GEORGE ALLEN, U.S. SENATOR FROM VIRGINIA

Senator ALLEN. Thank you, Mr. Chairman. Thank you for expediting this hearing on a very important matter. All our thoughts and prayers are with the people in southeast Louisiana, Mississippi, and Alabama, and those who are working to restore their lives.

This disaster of Katrina points out something that I've been saying a long time, and I know this is your shared views, as well, Mr. Chairman, and that is our energy policy in this country affects our national security, our jobs, and also our competitiveness.

There are several things that have been pointed out here that I think need to be addressed. Number one is the demand. Number two is the regulations. Number three is the supply.

Insofar as the supply is concerned, we do need to get more production of natural gas and oil in this country. It's important for manufacturing, as Senator Burns said, as well as transportation.

Insofar as regulations are concerned, the President suspended a slew of regulations to make sure that we did get natural gas and oil to more people. One of those has to do with refineries and these rules that are in effect, where there are about a hundred different boutique fuels in our refineries that are at full capacity. I think we

ought to look at some of these regulations to see if they ought to be modified permanently, not just for a few weeks or a few months. And Senator Burr, and I, on the Energy Committee are working on a measure to say let's pick—say that the top three or five cleanest-burning fuels, and, for nonattainment areas, pick those three or five, as opposed to having 50-plus different formulations, which means refineries are blending or formulating on specialty fuels. And that's something that I want to listen to our experts on, on that.

I also think that, on the demand side, we need to be making sure that oil and natural gas that's being used for fertilizer, chemical, tire, forestry property—forestry products, and manufacturing, as opposed to using it for electricity. Electricity in this country, which is so important, ought to be generated by either clean coal technology or advanced nuclear. And I think those are the ways that we're going to need to move forward, learning from Katrina, but also improving on the energy policy bill that we've passed. But there's more to be done to make sure that we have an affordable, and reliable, supply of energy for consumers, as well as our economy.

The CHAIRMAN. Thank you very much.

Senator Smith?

STATEMENT OF HON. GORDON H. SMITH, U.S. SENATOR FROM OREGON

Senator SMITH. Thank you, Mr. Chairman. I'd like to add a bipartisan voice to what I'm sure many of my colleagues have been saying.

I have come to believe that there are commodities, and then there are commodities so essential to the lives of people that they deserve an extra measure of protection. And I have come to believe that the Federal Trade Commission needs some additional powers. For that reason, today I have introduced a bill called the Post-Disaster Consumer Protection Act of 2005. This will provide additional authorities to FTC to prevent oil and gas price-gouging in the immediate aftermath of a declared disaster.

The President has to declare a disaster under the Stafford Act. And, for 30 days following the disaster declaration, under my bill, it would be unlawful to engage in any kind of price-gouging for oil or gas products. The bill defines "price-gouging" as a gross disparity in price for products charged after the disaster declaration, as compared to prices charged by the same supplier during the 30 days immediately preceding the disaster. Price gouging will not include price increases attributable to increased wholesale or operational costs, international market trends, loss of production capability, or loss of pipeline transmission capability.

The bill authorizes the FTC to determine what represents a gross disparity in pricing. The FTC will be authorized to punish violations under the Act, using existing authorities under the FTC Commission Act. Those authorities include seeking civil penalties of $11,000 per violation, assessing fines and repayment of illegal gains, freezing assets, and seeking preliminary injunctions, cease and desist orders, or temporary restraining orders.

Mr. Chairman, I believe this bill ought to be in the mix, and I know many other Senators have their own versions. But I think at least this much should be done. In the months and years ahead, as energy becomes increasingly more expensive, I think that the American people deserve, and we ought to provide, additional protections to them. This commodity is no longer like most commodities. This one is essential to the American way of life and the ability of people, particularly in rural areas, to make their way.

The CHAIRMAN. Thank you, Senator.

Senator Rockefeller?

We're limiting ourselves to 2 minutes in the opening statements, Senator.

STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

Senator ROCKEFELLER. I understand that, and I thank the Chairman.

My main concern is with respect to first responders in West Virginia and other places, that the fuel isn't going to be there for them. It isn't there now. And I worry about that.

Mr. Chairman, I've just got something in my heart. I picked up the paper this morning, and I read that a member of the Washington Nationals Baseball Team, one Ryan Church, said that, "Jews shall not receive salvation." And it—we have Bud Selig here, and we do steroids. We talk about that. Steroids are bad for baseball, bad for young people. We also don't, on this Committee, try to encourage hate and racial bigotry. Ryan Church said he apologized for the statement, didn't mean it. But, of course, if he said it, it's exactly what he did mean. And I would just put out to the Committee the thought of statements like that being made as different groups are bringing people together for spiritual enrichment before games, it should not ever be tolerated, and that there should be a punishment for that, as there should be for steroids, because it's far worse.

I thank the Chair.

The CHAIRMAN. Well, thank you very much.

And I thank you all for your brevity.

Our first witness—panel this morning is going to be—we're going to ask them to limit their statements to 10 minutes each. Those this afternoon will be limited to 5 minutes each. We expect a full attendance here at this hearing, and if we're all to have an opportunity to participate, we do need to limit our time.

Let me call first on J. Robinson West, who's Chairman of PFC Energy. They are listed as strategic advisors in global energy. And he will be followed by Mr. Bustnes, who is—is that the right way to say it? Bustnes—who is really from the Rocky Mountain Institute. And we ask that you limit your statements to 10 minutes. All statements presented by witnesses will be printed in the record, subject to limitation, in terms of attachments.

Thank you.

STATEMENT OF J. ROBINSON WEST, CHAIRMAN, PFC ENERGY

Mr. WEST. Good morning, Mr. Chairman and members of the Committee. Thank you.

I have submitted a fairly long statement, which I will not wade through. There are some points I'd like to make in picking up on some of the comments the members of the Committee have made, but let me begin.

First, as you look at the question of energy, and particularly oil and gas, I think I would respectfully submit that—look at this as a business that involves companies, governments, and markets, and that, as you look at policy, understand investment patterns, understand markets, because that's, in the end, what's going to drive things, also recognize that this is a global market. The—one Senator said that the state was an isolated market, isolated western market. There are no isolated markets. This is a global commodity, and we're operating way, way beyond U.S. boundaries.

There are a couple of points I'd like to make. The first is that, I think, Hurricane Katrina demonstrated that the markets are very tight, to the point of fragility. And if nothing's done, it's going to get even tighter.

The CHAIRMAN. Pull that mike up a little bit, please.

Mr. WEST. OK. Is this better?

Senator Cantwell very properly pointed out that something's been going on for the last year and a half. This is—what's going on has been happening a long time before Katrina. Katrina pointed out a problem, but, structurally, something's been going on for years. And the markets are very, very fragile, and, over time, we believe they're going to be even more fragile, which will have huge impact on the economy, a huge negative impact.

My little testimony in my paper was called "Energy Insecurity." "Energy security," we defined as reliable supply at reasonable cost. I would respectfully submit we are entering the age of "energy insecurity," where we have unreliable supply at unreasonable cost.

Katrina—as I say, things were very tight, and Katrina tipped things. Production in the Gulf, it dropped by a million and a half barrels. It's still down by 850,000 barrels. It stopped deliveries of crude oil to refineries serving the mid-continent. It stopped deliveries of products which are moved by pipeline to the East Coast and Florida. And it shut in refining capacity—initially at 15 percent of the Nation—now it's down by 5 percent.

I believe, in my business, that markets set prices, that generally the oil and gas markets are efficient transparent markets. And one of the points I think is important to recognize is that the international oil companies are now relatively small factors in that market, that the market is set by supply-and-demand, and it takes years setting these forces of supply-and-demand in motion, and also that the market moves in expectations of further, either supply, or demand.

I also believe—and I think my colleague here today—if you look at the situation, we cannot supply our way out of this. We are, in the end, going to have to deal with demand. We must deal with demand. I think there are some supply issues which can be dealt with, but, long-term, we're going to have to deal with demand.

I think one of the things, also, that's important is that—one myth that's important to dispel is the notion that the oil industry has not invested in refining in the United States. That's simply not true. They have not built new refineries. But, frankly, given regula-

tion right now, you effectively cannot build new refineries. But they have expanded capacity from about 15 million barrels—over 15 million barrels a day to over 17 million barrels a day. And I think it's about a 7- or 8-year period, the industry spent about $49 billion—$17 billion in capital, $31 billion in operation and maintenance.

So that it's—I don't think it's fair to say that the industry has ignored refining. It's important, as I also pointed out, that the refining business has historically been quite an unprofitable business. It's a very, very difficult business to make money in.

I think one of the things to keep in mind, therefore, is that the oil industry is not a utility, and that it is not a cost-plus business, and—it is a supply and-demand business, and if you are going to mandate price caps or do things like this, this, in turn, will drive behaviors, which I don't think will actually lead to more supply, or better prices for consumers.

And, you know, frankly, when the oil price crashed, in 1985 to 2000, the consumers benefited enormously. And that's fine. That's how markets work. And I think markets will correct themselves. And I think it's important that the government play a constructive role in making sure that the markets protect themselves.

I was an Assistant Secretary of the Interior. I ran the largest nonfinancial auction in the history of the world, which was the Offshore Leasing Program. And I have come to recognize—is that the government is an active participant in markets all the time. But the problem is, is that a lot of people don't understand how the government is a participant. Sometimes it withholds resources, by permitting it makes things more difficult, through environmental regulation it changes behavior. And I think it's very important to understand the role of government, because it is a very important factor in the government—or in the market. Sometimes people say, "Well, don't do anything." But what you're doing at times is freezing the existing role of government, which can be very unproductive.

I will stop there, Mr. Chairman. As I say, I have a—I'd be happy to go through details of my testimony here. I also would be happy to discuss with members of the Committee, I think, some steps which could be taken to alleviate the situation, short-term and longer-term.

So—

The CHAIRMAN. You still have a few minutes. Do you want to expand on that?

Mr. WEST. Well, let me—I would say, if you—a couple of points, in terms of the short-term. First thing, be very careful not to do things which are unwise. If the government is going to interfere in the market, please do so carefully, and understand the implications of what you're going to do. This has, with all due respect, not always been the case.

Second, I think it's very important to recognize that—I'm in the energy consulting business, and I have gone to countless meetings in windowless rooms with half-empty styrofoam cups with cold coffee, debating with people from oil companies, auto companies, the government, and some other gurus about what to do. It was a really tiny debate, that had very, very little influence. This debate must change. And people have to recognize that they're stake-

holders in the energy economy. And I would argue that the AARP, farmers, homebuilders, there are a lot of stakeholders. Energy is a big deal. And a lot of people simply haven't weighed in.

So, I think you've got to change the debate. And I think, frankly, it has got to be—this is a very, very sensitive issue. A number of politicians are saying—a number of Senators that were back in their home district—how enraged their voters were. They're very concerned about gasoline prices. It's very difficult to come between voters and their cars, and I think that we've got to develop constituencies which make it easier to do sensible things, which does not necessarily mean higher taxes or changing CAFE. There are a lot of other things that can be done.

Third, that I think that we have to recognize that this is a national problem, and that national interests have to prevail, that a lot of times it is local interests which have blocked necessary solutions. I think the Congress should be congratulated for what they did on LNG siting. This is a case of—we need LNG receiving terminals. It's a national problem. I testified, several years ago, in front of Senator Hagel on this subject, and finally—and I congratulate the Congress on moving it.

The fourth thing is permitting and policy clarification. Senator Allen talked about boutique fuels, but please be aware that—and he's absolutely correct, I might add—but boutique fuels are also an issue which involves state and local government, as well. And I think that the situation will be greatly compounded if the Federal Government acts without working closely with the states and the local governments. This is a very important problem.

There are two other areas that I would urge. One is that I think Katrina has indicated that there's a real tightness in the market. And one of the ways to alleviate the tightness is to increase mandatory stock levels of petroleum products held by the companies. And this should be held in their plants, near markets. And you should also recognize that there's a cost to the companies on this, and some way should be found to work it out with them. But I think we should be maintaining larger inventories of petroleum products near markets.

I think the other thing that's just been demonstrated is in the operations of refineries and pipelines. Some of the big pipelines to the East Coast went down simply because of electricity and pumps, and things like that. I think it's clear that there should be operating standards so that there is redundancy in pumps, electricity, and that sort of thing, so that the system is less fragile. I think those are two relatively easy fixes, and ones which should be undertaken quickly.

I have some longer-term views, but I think my time's up.

[The prepared statement of Mr. West follows:]

PREPARED STATEMENT OF J. ROBINSON WEST, CHAIRMAN, PFC ENERGY

Energy Insecurity

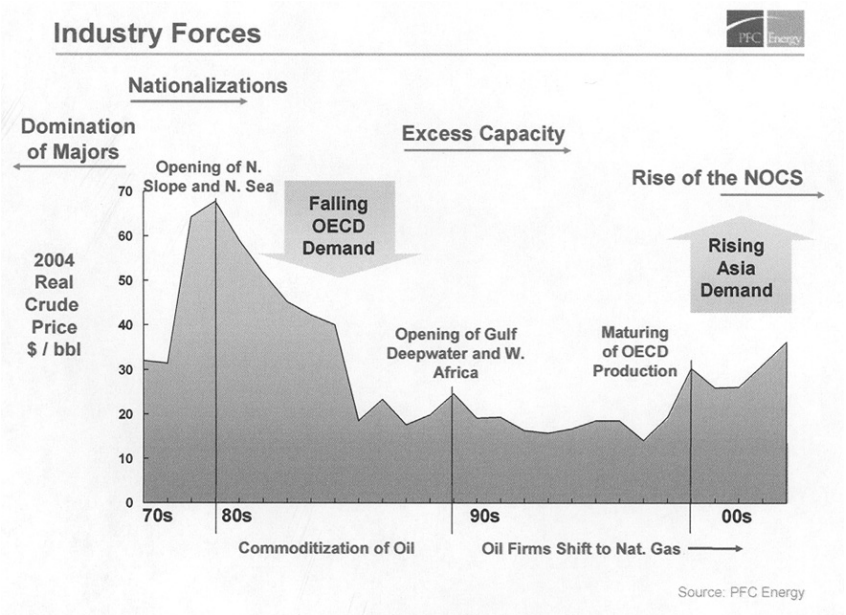
Hurricane Katrina was a natural disaster of unprecedented proportions. It not only demolished a swath of the Gulf Coast and destroyed thousands of lives, but with the ensuing rise in energy prices, there was also a fear that it would demolish the economy as well.

Katrina has brought home the realization that Americans have entered a new age, the age of Energy Insecurity. For the last twenty years, we have lived in a period of energy security, where we had ample and reliable supplies at a reasonable cost. Those days are over. Supplies are tight, may not be reliable, and fears of shortages have sent oil and gas prices skyrocketing.

To understand oil and gas markets, one must examine the fundamentals of supply-and-demand, which have radically changed in the last twenty years, together with two trends: nationalization and financialization in the industry.

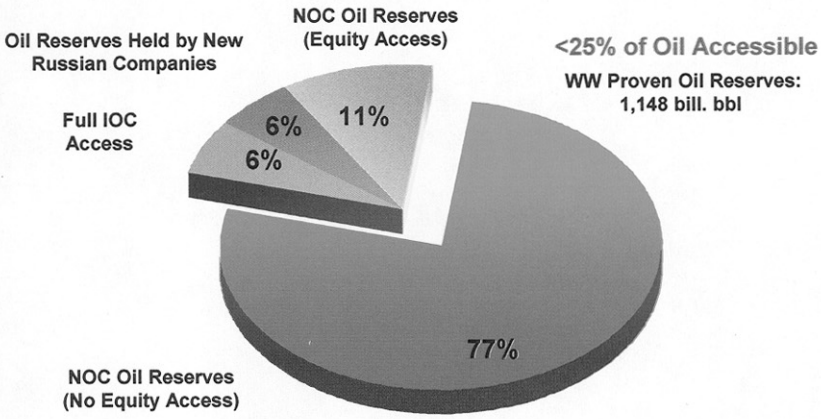
For much of the twentieth century, the oil markets were managed by the large, vertically-integrated (from oil well to gas pump) "Majors." Until the early 1960s, the Majors explored and produced oil, virtually everywhere with the exception of Russia and Mexico. By the 1960s, however, major oil-producing countries felt that they had not received their fair share of the oil revenues from the international industry, and began to nationalize their oil and gas resources, creating National Oil Companies (NOCs) to manage these resources. This process was completed by the late 1970s, as the Majors were pushed out of the Middle East, the primary source of cheap crude oil, and other important producing areas, such as Venezuela.

OPEC member states came to control their own supply of oil, and spent the next twenty years trying to engineer higher oil prices. Successful at first (the first and second oil shocks of the 1970s), they later failed as many new areas (the North Sea, Gulf of Mexico, Alaska's North Slope, and West Africa, notably) produced substantial quantities of oil and most developing countries introduced conservation measures. The oil markets crashed and consumers and their governments were lulled into a feeling of complacency—*i.e.,* excess production capacity and competition among suppliers driving prices down.



But this era has now come to an end—non-OPEC countries are nearly tapped out. International oil companies are finding fewer new places to look for oil, and there is less oil in those areas that are not controlled by national oil companies. Today NOCs control 77 percent of the world's oil resources. The Majors are no longer the rulemakers—now they are rule-takers.

National Oil Companies Control the Oil Proven Reserves…

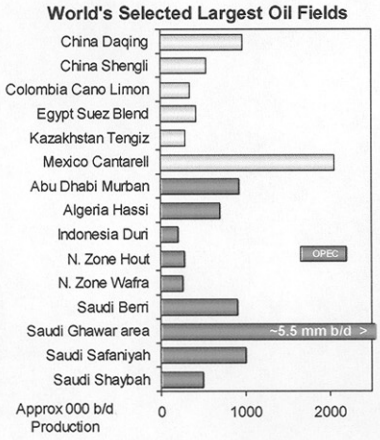


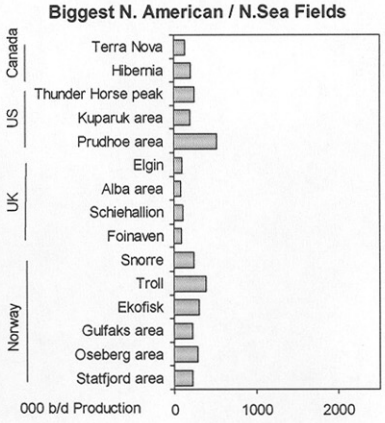
…As a result International Oil Companies are rule takers and price takers; have limited access to oil reserves

Source: PFC Energy

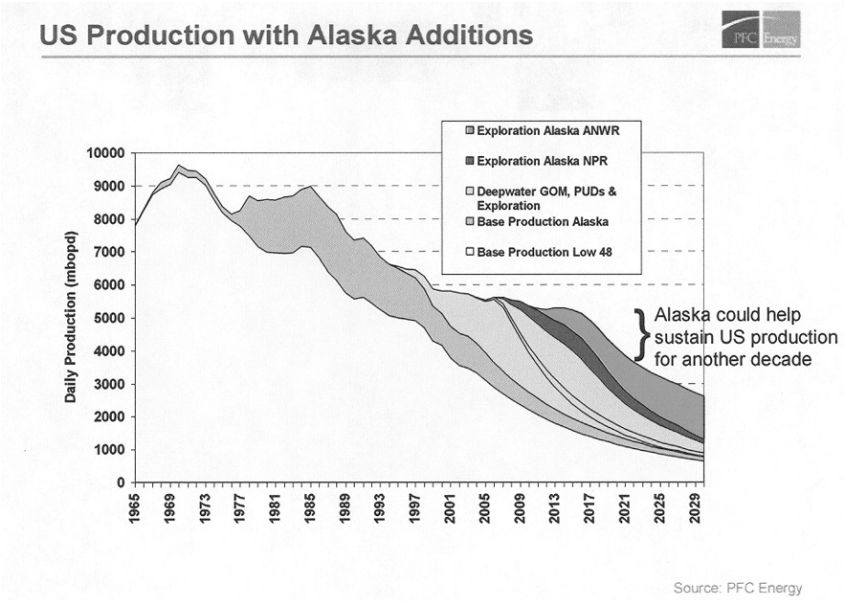
World's Production Comprised of Many Fields

- **15 largest fields comprise about 19% of world production**
- **15 largest N. Sea/N. American fields comprise about 4.3% of world production**
- **The US has about 35,000 oil fields**





Source: PFC Energy

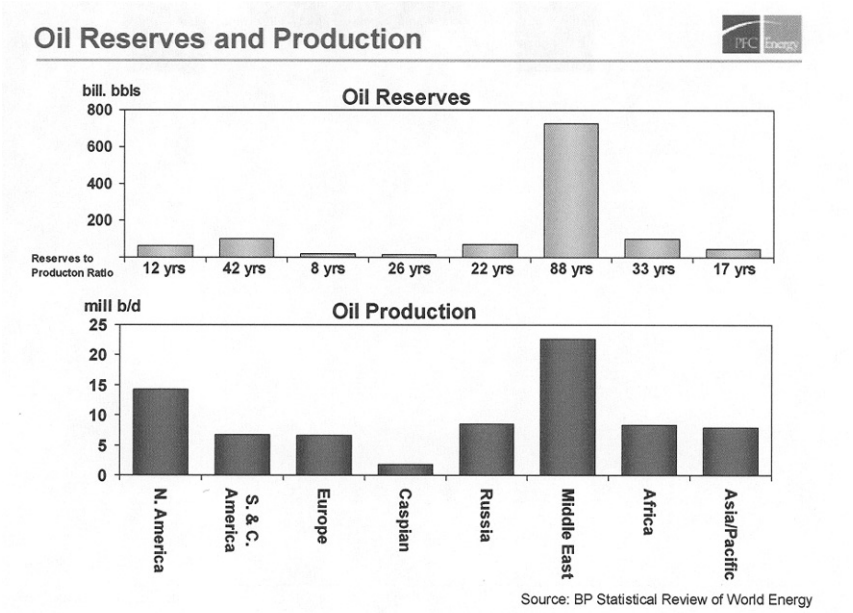


The low oil prices of the 1980s and 1990s forced oil companies to become more efficient users of capital. This process of financialization was driven by their shareholders. Capital markets are ruthlessly efficient. They demand short-term profits, delivered quarterly. Investors punish under-performing companies, and companies will, thus, not invest in under-performing sectors.

The impact on the industry has been severe. The oil and gas industry is a risky, capital intensive, long-lead time business. Many oil companies, including some of the largest companies in the U.S.—Mobil, Amoco, Arco, and Texaco—could not compete effectively and went out of business. Likewise, the worst performing sector, downstream received less investment since returns were lower. The companies did not ignore their refineries and marketing operations, spending billions to upgrade and de-bottleneck for efficiency and higher fuel standards, but they did not invest in new refineries because they would be punished by investors, and an increasingly powerful environmental movement. Also, government regulations made construction of new refineries virtually impossible in the U.S.

Major oil discoveries were made in the 1960s and 1970s, with over 80 percent of all global reserves (just over 2 trillion barrels) having been found before 1980. Since the mid 1980s, however, discovery sizes had clearly begun to decline, although the exploration efforts of the industry continued aggressively where they were permitted. We are now consuming about three times as much conventional crude oil as we are discovering through exploration. Even counting unconventional oil, natural gas liquids and enhanced oil recovery, the ratio of production to new reserves is still greater than two-to-one.

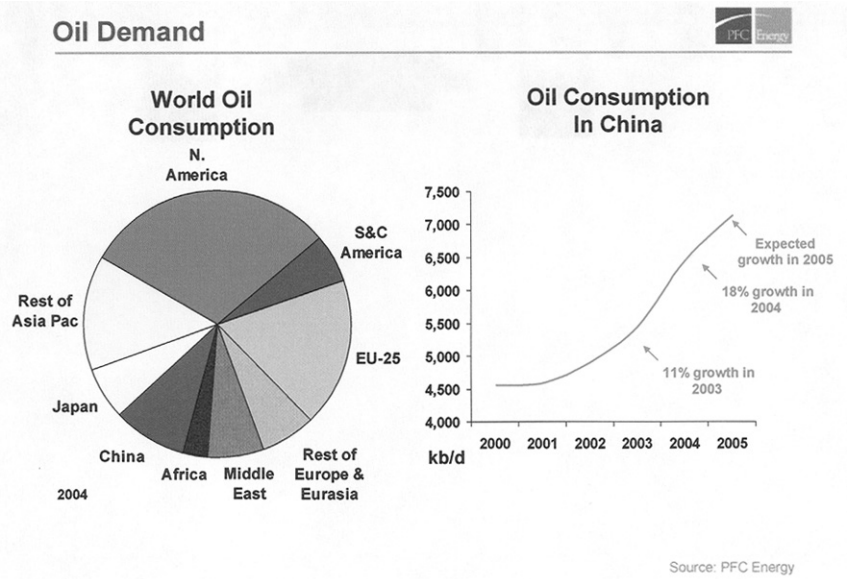
One success has been the deep offshore, where oil is produced in water depths of over a mile. This requires tremendous levels of technology and capital. A single field can cost over $3 billion to develop. The industry deserves credit for developing and producing so much oil in the areas where is does have access.



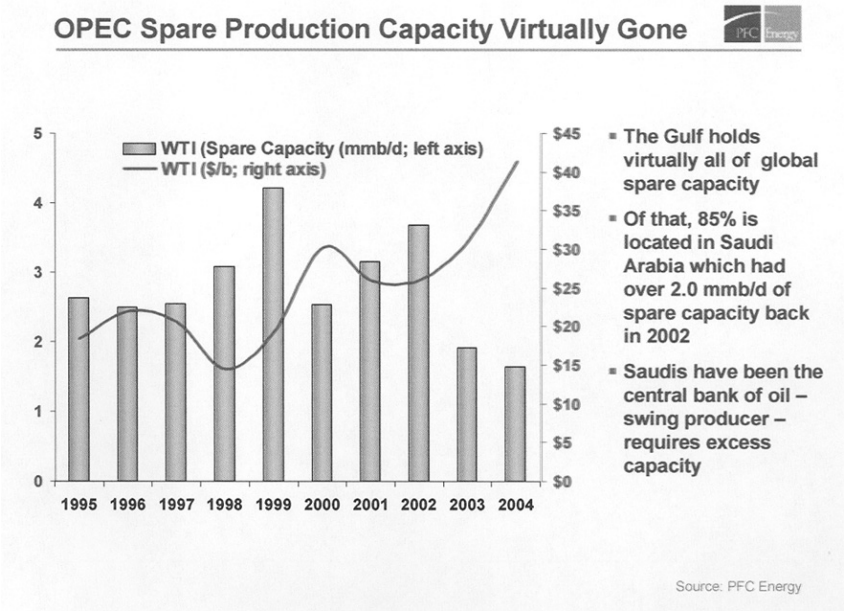
While the industry was struggling with reserve replacement, low prices, and political barriers, consumers in America happily guzzled cheap gasoline. This was an explosive combination. Consumers benefited from a 58 percent decline in real gasoline prices from a peak 1981, to the low point in 1998. Americans became richer and spent an ever smaller percentage of their growing incomes on energy, driving more and more. Gasoline consumption in the U.S. rose 38 percent from 1981 to 2004.

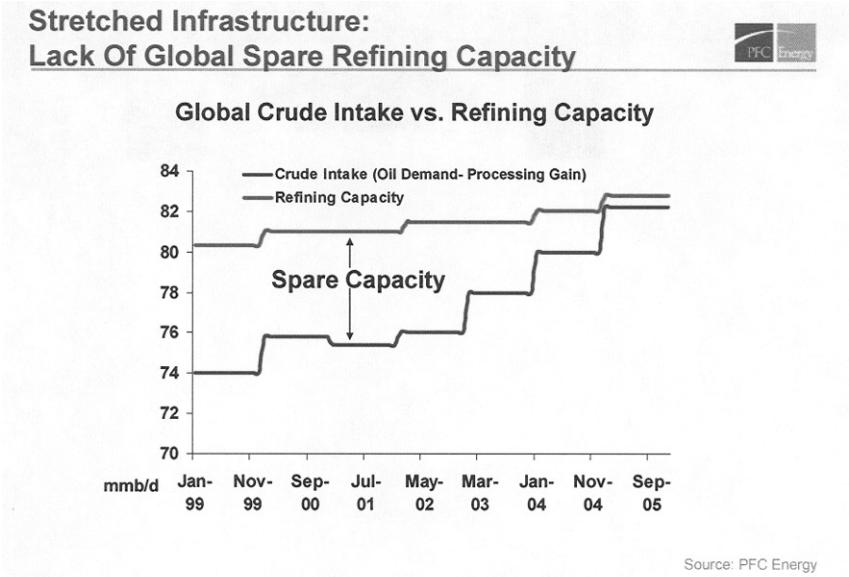
The expansion of suburbia, and now exurbia, on the back of cheap gasoline, land and credit became the crucial social phenomenon of the last 20 years. This is symbolized by Americans driving the world's largest SUVs to Wal-Mart, the world's largest company.

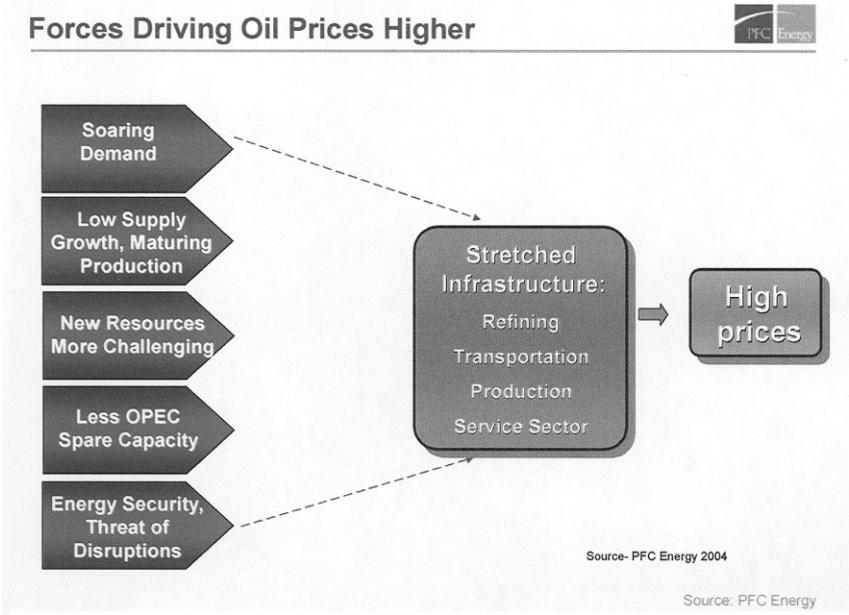
At the same time, across the Pacific, an economic giant has begun to stir. By the early 1990s, the Chinese economy began to become market-based, organized for exports. The Chinese economy began expanding, wealth was created, and expectations soared. Its demand for oil started growing just as its oil production began to mature. Market experts, ourselves included, were slow to recognize China's rocketing demand, in part because of inadequate data. The oil markets were shocked in 2003, when Chinese oil consumption leapt by 11 percent, and again in 2004, by 18 percent.



In the Autumn of 2005, the world economy is confronted with surging demand and low supply growth. Refining capacity is tight. The international petroleum system produces about 84 million barrels of oil per day (b/d), with very little excess capacity to provide a cushion from shocks, such as Katrina or insurgency in Iraq. Any spare oil production capacity we have is in the Persian Gulf, particularly Saudi Arabia.

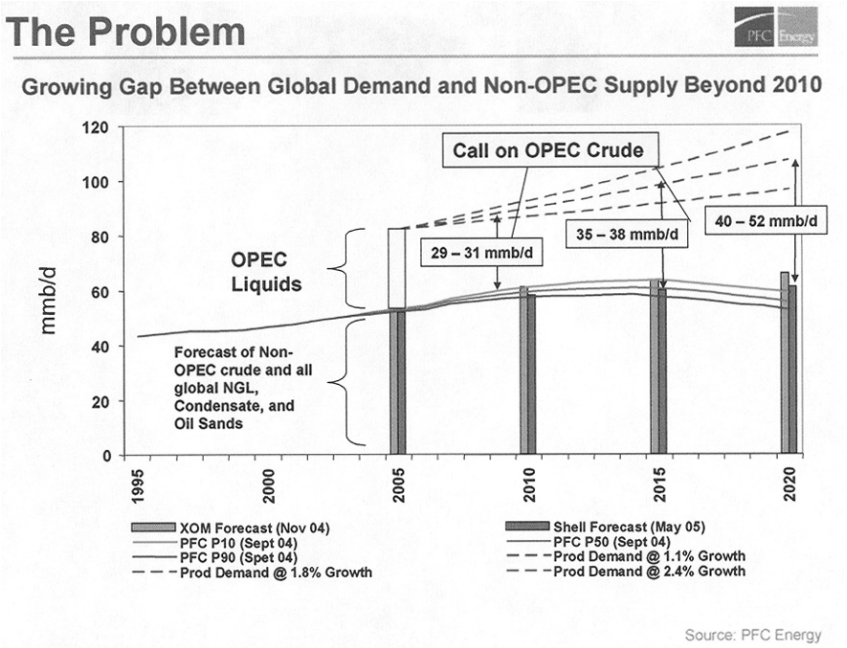






But wait, the longer-term the picture is even bleaker. PFC Energy projects that the world petroleum system can generate peak production of 95 to 100 million b/d by 2015–2020. Beyond that period, the industry will not be able raise output significantly, and we are likely to see a plateauing of supplies followed by a slow decline. Crude oil production outside of Russia and OPEC reached a plateau in 1998, which persists to this day. Non-OPEC production will face serious growth challenges beyond 2010. Beyond 2015, OPEC reserves will face similar growth challenges. To get to 100 million b/d, in spite of shrinking discovery sizes, enhanced recovery tech-

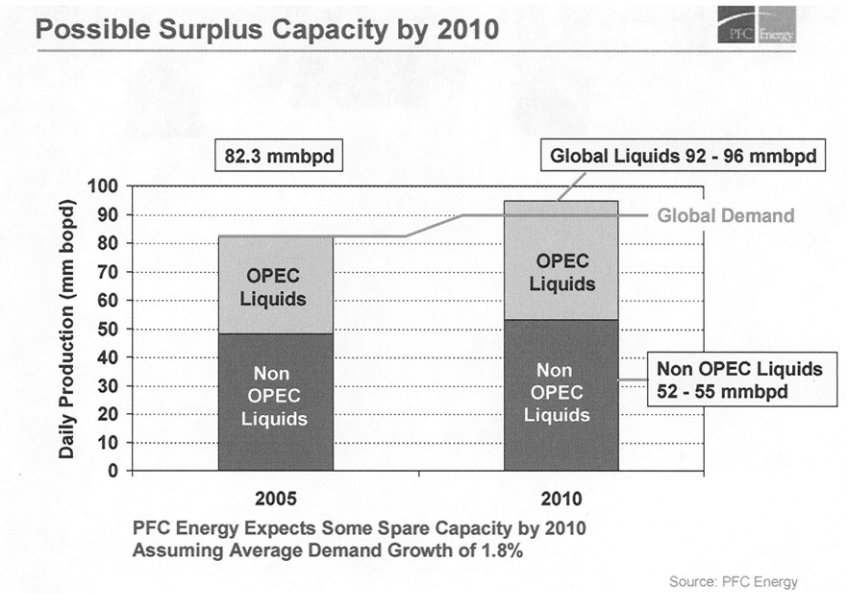
nology must be employed along with growing exploitation of heavy oil, oil shale, natural gas liquids, gas to liquids and tar sands.

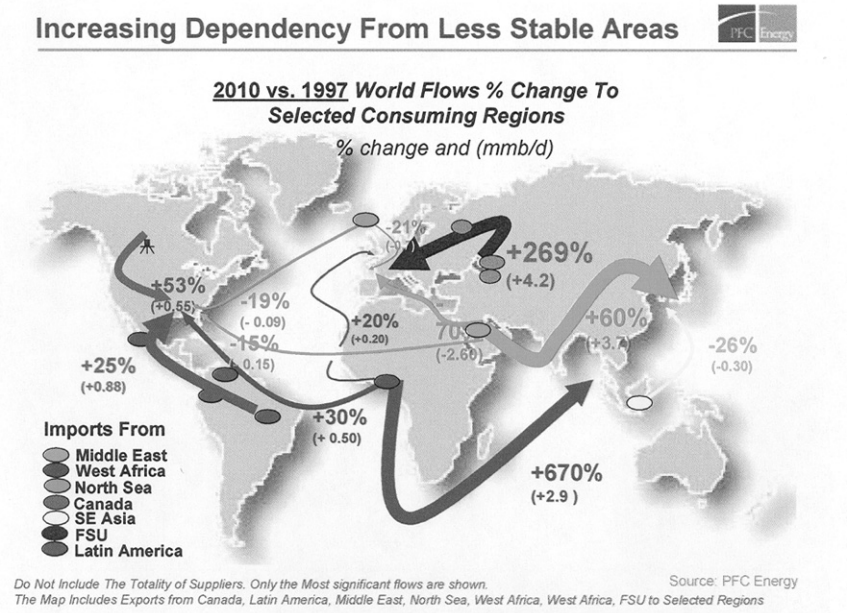


Certain respected experts believe that Saudi Arabia will not be able to increase its output, or even worse, that its output will decline. However, we think there is a reasonable probability that Saudi-sustained production can increase from about 10 million b/d now to 12.5 million b/d, with a surge capacity of another 2 million b/d. The Saudis are committed to spending nearly $50 billion to help meet rising demand for crude oil. When it comes to oil, Saudi Arabia has been a part of the solution, not the problem. Saudi Aramco, the NOC, is highly professional, and the Saudis have played the role of central banker for oil, seeking to provide liquidity and stability to the market.

There is not very much that can be done to increase supply. Some optimists say that we have always found technical solutions to increase production before, and will again. Our response is that if breakthrough technology is not in the pipeline now, it will have no impact for years. Likewise, the fact the NOCs control 77 percent of the oil resources means that the ability of international companies is seriously constrained, since they cannot get access to those resources. With high prices, however, many oil producing countries cannot absorb the money they are already receiving, and have little incentive to expand production.

PFC Energy's model of all planned projects over the next 5 years indicates that there is still some breathing room in the near term. By 2010, there may again be some excess oil production capacity in the global industry. While this may buy us some extra time to confront the future crisis, it is crucial that we not be lulled into a false sense of energy security. Most of the new production, expected by 2010, will come from the former Soviet Union, West Africa and the Middle East, much of it flowing to Asia.





Welcome to the Age of Energy Insecurity. Worldwide production will peak. The result will be skyrocketing prices, with a huge, sustained economic shock. Jobs will be lost. Key sectors of the economy, from agriculture to home building, will be hit hard. Without action, the crisis will certainly bring energy rivalries, if not energy wars. Vast wealth will be shifted, probably away from the U.S.

We must confront the issue of demand, primarily in the U.S. and Asia. Politicians in the U.S., from both sides of the aisle and both ends of Pennsylvania Avenue, are loathe to come between Americans and their cars—part status symbol, part toy, part necessity. Solutions must be found, but if the wrong solutions are proposed, the

economy as a whole, and the suburban economic model in particular—the basis of the American consumers' wealth—will come to a screeching halt. The key is to engage critical stakeholders to come together and push for the political will for change.

For the last 20 years, U.S. policy has discouraged production and encouraged consumption. This policy is simply not sustainable. If we dither any more, as we have for so long, we will pay a terrible price, the economic equivalent of a Category Five hurricane. Katrina was a Category Four.

The CHAIRMAN. Thank you very much.

Our next witness, as I said, is Mr. Bustnes, from the Rocky Mountain Institute. We would welcome your contribution today.

STATEMENT OF ODD–EVEN BUSTNES, CONSULTANT, ENERGY AND RESOURCES SERVICES, ROCKY MOUNTAIN INSTITUTE

Mr. BUSTNES. Good morning, Mr. Chairman.

On behalf of Rocky Mountain Institute, I appreciate this opportunity to testify before your Committee hearing, to examine the rise of domestic energy prices.

My name is Odd-Even Bustnes, and I'm a Manager at the Institute. My background is in economics and in chemical engineering. I was previously a consultant with McKinsey & Company, and I'm now at the Institute, consulting for the energy industry.

My testimony will focus on what actions can be taken to profitably lower the U.S. oil consumption. My testimony will highlight the key findings of our major independent study, *"Winning the Oil Endgame: Innovation for Profits, Jobs, and Security"*—here it is—which was co-sponsored, by the way, by the Office of the Secretary of Defense.

The objective of this two-year research effort was to define the proven technologies that either exist today or are being commercialized, and that could significantly reduce U.S. oil demand and the measures necessary to accelerate market adoption. Our study is built around competitive strategy business cases for the car, truck, plane, oil, and agriculture industries, and improving military effectiveness through efficiency. Its reception by those civilian and military sectors has been encouraging. We are honored that the book's Forewords by Secretary George Schultz and the former Shell Chairman, Sir Mark Moody-Stuart.

Our analysis found that the United States of America can significantly reduce its use of oil within two decades, virtually eliminate its use by the 2040s and, in the process, revitalize its economy, all led by business-for-profit. The profits arise because, over the next few decades, the best technologies already in or entering commercial service in Spring of 2004, can save or displace most of the oil we use at a lower cost than buying it. This is true even if the world oil price fell back to $26 a barrel, which was EIA's January 2004 reference case forecast for the year 2025. And it's also true if externalities were worth zero, as our analysis assumed.

So, the broad outlines of a national path, beyond oil, are actually strikingly simple, and it contains three key steps. First, redouble the efficiency of using the oil. Second, replace a third of remaining U.S. oil with advanced biofuels. And, finally, save half of natural gas at an eighth of today's market price, and then substitute the saved gas for the rest of the oil—optionally, if you will—via hydrogen over the long run. We found that half of the projected 2025 oil consumption can be saved by more efficient use, costing, on aver-

age, $12 a barrel. The other half can be replaced by cost-effective saved-natural-gas and advanced biofuels, costing less than $26 per marginal barrel. By 2025, these cheaper savings and substitutions would cost less than $26 per barrel of oil and would save the country $155 billion per year gross, or $70 billion per year net. Achieving this transition beyond oil would require investments, about $180 billion over a period of 10 years. Half of that would go to retooling the car, truck, and plane industries, and half to build the advanced biofuels industry.

These investments would also create a million new jobs, three-fourths of them in rural and small-town America, and could protect another million jobs now at risk in automotive and truck manufacturing.

Two technological shifts underpin these remarkable findings—advanced materials and cellulose-based biofuels—both of which are proven and now in the pre-commercial stage. We do not need to wait for the fuel cell. Efficiency and biofuels can ultimately halve our projected consumption of oil and bring us back to the pre-1970 usage levels.

As a free by-product of the profitable oil savings, America's CO_2 emissions would decrease by 26 percent. These outcomes all assume the same doubled economy, the same mobility and vehicle attributes, and the same lifestyles as EIA's 2004 reference-case forecast, but would yield stronger national competitiveness, a more vibrant economy, and more robust security. Our analysis details the technologies, economics, and business logic of how to get the Nation off oil at a profit, but also describes innovative policies that support, not distort, business logic, based on the sound tenets of market economics and free enterprise. These policies do not require fuel taxes, subsidies, mandates, or new Federal laws, but simply steer the relevant product markets in a direction that removes four key market barriers that prevent efficiency from competing on a level playing field with supply today.

I'll submit, for the record, an executive summary of our findings and a few comments by third parties. Let me just quickly, here, highlight the five most important points.

First, with technology available today, we can halve our demand for oil within three decades, possibly two. Saving each barrel will, on average, cost only $12, less than half of what the government, in 2004, forecast oil will cost in 2025, or less than one-fifth of recent prices. We conservatively excluded all external costs from this estimate, and assumed uncompromised performance and attributes of vehicles. The technologies that make this possible are basically lighter and safer vehicles and better aerodynamics, lower rolling resistance, and hybrid powertrains. All these technologies were commercially available last year, in 2004.

Second, after halving its use of oil, the U.S. can displace the rest from other fuels, primarily saved-natural-gas and advanced biofuels. Of the remaining demand, one-third can be replaced with modern biofuels. These are not fuels, such as ethanol, made from heavily subsidized corn, but, rather, from woody plants, like switchgrass and poplar trees. These feedstocks double the yield while saving capital and energy. Without competing for food crops' land or water, such cellulosic ethanol, plus biodiesel, can cost-effec-

tively displace some four million barrels of oil per day, create 750,000 rural jobs, and boost farm income by tens of billions of dollars per year.

Third, in the long run, by saving half of natural gas at a cost of one-eighth of today's market price through efficiency, we can free-up gas to displace the remaining oil either directly or optionally via hydrogen in fuel-cell vehicles.

Fourth, the fight to win the oil endgame is about national security through national competitiveness. We need to invest in our core automotive industries, to retool them to make the more efficient, yet safer, spacious cars and trucks that Americans want to buy. We need to invest in a secure domestic-fuels infrastructure. These investments will yield cheaper trucking with doubled margins, affordable petrochemical feed stocks and airline fuel, lower and more stable fuel prices for all, and restored American leadership in making cars, trucks, and planes.

Fifth, and final point, to accelerate this adoption, our study suggested modest policy innovations that are market-oriented without taxes, innovation-driven without mandates, and doable administratively. Over the long-term, the Federal policy portfolio should be consistent, and it should seek to increase consumer adoption of efficient vehicles, while also increasing customer choice with size and class-based feebates. This instrument combines fees on inefficient models with rebates on efficient ones, all calculated separately within each size class, so one isn't penalized for choosing a large vehicle, but rewarded for choosing an efficient, large vehicle. This pulls innovations faster from the lab to the showrooms, because it encourages buyer investment that incorporates the value of fuel savings over the entire life of the vehicle, not just for the first 2 to 3 years, which is common today. It basically matches, therefore, the societal and individual discount rates and deals with the information challenge, both at the same time.

In addition to this policy instrument, our report also outlines, in great detail, six other modest policy options that would enable efficiency to fully compete in the market. And I can talk to you about those afterwards, if you want.

In conclusion, many more jobs, dollars, and security gains would be created by policies that steer the market toward the more affordable alternatives to oil, such as efficient technologies and new fuels. The reduction in demand is the single-greatest lever we can pull to permanently lower oil prices. We achieved this in our history, between 1977 and 1985; when the U.S. GDP grew 27 percent, oil-use fell 17 percent. That very move broke OPEC's pricing power for nearly a decade. Let's work together to do it again.

Mr. Chairman, thank you for listening to my testimony.

[The prepared statement of Mr. Bustnes follows:]

PREPARED STATEMENT OF ODD-EVEN BUSTNES, CONSULTANT, ENERGY AND RESOURCES SERVICES, ROCKY MOUNTAIN INSTITUTE

Good morning, Mr. Chairman. On behalf of Rocky Mountain Institute, I appreciate the opportunity to testify before your Committee hearing to "examine the rise of domestic energy prices." My name is Odd-Even Bustnes and I am a Manager at the Institute. I hold graduate degrees in economics and in chemical engineering from Princeton and Oxford, and was previously a consultant with McKinsey & Company. RMI is a 23-year-old, independent, entrepreneurial, nonprofit applied-research

center in Old Snowmass, Colorado, and has a long history of expertise in energy strategy and policy.

RMI's testimony will focus on what actions can be taken to profitably lower U.S. oil consumption. My testimony will highlight the key findings of our major independent study, *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security,* which was co-sponsored by the Office of the Secretary of Defense. The objective of this two-year research effort was to define the proven technologies that either exist today, or are being commercialized, and that could significantly reduce U.S. oil demand, and the measures necessary to accelerate market adoption. Our study is built around competitive-strategy business cases for the car, truck, plane, oil, and agriculture industries, and improving military effectiveness through efficiency. Its reception by those civilian and military sectors has been encouraging. We are honored that the book's Forewords are by Secretary George Shultz and the former Shell Chairman, Sir Mark Moody-Stuart.

My two senior co-authors, RMI's CEO Amory Lovins and Senior Director Kyle Datta, unfortunately could not attend today on such short notice, but they hope to be of service on another occasion. They each have decades of experience in energy policy. I do not. My role in our study was chiefly performing technological and economic analyses. I will, therefore, defer broad policy questions to my senior colleagues for their written response. However, I am happy this morning to give you an overview of our findings, and hope these will be of interest and value.

Our analysis found that the United States of America can significantly reduce its use of oil within two decades, virtually eliminate its oil use by the 2040s, and in the process revitalize its economy, all led by business-for-profit. The profits arise because over the next few decades, the best technologies already in, or entering commercial service in Spring 2004, can save or displace most of the oil we use, at a lower cost than buying it. This is true even if the world oil price fell back to $26 a barrel (in year-2000 dollars)—which was EIA's January 2004 Reference Case forecast for the year 2025—and also if externalities were worth zero, as our analysis assumed.

The broad outlines of a national path beyond oil are strikingly simple, and it contains three steps.

1. First, redouble the efficiency of using oil.
2. Second, replace a third of remaining U.S. oil with advanced biofuels.
3. Finally, save half of natural gas at an eighth of today's market price, and then substitute the saved gas for the rest of the oil via hydrogen over the long run.

We found that half of the projected 2025 oil consumption can be saved by more efficient use, costing on average $12/bbl. The other half can be replaced by cost-effective saved-natural-gas and advanced biofuels costing less than $26 per marginal barrel. By 2025, these cheaper savings and substitutions would cost less than $26/bbl oil, and would save $155 billion per year gross, or $70 billion a year net. Achieving this transition beyond oil would require a $180 billion investment over 10 years—half to retool the car, truck, and plane industries, and half to build the advanced biofuels industry. These investments would also create a million new jobs—three-fourths of them in rural and small-town America—and could protect another million jobs now at risk in automotive and truck manufacturing.

Two technological breakthroughs underpin these remarkable findings: advanced materials and cellulose-based biofuels, both of which are proven, and now in the pre-commercial stage. We do not need to wait for the fuel cell; efficiency and biofuels can ultimately halve our projected consumption of oil, and bring us back to pre-1970 usage levels. As a free byproduct of the profitable oil savings, America's CO_2 emissions would decrease by 26 percent. These outcomes all assume the same doubled economy, the same mobility and vehicle attributes, and the same lifestyles as EIA's 2004 Reference Case forecast, but would yield stronger competitiveness, a more vibrant economy, and more robust security.

Our analysis details the technologies, economics, and business logic of how to get the Nation off oil at a profit, but also describes innovative policies that support, not distort, business logic based on the sound tenets of market economics and free enterprise. These policies do not require fuel taxes, subsidies, mandates, or new Federal laws, but simply steer the relevant product markets in a direction that removes four key market barriers that prevent efficiency from competing on a level playing field with supply.

I'll submit for the record an Executive Summary of our findings and a few comments by third parties. The complete analysis is very detailed and integrative, but let me highlight here the five most important points:

1. First, with technology available today we can halve our demand for oil within three decades. Saving each barrel will on average cost only $12—less than half what the government in 2004 forecast oil will cost in 2025, or less than one-fifth of recent prices. We conservatively excluded all external costs from this estimate, and assumed uncompromised performance and attributes of vehicles. The technologies that make this possible are lighter *and* safer materials, better aerodynamics, lower rolling resistance, and hybrid powertrains. All these technologies were commercially available in 2004.

2. Second, after halving its use of oil, the U.S. can displace the rest from other fuels, primarily saved-natural-gas and advanced biofuels. Of the remaining demand, one-third can be replaced with modern biofuels. These are *not* fuels such as ethanol made from heavily subsidized corn, but *rather* from woody plants like switchgrass and poplar trees. These feedstocks double the yield while saving capital and energy. Without competing for food crops' land or water, such "cellulosic ethanol," plus biodiesel, can cost-effectively displace some four million barrels of oil per day, create 750,000 rural jobs, and boost farm income by tens of billions of dollars per year.

3. Third, in the long run, by saving half of natural gas at a cost of one-eighth of today's market price through efficiency can free up gas to displace the remaining oil either directly or via hydrogen in fuel-cell vehicles.

4. Fourth, the fight to win the oil endgame is about national security through national competitiveness. We need to invest in our core automotive industries to retool them to make them more efficient—yet safer, spacious, and sporty—cars and trucks that Americans want to buy. We need to invest in a secure domestic fuels infrastructure. These investments will yield cheaper trucking with doubled margins, affordable petrochemical feedstocks and airline fuel, lower and more stable fuel prices for all, and restored American leadership in making cars, trucks, and planes.

5. Fifth, to accelerate adoption, our study, therefore, suggested modest policy innovations that are market-oriented without taxes, innovation-driven without mandates, and doable administratively. Over the long-term, the Federal policy portfolio should be consistent, and it should seek to increase consumer adoption of efficient vehicles while also increasing customer choice with size- and class-based feebates. This instrument combines fees on *inefficient* models with rebates on *efficient* ones—all calculated separately within each size class, so one isn't penalized for choosing a large vehicle, but rewarded for choosing an *efficient,* large vehicle. This pulls innovations faster from the lab to the showrooms because it encourages buyer investment that incorporates the value of fuel savings over the entire life of the vehicle, not just for the first 2–3 years. It basically matches the societal and individual discount rates and deals with the information challenge at the same time.

In addition to this policy instrument, our report also outlines, in great detail, six other modest policy options that would enable efficiency to fully compete in the market.

In conclusion, many more jobs, dollars, and security gains would be created by policies that steer the market toward the more affordable alternatives to oil, such as efficient technologies and new fuels. The reduction in demand is the single greatest lever we can pull to permanently lower oil prices. We achieved this between 1977 and 1985, when U.S. GDP grew 27 percent, but oil use fell 17 percent. That broke OPEC's pricing power for nearly a decade. Lets work together to do it again.

Mr. Chairman, thank you for listening to my testimony.

FOREWORD TO *Winning the Oil Endgame* by George P. Schultz

Crude prices are rising, uncertainty about developments in the Middle East roils markets and, well, as Ronald Reagan might say, "Here we go again." Once more we face the vulnerability of our oil supply to political disturbances. Three times in the past thirty years (1973, 1978, and 1990) oil price spikes caused by Middle East crises helped throw the U.S. economy into recession. Coincident disruption in Venezuela and Russia adds to unease, let alone prices, in 2004. And the surging economies of China and India are contributing significantly to demand. But the problem far transcends economics and involves our national security. How many more times must we be hit on the head by a two-by-four before we do something decisive about this acute problem?

In 1969, when I was Secretary of Labor, President Nixon made me the Chairman of a Cabinet Task Force to examine the oil import quota system, in place since 1954. Back then, President Eisenhower considered too much dependence on imported oil to be a threat to national security. He thought anything over 20 percent was a real problem. No doubt he was nudged by his friends in the Texas and Louisiana oil patches, but Ike was no stranger to issues of national security and foreign policy.

The Task Force was not prescient or unanimous but, smelling trouble, the majority could see that imports would rise and they recommended a new monitoring system to keep track of the many uncertainties we could see ahead, and a new system for regulating imports. Advocates for even greater restrictions on imports argued that low-cost oil from the Middle East would flood our market if not restricted.

By now, the quota argument has been stood on its head as imports make up an increasing majority, now almost 60 percent and heading higher, of the oil we consume. And we worry, not about issues of letting imports in, but that they might be cut off. Nevertheless, the point about the importance of relative cost is as pertinent today as back then and applies to the competitive pressures on any alternative to oil. And the low-cost producers of oil are almost all in the Middle East.

That is an area where the population is exploding out of control, where youth is by far the largest group, and where these young people have little or nothing to do. The reason is that governance in these areas has failed them. In many countries, oil has produced wealth without the effort that connects people to reality, a problem reinforced in some of them by the fact that the hard physical work is often done by imported labor. The submissive role forced on women has led to this population explosion. A disproportionate share of the world's many violent conflicts is in this area. So the Middle East remains one of the most unstable parts of the world. Only a dedicated optimist could believe that this assessment will change sharply in the near future. What would be the impact on the world economy of terrorist sabotage of key elements of the Saudi pipeline infrastructure?

I believe that, three decades after the Nixon task force effort, it is long past time to take serious steps to alter this picture dramatically. Yes, important progress has been made, with each Administration announcing initiatives to move us away from oil. Advances in technology and switches from oil to natural gas and coal have caused our oil use per dollar of GDP, to fall in half since 1973. That helps reduce the potential damage from supply problems. But potential damage is increased by the rise of imports from 28 percent to almost 60 percent of all the oil we use. The big growth sector is transportation, up by 50 percent. Present trends are unfavorable; if continued, they mean that we are likely to consume—and import—several million barrels a day more by 2010.

Beyond U.S. consumption, supply-and-demand in the world's oil market has become tight again, leading to many new possibilities of soaring oil prices and massive macroeconomic losses from oil disruptions. We also have environmental problems to concern us. And, most significantly, our national security, and its supporting diplomacy, are left vulnerable to fears of major disruptions in the market for oil, let alone the reality of sharp price spikes. These costs are not reflected in the market price of oil, but they are substantial.

What more can we do? Lots, if we are ready for a real effort. I remember when, as Secretary of the Treasury, I reviewed proposals for alternatives to oil from the time of the first big oil crisis in 1973. Pie in the sky, I thought. But now the situation is different. We can, as Amory Lovins and his colleagues show vividly, win the oil endgame. How do we go about this?

A baseball analogy may be applicable. Fans often have the image in their minds of a big hitter coming up with the bases loaded, two outs, and the home team three runs behind. The big hitter wins the game with a home run. We are addicted to home runs, but the outcome of a baseball game is usually determined by a combination of walks, stolen bases, errors, hit batsmen, and, yes, some doubles, triples, and home runs. There's also good pitching and solid fielding, so ball games are won by a wide array of events, each contributing to the result. Lovins and his co-authors show us that the same approach can work in winning the oil endgame. There are some potential big hits here, but the big point is that there are a great variety of measures that can be taken that each will contribute to the end result. The point is to muster the will-power and drive to pursue these possibilities.

How do we bring that about? Let's not wait for a catastrophe to do the job. Competitive information is key. Our marketplace is finely tuned to the desire of the consumer to have real choices. We live in a real information age, so producers have to be ready for the competition that can come out of nowhere. Lovins and his colleagues provide a huge amount of information about potential competitive approaches. There are home run balls here, the ultimate one being the hydrogen economy. But we don't have to wait for the arrival of that day. There are many things

that can be done now, and this book is full of them. Hybrid technology is on the road, and currently increases gas mileage by 50 percent or more. The technology is scaleable. This report suggests many ways to reduce weight and drag, thereby improving performance. A big point in this report is evidence that new, ultralight-but-safe materials can nearly redouble fuel economy at little or no extra cost.

Sequestration of effluent from use of coal may be possible on an economic and comfortable basis, making coal a potentially benign source of hydrogen. Maybe hydrogen could be economically split out of water by electrolysis, perhaps using renewables such as windpower; or it could certainly be made, as nearly all of it is now, by natural gas saved from currently wasteful practices, an intriguingly lucrative option, often overlooked in discussions of today's gas shortages. An economy with a major hydrogen component would do wonders for both our security and our environment. With evident improvements in fuel cells, that combination could amount to a very big deal. Applications include stationary as well as mobile possibilities, and other ideas are in the air. Real progress has been made in the use of solar systems for heat and electricity. Scientists, technologists, and commercial organizations in many countries are hard at work on these issues.

Sometimes the best way to get points across is to be provocative, to be a bull in a china closet. Amory Lovins loves to be a bull in a china closet—anybody's china closet. With this book, the china closet he's bursting into is ours, and we should welcome him because he is showing us how to put the closet back together again in far more satisfactory form. In fact, Lovins and his team make an intriguing case that is important enough to merit careful attention by all of us, private citizens, and business and political leaders alike.

Biographical Note, George P. Schultz: A native of New York, George P. Shultz graduated from Princeton University in 1942. After serving in the Marine Corps (1942–45), he earned a Ph.D. at MIT. Mr. Shultz taught at MIT and the University of Chicago Graduate School of Business, where he became Dean in 1962. He was appointed Secretary of Labor in 1969, Director of the Office of Management and Budget in 1970, and Secretary of the Treasury in 1972. From 1974 to 1982, he was President of Bechtel Group, Inc. Mr. Shultz served as Chairman of the President's Economic Policy Advisory Board (1981–82), and Secretary of State (1982–89). He is Chairman of the JPMorgan Chase International Council and the Accenture Energy Advisory Board. Since 1989, he has been a Distinguished Fellow at the Hoover Institution, Stanford University.

FOREWORD TO *Winning the Oil Endgame* by Sir Mark Moody-Stuart

In this compelling synthesis, Amory Lovins and his colleagues at Rocky Mountain Institute provide a clear and penetrating view of one of the critical challenges facing the world today: the use of energy, especially oil, in transportation, industry, buildings, and the military. This report demonstrates that innovative technologies can achieve spectacular savings in all of these areas with no loss of utility, convenience, and function. It makes the business case for how a profitable transition for the automotive, truck, aviation, and oil sectors can be achieved, and why they should embrace technological innovation rather than be destroyed by it. We are not short of energy in this world of ours; we have large resources of the convenient hydrocarbons on which our economies are based, and even greater resources of the coal on which our economies were originally built. But there are two serious issues relating to its supply and use.

First, some three-fourths of the reserves sit in a few countries of the Middle East, subject to actual and potential political turmoil. Second, there are the long-term climatic effects of the burning of increasing amounts of fossil fuels. While the normal rate of change of technology is likely to mean that we will be on one of the lower impact scenarios of climate change, and not at the apocalyptic end favoured by doom mongers, it is reasonably certain that our world will have to adapt to significant climate change over the next century. These two factors mean that, unless there is a change of approach, the United States will inexorably become increasingly dependent on imported energy—be it oil or natural gas. At the same time, on the international scene, the United States will be criticised by the rest of the world for profligate use of energy, albeit to fuel an economy on whose dynamism and success the rest of the world is also manifestly dependent. Furthermore, thoughtful people wonder what we will do if the booming economies and creative people of China and India have energy demands which are on the same development curve as the United States.

The RMI team has approached this economic and strategic dilemma with technical rigour, good humour, and common sense, while addressing two key requirements often overlooked by energy policy advocates.

First, we have to deliver the utility, reliability and convenience that the consumer has come to expect. As business people we recognise this. It is no good expecting people in the United States to suddenly drive smaller, less convenient or less safe vehicles. We have to supply the same comfort and utility at radically increased levels of energy efficiency. Most consumers, who are also voters, have only a limited philosophical interest in energy efficiency, security of supply, and climate change. Most of us have a very intense interest in personal convenience and safety—we expect governments and business to handle those other issues on our behalf. There is a very small market in this world for hair shirts. Similarly, we cannot expect the citizens of China and India to continue to ride bicycles in the interests of the global environment. They have exactly the same aspirations to comfort and convenience as we do. This book demonstrates how by applying existing technologies to lightweight vehicles with the use of composites, by the use of hybrid powertrains already in production, and with the rapid evolution to new technologies, we can deliver the high levels of convenience and reliability we are used to at radically increased levels of energy efficiency, while also maintaining cost efficiency.

The second critical requirement is that the process of transition should be fundamentally economic. We know in business that while one may be prepared to make limited pathfinding investments at nil or low return in order to develop new products and markets, this can not be done at a larger scale, nor indefinitely. What we can do, and have seen done repeatedly, is to transform markets by delivering greater utility at the same cost or the same utility at a lower cost, often by combining more advanced technologies with better business models. When this happens, the rate of change of markets normally exceeds our wildest forecasts and within a space of a few years a whole new technology has evolved.

A good example of the rapid development and waning of technology is the fax machine. With astonishing rapidity, because of its functional advantages over surface mail, the fax machine became globally ubiquitous. The smallest businesses around the world had one and so did numerous homes. The fax has now become almost obsolete because of e-mail, the e-mail attachment and finally the scanned e-mail attachment. The connectivity of the Internet, of which e-mail is an example, has transformed the way we do business. What this book shows is that the delivery of radically more energy-efficient technologies has dramatic cost implications and therefore has the potential for a similarly economically driven transition.

The refreshingly creative government policies suggested here to smooth and speed that transition are a welcome departure from traditional approaches that often overlook or even reject the scope of enterprise to be an important part of the solution. These innovative policies, too, merit serious attention, especially as an integrated package, and I suspect they could win support across the political spectrum.

The technological, let alone policy, revolution has not been quick in coming to the United States. Yet as has happened before in the automobile industry, others are aware of the potential of the technology. Perhaps because of Japan's obsession with energy security, Toyota and Honda began some years ago to hone the electric-hybrid technology that is likely to be an important part of the energy efficiency revolution. As a result, U.S. automobile manufacturers who now see the market opportunities of these technologies are turning to the proven Japanese technology to deliver it rapidly.

I believe that we may see a similar leapfrogging of technology from China. China is fully aware of the consequences on energy demand, energy imports, and security of supply of its impressive economic growth. Already China is using regulation to channel development into more energy-efficient forms. The burgeoning Chinese automobile industry is likely to be guided down this route—delivering the function and convenience, but at greatly increased levels of efficiency. And it is not just in the automobile industry—by clearly stated national policy it applies to all areas of industrial activity. This has great implications both for the participation by U.S. firms in investment in China, and also in the impact of future Chinese manufactures on a global market that is likely to be paying much greater attention to energy efficiency.

As a businessman, I am attracted by the commercial logic and keen insight that this report brings to the marketplace struggle between oil and its formidable competitors on both the demand and the supply sides. Indeed, during my time in both Shell and Anglo American, RMI's engineers have helped ours to confirm unexpectedly rich deposits of mineable "negawatts" and "negabarrels" in our own operations—an exploration effort we're keen to intensify to the benefit of both our shareholders and the environment.

As a lifelong oil man and exploration geologist, I am especially excited to learn about the Saudi Arabia-size riches that Amory Lovins and RMI's explorers have discovered in what they term the Detroit Formation—through breakthrough vehicle design that can save vast amounts of oil more cheaply than it can be supplied. And as a citizen and grandparent, I am pleased that RMI proposes new business models to span the mobility divide that separates rich and poor, not just in the United States, but in many places in the world. Concern about such opportunity divides is increasingly at the core not just of international morality but also of stability and peace.

This book points the way to an economically driven energy transformation. And its subtitle "Innovation for Profit, Jobs, and Security" is both a prospectus for positive change and a reminder that both the United States and other countries can be rapid adapters of innovative technologies, with equally transformative economic consequences. As someone who has spent a lifetime involved in energy and changes in energy patterns, I find the choice an easy one to make. The global economy is very much dependent on the health of the U.S. economy, so I hope that the U.S. indeed makes the right choice.

This report will help to launch, inspire, and inform a new and necessary conversation about energy and security, economy and environment.

Its outcome is vital for us all.

Biographical Note, Sir Mark Moody-Stuart: Born in Antigua, Mark Moody-Stuart earned a doctorate in geology in 1966 at Cambridge, then worked for Shell starting as an exploration geologist, living in the Netherlands, Spain, Oman, Brunei, Australia, Nigeria, Turkey, Malaysia, and the U.K., and retiring as Chairman of the Royal Dutch/Shell Group in 2001. He is Chairman of Anglo American plc, a Director of HSBC and of Accenture, a Governor of Nuffield Hospitals, President of the Liverpool School of Tropical Medicine, and on the board of the Global Reporting Initiative and the International Institute for Sustainable Development. He is Chairman of the Global Business Coalition for HIV/AIDS, and Co-Chair of the Singapore British Business Council. He was Co-Chair of the G8 Task Force on Renewable Energy (2000–2001), and Chairman of Business Action for Sustainable Development, an initiative of the ICC and the World Business Council for Sustainable Development before and during the 2002 World Summit on Sustainable Development in Johannesburg. During 2001–2004, he served on the U.N. Secretary General's Advisory Council for the Global Compact. He was knighted in 2000. With his wife Judy, he drives a Toyota Prius and is an investor in Hypercar, Inc.

Winning the Oil Endgame—Innovation for Profits, Jobs, and Security by Amory B. Lovins, E. Kyle Datta, Odd-Even Bustnes, Jonathan G. Koomey, and Nathan J. Glasgow

Executive Summary

Winning the Oil Endgame offers a coherent strategy for ending oil dependence, starting with the United States but applicable worldwide. There are many analyses of the oil problem. This synthesis is the first roadmap of the oil *solution*—one led by business-for-profit, not dictated by government for reasons of ideology. This roadmap is independent, peer-reviewed, written for business and military leaders, and co-funded by the Pentagon. It combines innovative technologies and new business models with uncommon public policies: market-oriented without taxes, innovation-driven without mandates, not dependent on major (if any) national legislation, and designed to support, not distort, business logic.

Two centuries ago, the first industrial revolution made people a hundred times more productive, harnessed fossil energy for transport and production, and nurtured the young U.S. economy. Then, over the past 145 years, the Age of Oil brought unprecedented mobility, globe-spanning military power, and amazing synthetic products.

But at what cost? Oil, which created the sinews of our strength, is now becoming an even greater source of weakness: its volatile price erodes prosperity; its vulnerabilities undermine security; its emissions destabilize climate. Moreover the quest to attain oil creates dangerous new rivalries and tarnishes America's moral standing. All these costs are rising. And their root causes—most of all, inefficient light trucks and cars—also threaten the competitiveness of U.S. automaking and other key industrial sectors.

The cornerstone of the next industrial revolution is therefore winning the Oil Endgame. And surprisingly, it will cost *less* to displace all of the oil that the United States now uses than it will cost to *buy* that oil. Oil's current market price leaves

out its true costs to the economy, national security, and the environment. But even without including these now "externalized" costs, it would still be profitable to displace oil completely over the next few decades. In fact, by 2025, the *annual* economic benefit of that displacement would be $130 billion gross (or $70 billion net of the displacement's costs). To achieve this does not require a revolution, but merely consolidating and accelerating trends already in place: the amount of oil the economy uses for each dollar of GDP produced, and the fuel efficiency of light vehicles, would need only to improve about three-fifths as quickly as they did in response to previous oil shocks.

Saving half the oil America uses, and substituting cheaper alternatives for the other half, requires four integrated steps:

- *Double the efficiency of using oil.* The U.S. today wrings twice as much work from each barrel of oil as it did in 1975; with the latest proven efficiency technologies, it can double oil efficiency all over again. The investments needed to save *each* barrel of oil will cost only $12 (in 2000 $), less than half the officially forecast $26 price of that barrel in the world oil market. The most important enabling technology is ultralight vehicle design. Advanced composite or lightweight-steel materials can nearly double the efficiency of today's popular hybrid-electric cars and light trucks while improving safety and performance. The vehicle's total extra cost is repaid from fuel savings in about 3 years; the ultralighting is approximately free. Through emerging manufacturing techniques, such vehicles are becoming practical and profitable; the factories to produce them will also be cheaper and smaller.
- *Apply creative business models and public policies* to speed the profitable adoption of superefficient light vehicles, heavy trucks, and airplanes. Combined with more efficient buildings and factories, these efficient vehicles can cut the official forecast of oil use by 29 percent in 2025, and another 23 percent soon thereafter—52 percent in all. Enabled by a new industrial cluster focusing on lightweight materials, such as carbon-fiber composites, such advanced-technology vehicles can revitalize these three strategic sectors and create important new industries.
- *Provide another one-fourth of U.S. oil needs by a major domestic biofuels industry.* Recent advances in biotechnology and cellulose-to-ethanol conversion can double previous techniques' yield, yet cost less in both capital and energy. Replacing fossil-fuel hydrocarbons with plant-derived carbohydrates will strengthen rural America, boost net farm income by tens of billions of dollars a year, and create more than 750,000 new jobs. Convergence between the energy, chemical, and agricultural value chains will also let versatile new classes of biomaterials replace petrochemicals.
- Use well-established, highly-profitable efficiency techniques to *save half the projected 2025 use of natural gas,* making it again abundant and affordable, then substitute part of the saved gas for oil. If desired, the leftover saved-natural-gas could be used even more profitably and effectively by converting it to hydrogen, displacing most of the remaining oil use—and all of the oil use if modestly augmented by competitive renewable energy.

These four shifts are fundamentally disruptive to current business models. They are what economist Joseph Schumpeter called "creative destruction," where innovations destroy obsolete technologies, only to be overthrown in turn by ever newer, more efficient rivals. In *The Innovator's Dilemma,* Harvard Business School Professor, Clayton Christensen, explained why industry leaders often get blindsided by disruptive innovations—technological gamechangers—because they focus too much on today's most profitable customers and businesses, ignoring the needs of the future. Firms that are quick to adopt innovative technologies and business models will be the winners of the 21st century; those that deny and resist change will join the dead from the last millennium. In the 108-year history of the Dow Jones Industrial Average, only one of 12 original companies remains a corporate entity today—General Electric. The others perished or became fodder for their competitors.

What policies are needed? American companies can be among the quick leaders in the 21st century, but it will take a cohesive strategy-based transformation, bold business and military leadership, and supportive government policies at a Federal or at least a state level. *Winning the Oil Endgame* charts these practical steppingstones to an oil-free America:

- Most importantly, revenue- and size-neutral "feebates" can shift customer choice by combining fees on inefficient vehicles with rebates to efficient vehicles. The feebates apply separately within each vehicle-size class, so freedom of choice is unaffected. Indeed, choice is enhanced as customers start to count fuel savings

over the vehicle's life, not just the first few years, and this new pattern of demand pulls super-efficient, but uncompromised vehicles, from the drawing-board into the showroom.

- A scrap-and-replace program can lease or sell super-efficient cars to low-income Americans—on terms and with fuel bills they can afford—while scrapping clunkers. This makes personal mobility affordable to all, creates a new million-car-a-year market for the new efficiency technologies, and helps clean our cities' air.
- Military needs for agility, rapid deployment, and streamlined logistics can drive Pentagon leadership in developing key technologies.
- Implementing smart government procurement and targeted technology acquisition (the "Golden Carrot") for aggregated buyers will accelerate manufacturers' conversion, while a government-sponsored $1-billion prize for success in the marketplace, the "Platinum Carrot," will speed development of even more advanced vehicles.
- To support U.S. automakers' and suppliers' need to invest about $70 billion to make advanced technology vehicles, Federal loan guarantees can help finance initial retooling where needed; the investments should earn a handsome return, with big spin-off benefits.
- Similar but simpler policies—loan guarantees for buying efficient new airplanes (while scrapping inefficient parked ones), and better information for heavy truck buyers to spur market demand for doubled-efficiency trucks—can speed these oil-saving innovations from concept to market.
- Other policies can hasten competitive evolution of next-generation biofuels and biomaterials industries, substituting durable revenues for dwindling agricultural subsidies, and encouraging practices that protect both topsoil and climate.

What happens to the oil industry? The transition beyond oil is already starting to transform oil companies like Shell and BP into energy companies. Done right, this shift can profitably redeploy their skills and assets rather than lose market share. Biofuels are already becoming a new product line that leverages existing retail and distribution infrastructure and can attract another $90 billion in biofuels and biorefining investments. By following this roadmap, the U.S. would set the stage by 2025 for the checkmate move in the Oil Endgame—the optional but advantageous transition to a hydrogen economy and the complete and permanent displacement of oil as a direct fuel. Oil may, however, retain or even gain value as one of the competing sources of hydrogen.

How big is the prize? Investing $180 billion over the next decade to eliminate oil dependence and revitalize strategic industries can save $130 billion gross, or $70 billion net, *every year* by 2025. This saving, equivalent to a large tax cut, can replace today's $10-billion-a-month oil imports with reinvestments in ourselves: $40 billion would pay farmers for biofuels, while the rest could return to our communities, businesses, and children. Several million automotive and other transportation-equipment jobs now at risk can be saved, and one million net new jobs can be added across all sectors. U.S. automotive, trucking, and aircraft production can again lead the world, underpinned by 21st century advanced-materials and fuel-cell industries. Amore efficient and deployable military could refocus on its core mission—protecting American citizens rather than foreign supply lines—while supporting and deploying the innovations that eliminate oil as a cause of conflict. Carbon dioxide emissions will shrink by one-fourth with no additional cost or effort. The rich-poor divide can be drastically narrowed at home by increased access to affordable personal mobility, shrinking the welfare rolls, and abroad by leapfrogging over oil-dependent development patterns. The U.S. could treat oil-rich countries the same as countries with no oil. Being no longer suspected of seeking oil in all that it does in the world would help to restore U.S. moral leadership and clarity of purpose.

While the $180-billion investment needed is significant, the United States' economy already pays that much, with zero return, every time the oil price spikes up as it has done in 2004. (And that money goes into OPEC's coffers instead of building infrastructure at home.) Just by 2015, the early steps in this proposed transition will have saved as much oil as the U.S. gets from the Persian Gulf. By 2040, oil imports could be gone. By 2050, the U.S. economy should be flourishing with no oil at all.

How do we get started? Every sector of society can contribute to this national project. Astute business leaders will align their corporate strategies and reorganize their firms and processes to turn innovation from a threat to a friend. Military leaders will speed military transformation by promptly laying its foundation in super-efficient platforms and lean logistics. Political leaders will craft policies that stimu-

late demand for efficient vehicles, reduce R&D and manufacturing investment risks, support the creation of secure domestic fuel supplies, and eliminate perverse subsidies and regulatory obstacles. Last, we, the people, must play a role—a big role—because our individual choices guide the markets, enforce accountability, and create social innovation.

Our energy future is choice, not fate. Oil dependence is a problem we need no longer have—and it's cheaper not to. U.S. oil dependence can be eliminated by proven and attractive technologies that create wealth, enhance choice, and strengthen common security. This could be achieved only about as far in the future as the 1973 Arab oil embargo is in the past. When the U.S. last paid attention to oil, in 1977–1985, it cut its oil use 17 percent while GDP grew 27 percent. Oil imports fell 50 percent, and imports from the Persian Gulf by 87 percent, in just 8 years. That exercise of dominant market power—from the demand side—broke OPEC's ability to set world oil prices for a decade. Today we can rerun that play, only better. The obstacles are less important than the opportunities if we replace ignorance with insight, inattention with foresight, and inaction with mobilization. American business can lead the Nation and the world into the post-petroleum era, a vibrant economy, and lasting security—if we just realize that we are the people we have been waiting for.

Together we can end oil dependence forever.

For the full report and more information, please visit *www.oilendgame.com*

The Ripon Forum, March/April 2005

ENDING OUR OIL DEPENDENCE

REPLACING ALL THE OIL THE U.S. NEEDS WILL COST LESS THAN BUYING IT

by Amory B. Lovins

The United States of America has the world's mightiest economy and most mobile society. Yet the oil that fueled its strength has become its greatest weakness.

Fortunately, this 10,000-gallon-a-second oil habit is also uneconomic, and American business is the greatest force on Earth for turning market imperfections into profits.

The United States can *eliminate* its oil dependence and revitalize its economy—not by passing Federal laws, taxing fuels, biasing markets, subsidizing favorites, mandating technologies, limiting choices, or crimping lifestyles, but by adopting smart business strategies. If government steers, not rows, then competitive enterprise, supported by judicious policy and vibrant civil society, can turn the oil challenge into an unprecedented opportunity for wealth creation and common security.

How can this be done? President Ronald Reagan's National Security Advisor, Robert C. McFarlane, wrote in an op-ed in *The Wall Street Journal* published on Dec. 20, 2004, that "perhaps the most rigorous and surely the most dramatic analysis . . . was tasked by the Pentagon and carried out by . . . Rocky Mountain Institute, a respected center of hard-headed, market-based research." Three months earlier, my team released that independent, peer-reviewed, 329-page study—*Winning the Oil Endgame: Innovation for Profits, Jobs, and Security*—and posted it with all technical backup at *www.oilendgame.com*. More than 170,000 free copies have already been downloaded. Here's a summary. But first, a little history is necessary.

In 1850, oil from the giant whaling industry lit most homes. Yet in the nine years before Drake struck oil in 1859, five-sixths of the whale-oil market vanished: competition elicited cheaper alternatives that the whalers had not expected. They ran out of customers before they ran out of whales, the rest of which were saved by capitalists and technological innovators.

Today, the globe-girdling oil industry seems poised to follow suit. Might oil become uncompetitive even at low prices before it becomes unavailable even at high prices? To find out, my economists, engineers, scientists and consultants added up the modern competitors for the first time. We examined decades' backlog of powerful new technologies for saving and displacing oil. We arranged them in order of increasing cost on a uniform accounting basis. Surprise! The robustly competitive options could save half the oil America uses and substitute cheaper alternatives for the rest, all led by business-for-profit. The transition beyond oil has three parallel elements:

- *Redouble the efficiency of using oil.* The United States now gets twice as much GDP per barrel as in 1975, but can wring out twice as much again by applying proven 2004 technologies. Saving each barrel will cost only $12 (in year-2000

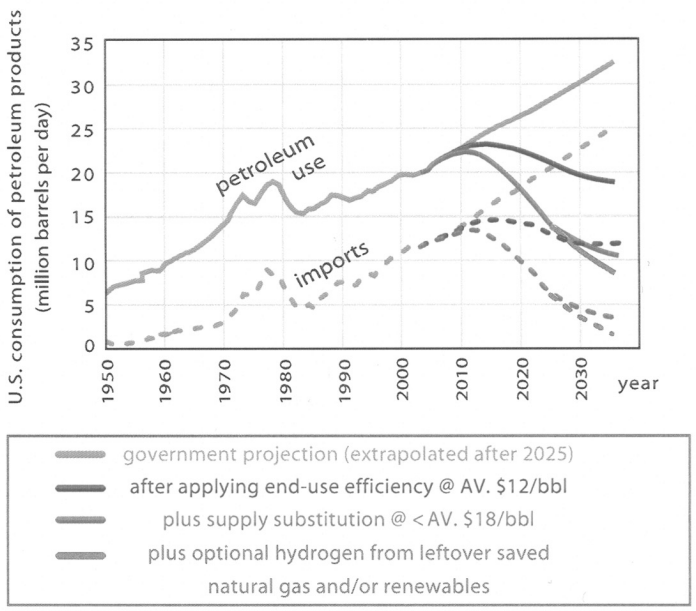
dollars)—less than half what the government forecasts oil will cost in 2025, or a fourth the recent price, so even more efficiency would be worth buying. Conservatively, we valued oil's unmonetized economic, military and environmental costs at zero, and assumed the same activities, vehicle attributes and lifestyles as the government forecast—then found ways to deliver these outcomes with less oil, less money and more brains.

Personal vehicles use 42 percent of U.S. oil and cause 58 percent of its forecast growth. Only 1 percent of their fuel energy moves the driver. Yet George P. Shultz's Foreword to our study says: "Hybrid technology is already on the road, and currently increases gas mileage by 50 percent or more. . . . New, ultralight-but-safe materials can nearly redouble fuel economy at little or no extra cost. . . ." Ultralight, ultrastrong carbon-fiber composite autobodies (make-able by a technique displayed by a Tier One supplier at the 2005 Detroit Auto Show), backstopped by new lightweight steels, can yield uncompromised, affordable 66-mpg hybrid SUVs and 92-mpg hybrid cars that pay back in three years. The materials' extra cost is offset by simpler auto-making and smaller propulsion systems. Per pound, the composites can absorb 6–12 times as much crash energy as steel, so by making cars big, which is protective, but not heavy, which is hostile and fuel-wasting, they can save oil *and* lives.

Even without lighter materials, if 2025's cars and light trucks were only as efficient as 2005's popular hybrids, they'd save a sixth of forecast oil use, or two Persian Gulfs' worth. Together, cost-effectively efficient vehicles, factories and buildings can cut U.S. oil use by 29 percent in 2025, rising to 52 percent as vehicle stocks turn over.

- *Save half of natural gas at an eighth of today's market price, and then substitute it for nearly a third of the oil.* Established, highly profitable efficiency techniques can save 12 trillion cubic feet (TCF) of gas a year. In all, 15 TCF a year can be freed up to displace oil, directly or (more efficiently and profitably) via hydrogen. Saving just 1 percent of U.S. electricity, including peak hours, saves 2 percent of total gas use and cuts gas prices by 3–4 percent. By this leverage, just the early savings would make gas affordable and abundant again, cut gas and power bills by $55 billion a year, and avoid the cost, siting problems and vulnerability of new liquefied natural gas (LNG) terminals and powerlines.
- *Replace the last fifth of U.S. oil with modern biofuels.* Two percent of U.S. gasoline today is substituted by costly, heavily subsidized ethanol made from corn-based sugars. Making ethanol instead from the woody parts of plants like switchgrass and poplar doubles the yield while saving capital and energy. Without competing for food crops' land or water, such "cellulosic ethanol," plus biodiesel, can cost-effectively displace nearly four million barrels of oil per day, create 750,000 rural jobs, and boost farm income by tens of billions of dollars a year. (Sugarcane ethanol has displaced 25 percent of Brazil's gasoline, repaying initial subsidies 50 times over, and now beats gasoline without subsidy.)

Within two generations, combining these three steps could make a more prosperous and secure America completely oil-free (see graph). This will require $90 billion of investment to retool the car, truck and plane industries, so that rather than importing efficient vehicles to replace foreign oil, we *make* efficient vehicles and import neither. Building an advanced biofuels industry will take another $90 billion. This $180 billion of private investment will by 2025 return *every year* more than $150 billion gross ($133 billion of it from saved oil) or $70 billion net, add a million new jobs, and preserve another million jobs, chiefly automotive, now at risk.



How oil efficiency and substitutions, deployed at historically reasonable rates, can profitably eliminate oil dependence over the next few decades.
Further details at www.oilendgame.com.

Making America More Competitive

The business case is compelling: cheaper trucking with doubled margins, affordable petrochemical feedstocks and airline fuel, lower and more stable fuel prices for all, and restored American primacy in making cars, trucks and planes. And the alternative is grim. China's ambitious car-export plans fit Beijing's new energy policy focused on efficient use and breakthrough technologies. Will China export your uncle's Buick? More likely you'll drive home your super-efficient Chinese car from Wal-Mart. The Big Three automakers will be toast unless they adopt advanced efficiency technologies first.

Such "disruptive" business shifts are hard. However, hesitating risks a slow, chaotic transition rife with wars and disruptions. Protecting national competitiveness and security requires instead an orderly transition harnessing America's strengths in technology and private enterprise, accelerated by light-handed policies that support, not distort, business logic.

Our study therefore suggested modest policy innovations that are market-oriented without taxes, innovation-driven without mandates, doable administratively or at a state level (where many are bubbling up), and previously overlooked in Washington. For example:

- "Feebates" for new cars and light trucks combine fees on inefficient models with rebates on efficient ones—all calculated separately within each size class, so one isn't penalized for choosing an SUV, but rewarded for choosing an *efficient* SUV. Whatever vehicle size you want would offer more choices as the greater price spread between more and less efficient models pulls innovations faster from the lab to the showroom. Feebates encourage you to invest in fuel savings over the vehicle's life, not just the first few years. Rebates no bigger than current $4,000–$5,000 manufacturer sales incentives would actually make money for producers as well as consumers, and be trued up each year to stay revenue-neutral. The fuel savings would be like buying gasoline at 57¢ a gallon—worthwhile even if the big savings made oil prices plummet.

- Low-income families lack affordable personal mobility—the last frontier of welfare reform. Junking clunkers and creatively financing super-efficient and reliable new cars could cleanse urban air, expand low-income employment opportunities, and create a profitable new million-car-a-year market for advanced-technology vehicles.
- Governments buy hundreds of thousands of light vehicles a year. Smart procurement can speed innovation and reduce automaker's investment risk.
- Innovation-friendly policies like temporary Federal loan guarantees (structured to cost the Treasury nothing) can help automakers retool and retrain, and airlines buy efficient airplanes while scrapping inefficient ones.
- Tweaking USDA rules can let profitable biofuels and biomaterials replace loss-making crops and durable revenues replace subsidies, ultimately tripling net farm and ranch income.
- The 48 states that reward gas and electric distribution utilities for selling more energy and penalize them for cutting customers' bills can easily purge this perverse incentive—as state utility commissioners unanimously urged in 1989.
- The military imperative of light, agile, fuel-efficient forces can protect troops and fuel supply lines, save tens of billions of dollars in annual fuel-logistics costs, realign force structures from tail to tooth, avoid poisonous geopolitical rivalries over oil, and ultimately help prevent the fighting of wars over oil.

Being able to treat countries with oil the same as countries without oil, and no longer giving anyone cause to think U.S. actions are about oil, would help defuse global suspicions and conflicts. By modestly shifting its technology budgets and procuring fuel-efficient platforms, the Defense Department could spawn broadly transformative advanced-materials civilian industries—just as it did with the Internet, GPS, and microchips that propel today's economy.

A Better Energy Policy

The required one-time $180 billion investment, spread reasonably over a decade, averages $18 billion a year. That's what America now pays for foreign oil every 5–6 *weeks*. At the forecast 2025 price of $26 a barrel, the oil saving of $133 billion a year would act like a large and permanent tax cut, but one that corrects, not exacerbates, today's fiscal imbalances. And the savings would become big even in the first decade.

Rather than sending $120 billion a year abroad for oil (partly to fund our enemies), we would reinvest it in our own companies and communities, and pocket the surplus. Drilling for oil under Detroit, we would discover a trove of vehicular efficiency bigger than Saudi Arabia's oil output, but all-American, squeaky-clean and inexhaustible.

Our analysis assumed vehicle improvements two-fifths slower than after the 1979 oil shock, and enormously slower than in the 1920s (when autobodies shifted from wood to steel in six years) or in World War II (when Detroit mobilized in six *months*). Indeed, our proposed oil savings are much slower than America achieved when she last paid attention. During 1977-85, 27 percent GDP growth was accompanied by 17 percent *lower* oil use, 50 percent *lower* oil imports, and a stunning 87 percent drop in Persian Gulf imports. OPEC's sales fell 48 percent, breaking the cartel's market power for a decade. The United States showed it had more market power than OPEC—but on the demand side: America is the Saudi Arabia of negabarrels, able to save oil faster than OPEC can conveniently sell less oil. Today's potent technologies and policy options could make that old play even more successful.

Automakers are already scrambling to make advanced-technology vehicles, and the oil industry, where I've consulted for 32 years, is generally receptive. Shell's former Chairman, Sir Mark Moody-Stuart, wrote in his Foreword that our study reflects "technical rigour, good humour, and common sense," as well as "refreshingly creative policies . . . [that] merit serious attention. . . ." Many oil-industry leaders agree that with foresight and supportive policies, they can profitably redeploy assets and skills in the post-petroleum era, as some already do with branded biofuels. The hydrogen in their oil may even be worth more without the carbon than with the carbon (even if nobody pays to keep carbon out of the air), because hydrogen can be used far more efficiently than hydrocarbons.

The result: By 2015, early savings will displace as much annual oil as the United States now gets from the Persian Gulf; then every seven years (at 3 percent annual GDP growth) can save another Gulf 's worth. By 2040, oil imports could be gone. By 2050, the United States economy could be oil-free and thriving, dominant again in transportation equipment. A more effective and efficient but less overstretched

military could refocus on protecting American citizens, not foreign pipelines. Rather than prolonging for decades our reliance on the frighteningly vulnerable Trans-Alaska Pipeline to haul oil that's too costly for oil majors to drill, this grave threat to national energy security could phase out on schedule. Carbon emissions would shrink by one-fourth as a free byproduct of profitable oil savings. Federal budget deficits would shrink slightly, trade deficits vastly. The United States could regain moral stature and esteem as it led a more peaceful world beyond oil.

Oil dependence is a problem America needn't have, and it's cheaper not to. Getting profitably, attractively and completely off oil—led by business, implemented through markets, sped by barrier-busting, boosted technologically by the Pentagon for military effectiveness and conflict prevention—would express America's highest ideals, honor its market and political principles, and enhance its security. Informed citizens will drive this transition as they guide markets, enforce accountability and create grassroots innovation.

A better energy policy process would offer even wider benefits for a stronger country and a safer world. Letting all ways to save or produce energy compete fairly at honest prices—no matter what kind they are, what technology they use, how big they are, or who owns them—is far from today's hogs-at-the-trough approach, but it's what conservative economics demands and what the Nation's broad hidden consensus (*www.nepinitiative.org*) would support.

Mr. Shultz concludes: "We can, as Amory Lovins and his colleagues show vividly, win the oil endgame." Mr. McFarlane concurs: "It is becoming clear . . . that the means to achieving near-term energy security and ultimate independence from foreign oil are at hand. Courage and leadership are all that it takes to get us there." And the preamble to President George W. Bush's 2001 energy policy statement says it best: "Our country has met many great tests. Some have imposed extreme hardship and sacrifice. Others have demanded only resolve, ingenuity, and clarity of purpose. Such is the case with energy today."

—Amory Lovins is founder and CEO of Rocky Mountain Institute (*www.rmi.org*), an independent, nonpartisan, nonprofit applied research center in Snowmass, Colorado. He has advised the Departments of Energy and Defense, and consults for industry worldwide.

The CHAIRMAN. Thank you very much. That's a very hopeful statement.

Let me get mundane here. My experience goes back to the time when there was competition at the gas station, and prices were coming down because of it. I worked in a small gas station, and I soon learned that if the gas price went down too low, by the time the next truck came back they couldn't buy enough gas to fill the tanks up to keep in business. Now, we hear a lot about price-gouging from the gas stations. Could one, or both of you, comment on the role for people that are operating gas stations. In my judgment, it is necessary to raise the price in order to have the money to buy the next load of fuel to sell to their consumers. Am I right or wrong?

Mr. West?

Mr. WEST. Senator, I think that's essentially correct, that the gas-station owners—and 90—about 90 percent of the gas stations in the United States are owned independently; they're not owned by the big oil companies. Basically, they buy in expectation of replacement cost. That's the—which is what you're saying—that's how they operate.

There may be instances of price-gouging, but price-gouging is very difficult if there is competition. If there's no competition, maybe you can do it. But, basically, it is expectation of replacement cost. That's what drives them.

The CHAIRMAN. Do you have any comment, Mr. Bustnes?

Mr. BUSTNES. No, I completely agree, actually. I agree with Mr. West.

The CHAIRMAN. You've each commented upon measures we could take. Do you think that those measures take legislation to accomplish? Are these measures you've suggested, such that could be done by the industry, without any further changes in our national laws?

Mr. WEST. On my—the two things which I have mentioned—the two short-term fixes, which are increased inventory and redundancy in systems in refineries and in pipelines—theoretically, the industry could do them by themselves. But there's a cost. And particularly on the—maintaining inventories. If they do it for a long period of time, it could be quite expensive. But, essentially, they could do it, and, I think, should be encouraged to do it. But, I think, long-term, a framework should be established.

Mr. BUSTNES. Two thoughts——

The CHAIRMAN. Mr. Bustnes?

Mr. BUSTNES.—two thoughts come to mind, Mr. Chairman. Regarding the question as to whether we should have policy to encourage these technologies of—for efficiency, for instance—to enter the marketplace. My answer would be that, you know, over the long-term, economics is going to sort these things out, if you will. The marketplace will sort these things out. However, policy can be very helpful, in terms of accelerating the marketplace, and what is delivered into the marketplace in the direction that we want. And this is why we leave it out as an option to help that acceleration.

Now, specifically, does it require legislation, or can these things be done administratively? It's the latter. Most of the things that we suggest as policy options, Mr. Chairman, can be done in an administrative fashion, as opposed to having to do legislation.

The other point to note, that I very much agree with, is that, when it comes to this being a national effort, it will require coordination between the Federal, State, and local levels. There's no question in my mind that that is correct. And, as such, many of the measures that we're talking about in this report can be done at, say, a State level. And, in fact, it could be a very interesting thing for this country to let the states experiment a little bit before we adopted certain things on a Federal level.

Thank you.

The CHAIRMAN. One last—pardon me, go ahead.

Mr. WEST. I was just going to add one thing. I think there's one area that's very important, and that is, if you want to build new refineries in the United States, you're simply going to have to review, particularly, the question of new source review, in terms of environmental permitting. And whether that requires a change of law or regulation, I'm not sure, but that really is a very serious problem.

The CHAIRMAN. Shortly, should the Strategic Petroleum Reserve play any part in our consideration of the price of the product sold at the pump?

Mr. WEST. I would respectfully submit that Katrina was an interruption of supply, which affected price. So, it was entirely appropriate to use it. To just use it to manage price, I'm not sure that's such a good idea, because it can become politicized, at times, as it has in the past. But I think in terms of—again, I go back to my point—the government is a factor. It's important to recognize,

the government, immediately after 9/11, started filling SPRO with royalty oil from the Gulf of Mexico, for the purposes of supporting the market and taking oil off the market. So, the government was intervening in the market. Now people say, "Well, we can't use SPRO." But I—to release oil—but, in fact, it was being used previously to pull the oil off. So, what I'm trying to say is, to get—have government understand its role in the market, and make sure it's consistent.

The CHAIRMAN. Very shortly. You want to add anything, Mr. Bustnes?

Mr. BUSTNES. I can't comment on that, sorry. Sorry, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Senator Inouye, you're recognized for 5 minutes.

Senator INOUYE. I believe all of us recognize that, though we represent about 4 percent of the world's population, we consume over a quarter of all of the fossil fuel. My State of Hawaii, 20 years ago, had to depend upon fossil fuel to the extent of about 95 percent, because nothing else was available. And so, we've tried everything—geothermal, now we're successfully looking at solar energy, and we're looking into wind energy, et cetera. But, even at that, it's just a dent.

All of us have attempted to do something about CAFE standards—other sources, biofuel. And it's like pulling teeth. It's not easy. And so, how about talking about a little supply, not just demand? I realize this is controversial, but I've supported the Chairman for many years on ANWR. Is that a wise decision, or a bad decision, to open up ANWR, as suggested by legislation?

Mr. WEST. Mr. Chairman, I—one of the things that I think is very important is, if you look at—on my testimony, on page 2, you'll see a chart. It said, "World's production is comprised of many fields." And the way the international oil business works is, there are not one or two huge valves you open; there are literally thousands of fields around the world. And we're concerned that we're going to become increasingly reliant on oil from unreliable places, such as Russia and Saudi Arabia. And you can see here, in the category on the right, it says, "Biggest fields in North America and the North Sea," and you can see the production from the biggest one is Prudhoe, and that's under a million barrels. If ANWR were to come on, it would be the biggest field in North America or the North Sea. This is not trivial. And I think right now we have an energy policy which discourages production and encourages consumption. And that is absolutely unsustainable.

Decisions were made—Senators concerned with—a number of Senators have been concerned about natural gas. A decision was made to basically rule out the eastern Gulf of Mexico. One of the problems we have is that when—for the last 20 years, when energy issues came up and collided against any other issue, when it collided against tourism and real estate in Florida, we said, "No, no, that industry will prevail over natural gas in the Gulf of Mexico." We can't go into the Rocky Mountain area, we can't go into a number of areas.

Now, if this is the decision people want, that's fine, but recognize there is a cost. And, as I say, in terms of ANWR, it would be a sig-

nificant secure field. Does that make sense, as you look at the world? I think it does. But not everyone agrees.

Mr. BUSTNES. Could I make an additional comment to that——

Senator INOUYE. Please.

Mr. BUSTNES.—Senator? You make a very important observation, which is that the United States essentially burns up about a quarter of the global energy. In terms of oil, specifically, today we consume, globally, about 82 million barrels per day of oil, and the United States consumes about 20–21 of those. The price of oil, as we've heard before, is essentially set between supply-and-demand in the global market. There is a very interesting data point, if you go back, historically speaking, on this topic, which is this issue of excess capacity to produce oil versus what is consumed by the world. Generally speaking, if you go below three million barrels a day of excess capacity, historically it's always shown that you will see more volatility in the price of oil. So, the point being, the price of oil is driven, fundamentally, by supply-and-demand, on top of which you have real risks, such as weather or terrorism, on top of which you have speculators.

In the last couple of years, what we've seen is a tremendous run-up of speculation as a result of movements on the fundamental demand-and-supply picture. My sources in the oil industry tell me, that right now, about a trillion dollars a year is pushed around, speculating on oil alone, never mind natural gas.

If you want to change this picture, you've got to look at the fundamental demand/supply situation. If you want to change demand, we've got to look at efficiency. And that's what our report has looked at very carefully across all sectors. We have examined that, and we have found the potential is quite large—and economical.

If you want to look at supply, think of biofuels as adding to your refinery capacity, if you will. It's another option, part of the portfolio package.

Thank you.

Senator INOUYE. I agree with you completely, but I hope that we can convince people of this Nation. We have been struggling over the years on CAFE standards. Finally, cars are coming down, but they're resisting it, "Let's stretch this out for another five more years. Let's go beyond that."

Prius came out, by Toyota, and others have caught on, but yet we make SUVs actually a truck, so they don't get taxed as much as passenger cars. What does it take us to really realize that we're in danger?

Mr. WEST. Senator, what I've tried to do in this little report is to say that—I mean, my last sentence is that if we dither anymore, as we have for so long, we will pay a terrible price, the economic equivalent of a Category@hurricane. Katrina was a Category 4. And I think that—I agree with you that we must act, but I think one of the things that's important is that a lot of people who have not participated in this debate actually have—they've—as I say, the American Association of Retired People, for example, has a huge stake in this debate. They—and they're a very powerful constituency, and have done nothing on this. And I think people like this have got to participate. And it should make it easier, frankly,

for people such as yourself who want to act, because it can give you the—some more political resources to act.

Mr. BUSTNES. If I may add to that, you're looking for signs. What should tell us when to act? And I think signs include when the U.S. automotive sector goes out of business because it can't compete any longer with the Toyotas of the world. It includes our heavy trucks basically being run by unprofitable companies. These are signs of the times that you see today, actually.

I would submit to you, Senator, that if there are two immediate next steps that we could do—because you look around and you see it, you see hybrids, led by Toyota; you see advanced materials, led by BMW and Honda; you see biofuels research, some of which is happening here, but Europe leads the United States—on biodiesel, for example—by a factor of 17. These are some signs of things that are changing right now, as we speak.

What can we do here in this country? I would say, immediately, two specific steps. First, redirect R&D to critical technologies that we know will work. For example, advanced materials and biofuels research and development, and commercialization. And, second, ensure that business here—I mean, this is a choice that you can make, essentially, as a country—but if we want these industries to exist, going forward, we've got a choice, and the choice is to help the automotive industry, plane and truck industries, put out efficient products in the marketplace, be it through loan guarantees that may not need to cost the Treasury anything, or other initiatives. These are initiatives that can be made.

Thank you.

Senator INOUYE. Thank you very much.

The CHAIRMAN. Thank you very much. I don't want to be disrespectful, but that little thing in front of you, flashes red when the time's up. If you can help us with time, we'd appreciate it.

Senator Snowe, you have not had an opening statement. We each had 2 minutes. Would you like 2 minutes?

Senator SNOWE. Thank you, Mr. Chairman. I'll wait, and I'll ask my questions.

The CHAIRMAN. Very well.

Senator SNOWE. Thank you.

The CHAIRMAN. Senator Nelson?

Senator BEN NELSON. Thank you, Mr. Chairman.

I mentioned the problem that is being recognized right now with the high cost, and the increasing cost, of natural gas and the availability of natural gas that could be increased through the pipeline, that has been proposed from Alaska to the continental United States, the adjacent states. It seems to me that if we were able to do that, that might be helpful. However, the time between now and the completion of that is not something that would give us any immediate relief, and communities are looking for immediate relief, particularly as we go to the—toward the winter season, where reliance on natural gas is going to be so important to home heating.

I mentioned the Mayor of Fremont, Nebraska, Mayor Skip Edwards, and his concerns about what's increasing. And he has asked the question, which I think's a legitimate question, and I would like to get your thoughts about it, and that is about the oversight on the speculation that goes on in the commodities market,

and as to whether or not gas or oil—in this case, either one—should be treated as a commodity traded on in the market, whether that stabilizes, as some have suggested that it will, the price, or whether that destabilizes the price. I'd like to get your thoughts.

Mr. West?

Mr. WEST. Senator Nelson, as a general rule, the more capital in a market, if it's a transparent market, the more efficient the market. If there are just a couple of players in the market, it's easier to distort the market. So, I don't think that the speculators are—this really isn't the problem, Senator.

Senator BEN NELSON. Well, but if you see a run-up at the level that it has been going, in many cases they're—the markets stop. In other words, there's a stop-loss or stop-mechanisms that says that if they go above a certain level at any particular time, that cuts it off, so the trading doesn't further destabilize the commodity. What are your thoughts about that? Either of you.

Mr. WEST. But, Senator, with all due respect, I think what's happened is, the market has—it's certainly, in natural gas in the last 18 months—and I think—by the way, natural gas this winter may be a more serious problem, and Hurricane Rita may compound the natural-gas problem, actually——

Senator BEN NELSON. Well, that's one of the reasons I'm raising it.

Mr. WEST. Yes. This is——

Senator BEN NELSON. Because I am very concerned about it.

Mr. WEST.—this is very serious. And the Gulf of Mexico is a very important source of natural gas. But I think that—I don't think—speculators can't keep driving markets up and up. The market is just too big, and too liquid, and too deep.

Mr. BUSTNES. Let me add to that. I completely concur. The picture I would paint of the market is one of three critical factors. The first factor is the fundamentals of demand and supply. The second factor contains risk—real risk factors, like the terror premium, like hurricanes, like weather and climate. The third factor is the factor containing those speculators that you are asking about, and their operations in the market. What's happening today is that we've got a fundamental tight supply-and-demand situation compounded by these natural risks that we've just seen recently.

Going forward, if you take a long-term, sound look at the situation, the thing to focus on is the fundamentals, and the fundamentals that you've got to look at in this case, I would submit to you, because it's economically just a win-win, would be the demand side of this equation.

We know—there are piles and piles of studies out there that show how to reduce the oil consumption in this country by 30, 40, 50 percent. We've just got to do it together as a country. That's the critical challenge ahead of us. And we can do it.

Thank you.

Senator BEN NELSON. Well, working toward—I think working toward supply, as opposed to Mr. West's suggestion, trying not to—trying to increase working on the demand side—perhaps there's a little bit of a difference of opinion about how we go about doing that.

But, Mr. West, what would constitute an unfair practice or price-gouging? If supply or demand dictates it, and it's not market manipulation in the securities field because there's enough money that comes in, and the market is big enough to be able to control that, what would, in your opinion, constitute price-gouging? Is there such a thing?

Mr. WEST. Oh, I—if you had a captive market, it would just be putting up price—essentially, I think, the way you gouge is, you withhold from the market. I don't know how else you'd do it.

Senator BEN NELSON. Well, would OPEC be guilty of that?

Mr. WEST. Well, I think OPEC is kind of—it's a little—with all due respect, I think OPEC—first thing, it's—OPEC is a gathering of nations that pursue their own self—they pursue their interests, as we pursue our interests.

Senator BEN NELSON. But they're not—that wouldn't necessarily be gouging, if you're pursuing your own interests.

Mr. WEST. Well, there have been times they have withheld production in order to support the price. They've also said they don't want the price too low, because that damages their economy. They also don't want the price too high, because that could affect demand and hurt the market. So, they were going for what they call a—excuse me; turn that off—they were going for a price band.

Frankly, they have blown through the price band. And OPEC, at this point, is along for the ride. OPEC, if you look at the——

The CHAIRMAN. That had to be one of your clients objecting to what you said.

[Laughter.]

Mr. WEST. Saudi Arabia on the line.

[Laughter.]

Senator BEN NELSON. The new Ambassador from Saudi Arabia calling.

[Laughter.]

Mr. WEST. But OPEC does not control the market now. One of the points my colleague made here was that spare capacity is critical. If you look in my testimony, there's a chart which shows the amount of spare capacity, which is largely in Saudi Arabia. It's under two million barrels. And they said that that would be available on call, if necessary.

One of the problems is that that tends to be heavy crude, which we can't even run in the refineries right now. Essentially, the world system—what I'm trying to say is, the world system is running at capacity. There is no significant production being withheld. And, at times in the past, they have done it, but one of the things to understand is, the oil business is cyclical business, and if you go back and look at the history of this business, there have been a number of cycles, about 20-year waves. And you had the Texas Railroad Commission, which withheld oil from the market in Texas, you had what's called the "as-is agreement," where, basically, Standard Oil and Shell divided up the world and withheld oil from the market. Then you had, really, the dominance of the "Seven Sisters," and then you had the arrival of OPEC. But the—usually, there has been, at some point—because when there are high prices, two things happen. One, more production is brought in. And, two, demand declines.

Senator BEN NELSON. Not if it's controlled.

Mr. WEST. But the fact of the matter is, is that OPEC—if you look in the 1980s, the OPEC countries, economically, were really struggling in the late 1980s, and they were not awash with money, I assure you. And we can provide all the data you want on that. But OPEC right now is not—with all due respect, I don't think suing OPEC's going to get you very far.

The other thing is, on the subject of Saudi Arabia, I think that—Senator Lautenberg's saying that they should open up the taps or whatever—but the fact of the matter is, is that there's a debate going on whether they can even sustain their existing production. Saudi Arabia is prepared to invest $50 billion to increase production from 10 to 12-and-a-half million barrels a day. Our view is that Saudi Arabia—think what you may about Saudi Arabia's political system, but, in terms of the oil markets, they've been pretty constructive. They have—at the time of the Iraq War, they put more money into the—put more oil into the market. At the time of the Venezuelan strike, which was a very important point in this business, they put more oil into the market.

So, I think it's—I would respectfully submit that people approach Saudi Arabia with some knowledgeable caution, sir.

Senator BEN NELSON. I'm sorry that—I'm sorry I went over. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Cantwell?

Senator CANTWELL. Thank you, Mr. Chairman.

Mr. Bustnes, thank you for your statement about investment in technology. We, in the Northwest, are firm believers in the material end of the equation, as Boeing is building a new plane that is 60 percent composite materials, which will be 30 percent more fuel efficient. We are trying to put our foot on the biodiesel gas pedal, as it relates to cellulosic feedstock. And I agree, there's a lot that states, regions, and the national policy can do to expedite bringing true competition to the marketplace. Your notion of decreasing the demand for fossil fuel by half by that investment is encouraging.

The question becomes: what do we do in the short-term? And Mr. West is, I think, articulating "wait until the markets correct themselves." Is that right, Mr. West?

Mr. WEST. No.

Senator CANTWELL. OK. Good.

Let me ask you this, Mr. West. Following up on my colleague's question, do you think there is enough transparency in this market?

Mr. WEST. I'm not a specialist in this area, but my impression is the markets are quite transparent. I think the FTC has investigated—they've had countless investigations in this. And if the market is not transparent—I mean, I'm all for—I believe in markets. I believe in transparent markets. I don't think you're going to——

Senator CANTWELL. Right, so can I——

Mr. WEST. With all due respect, I don't think you're going to get very—I don't think you're going to learn a great deal more.

Senator CANTWELL. Well, you know, we heard the same thing about the western energy crisis and the electricity markets. And, you know what? When we heard about gouging Grandma Milly, we

found out a lot more about the electricity markets. And I think this Committee ought to have an investigation and push the FTC and push every avenue we have, because I'm not going to wait for the market to correct itself while people go bankrupt, people lose their pensions, people lose their jobs, and the American economy is ruined. I mean, at what price, of gasoline—$4, $5 a gallon—are we going to do something about this?

So, my question for you is—this past week, AAA, hardly an aggressive organization as it relates to putting out press releases, spoke on behalf of various gas-station dealers saying that they were forced by their parent company to raise the price 68 cents per gallon—this is post-Katrina—while the spot market in other areas had the price lower. So, here was somebody saying—the spot market price was 68 cents lower, and now they're getting an order from their oil company supplier to raise the price 68 cents above the spot market. Now, does that sound like transparency?

Mr. WEST. Senator, I'm not familiar with the facts on this. The one thing I would point out, generally, though, is that the retail stations, 90 percent of which are not owned by oil companies—oil companies can't tell gas stations, unless they—if these were the company-owned stations, they can tell them to raise the price. If these are not company-owned stations——

Senator CANTWELL. They were company-owned—that is the point. This is the point. OK. I think the GAO has been right about this. My colleagues from Oregon, both Senator Smith and Senator Wyden, have been pushing on this as has my colleague from California. We've got conflicting reports. The FTC says, "Yes, these mergers, no big deal." The GAO came back and said, "Oh, no, a big deal." You almost have a oligopoly here. And, as you just said, when you have an oligopoly, when you have fewer players, they control the price. So, what's happening is, here's the spot-market price. The spot market is the going-day price. Then you have these oil-company-owned stations, and they're getting on the phone, saying, "Hey, raise the price." Now, what do you think the independents are going to do in that situation? So, they're putting pressure on.

Now, we'll find out. That's why I think this committee ought to have subpoena power. That's why I think this committee ought to go after this issue. Because it's obvious the FTC hasn't been able to get the job done. But, just like in the western electricity market, we heard the same complaints, "It's all about supply. It's all about environmental rules." And then when we found out there was a lot of market manipulation going on.

So, I'm all for markets, too, but, by God, they'd better have transparency. I don't know what your thought is about at what point the gas price is so high that markets aren't functioning. Do you have a number?

Mr. WEST. No, I don't. I think there are—a couple of points. One, I agree, I think markets should be transparent, and people should be held accountable to the rules in the market. I'm not going to defend that.

I think one of the things that it's important to recognize—and the point I've tried to make is that Katrina should be seen as a wake-up call. Gasoline prices are down now, I think I saw in the

paper, 17 cents or something, from the high. But the fact of the matter is, unless certain actions are taken, you know, you're going to have $4 gasoline, you're going to have $5 gasoline, and you're going to have $6 gasoline, and——

Senator CANTWELL. And at what point will you say the market isn't working?

Mr. WEST. Oh, I think it's—this is a global commodity. This is what I'm trying to say. And it will be reflected in cost. And it's—this is—this is something—what I'm trying to say is that, in terms of the world market, the oil companies do not set the price. They are—in economic terms, they're known as "price-takers." They are not price-makers. OK? That's the first thing. The second thing is that, in terms of—a large portion of the gasoline price is crude oil. And to the extent—so that that input—and that's—that's just a—with all due respect, Senator, that's a fact. Now—and I think—you know, the question is—and I think we're—my colleague on the panel and I agree—is, you know, how do we get things in order so we minimize the impact of that? If we don't do anything, that's what's going to happen, I believe. And I don't think—I think it's easy to blame the companies and to say, "There's a great conspiracy and"—I just—I mean, there is a—for a number of reasons, it has been going on for a long time. There will be——

Senator CANTWELL. Mr. Chairman, I know my——

Mr. WEST.—shortages. I'm sorry.

Senator CANTWELL.—I know my time is up, but I think we are doing our part, in the Northwest, to move ahead. But, at the current time, we have to protect consumers.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Senator Pryor?

Senator PRYOR. Thank you, Mr. Chairman.

Mr. Bustnes, let me ask you about something. I keep seeing a fact reported over and over and over. I want to ask you if it's true that the U.S. has not built a new refinery in 30 years. Is that true?

Mr. BUSTNES. To my knowledge, Senator, that is roughly true. I can't tell you the exact number of years, but it's at least 20 years. A new site. That said, capacity at existing sites have been expanding, to Mr. West's point earlier.

Senator PRYOR. That's what I was going to ask you. So, even though there has not been a new refinery, our capacity has increased. Do you know what percentage it has increased?

Mr. BUSTNES. I don't, off the top of my head. Do you?

Mr. WEST. The numbers—it went from 15.1 million to 17.1 million in about an 8-year—a 10-year period, I think.

Senator PRYOR. OK. So, I guess the point is that when people—when that fact is reported—I think I have two news stories here where it's mentioned—that that's not the complete story. Still, even though we don't have new refinery sites, we do have more refining capacity.

Mr. BUSTNES. That's correct.

Mr. WEST. I had—one other thing here is that the quality of the fuel coming out of the refineries is completely different than it was 15 or 20 years ago, and——

Senator PRYOR. Higher quality——

Mr. WEST.—the standards are much higher.

Senator PRYOR.—cleaner——

Mr. WEST. Yes.

Senator PRYOR. Yes.

Mr. WEST. And so, I think that it's—I mean, as I say, the industry's—again, say what you like about the industry, but they have invested a lot of money in upgrading and de-bottlenecking, they've created more capacity with the existing plant, and they're producing a lot more cleaner fuel.

Senator PRYOR. OK. Mr. Bustnes, you also mentioned, sort of, three major factors for oil markets. One's supply-and-demand. Two is risk factors. And three is the speculators.

Mr. BUSTNES. Correct.

Senator PRYOR. Are those equal factors, or is one more dominant than the other?

Mr. BUSTNES. Senator, I can't tell you the answer to that question, but I could speculate.

[Laughter.]

Senator PRYOR. All right, let's hear you speculate.

Mr. BUSTNES. And the speculation I would have would be that under periods of stable oil prices, where we have a good supply-and-demand—fundamental supply-and-demand situation, speculation tapers off. That's the—that's what we're seeing. And why is there a trillion dollars sloshing around today on speculation? Because we have an extremely tight/unstable fundamental situation. And so, that's the way I look back in history and see that picture.

The relative size—well, if there—if it's true that there is a trillion dollars moving—changing hands in the course of a year in speculation—to put that in perspective, the International Energy Agency says that over the next—I think it's over the next 30 years—we need to invest $16 trillion in oil infrastructure and other energy infrastructure projects. Over the next 30 years. So, a trillion dollars a year is a big number.

Senator PRYOR. Right.

Mr. BUSTNES. Thank you.

Senator PRYOR. Mr. West, do you have something to add to that?

Mr. WEST. Speculators make money on movement.

Senator PRYOR. Right.

Mr. WEST. And if so, for the prices—they can make money if the price is going down——

Senator PRYOR. So, if there's volatility——

Mr. WEST. Volatility is what they're——

Senator PRYOR.—that's where the——

Mr. WEST.—looking for.

Senator PRYOR.—speculators come in. Right.

Mr. WEST. And because of the risk factor, the markets are very volatile.

Senator PRYOR. Right. OK.

And, Mr. Bustnes, let me ask this. You're familiar with the example of Brazil?

Mr. BUSTNES. Yes, I am.

Senator PRYOR. Senator Cantwell, here, a few—couple of weeks ago, had a—or a few weeks ago—had an amendment on—that was, sort, of basically, patterned after Brazil, that I supported. And I

think a lot of our colleagues did, as well. Can America do that? Can America make a commitment, say, over a couple of decades, to get to an energy-independence level? And, based on your testimony, it sounds like you think the elements are there for us to do it, it just takes a national commitment. But I'd like to hear your thoughts on that.

Mr. BUSTNES. Yes, the—thank you, Senator—the thoughts would be as follows. The case of Brazil is different from the case of the United States of America. The case of Brazil is one where one-quarter of their current gas—petroleum gas-usage equivalent is provided by ethanol from sugarcane.

Senator PRYOR. Right.

Mr. BUSTNES. We don't have that level of sugarcane production in this country, and we never will. That said, though, the situation in this country could be similar to Brazil, if we really wanted to make it happen, based on different feedstocks. We wouldn't feed our biorefineries, if you will, sugarcane, but, rather, cellulosic feedstocks such as switchgrasses and poplar trees, willow trees, and so forth. And the big question that always comes up is: do we have enough land in this country to actually produce that much feedstocks? And the short answer is yes. If you combine the correct technology—which, over the next few years, will very likely prove to be gasification with Fischer Tropsch conversion processes—with the right set of feedstocks, we could be at about a quarter of today's liquid fuel needs provided by this cellulosic ethanol that I'm describing to you.

Senator PRYOR. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Burns is gone. Senator Boxer?

Senator BOXER. Thanks, Mr. Chairman.

I want to probe a little, some of your—you're smiling, Mr. West, because you know that I was going to ask you a few things. When Senator Stevens relayed the point of when he worked in a gas station, there was competition, the price would go down, and how the independents, sometimes their hands are tied. I'd agree with that. They worry that they won't have inventory.

So, here's the thing. I had my staff check. And I think it's important to note that in California we only have 15—15 percent of the gas stations, Mr. Chairman, are owned by independents. Only 15 percent. The rest are owned by big oil. The other point is, this is a highly-concentrated industry. ConocoPhillips, Exxon Mobil, BP, Valero, and ChevronTexaco own 50 percent of the U.S. refinery capacity. These same oil companies own the stations. So, when you say—and excuse me for—you know, "the poor oil companies"—that's, kind of, what I get from you—that they don't set the price—that is untrue. In my State, they set the price, because they control everything. And, in addition, they love it. They don't want more capacity.

And let me give you a particular case in point. You may know about it, Mr. West. It's the Bakersfield Refinery, owned by Shell. Shell wanted to shut it down. And the Congressional delegation, bipartisan, Senator Feinstein and I realized this would be terrible for consumers. We need to build more refineries, not close down existing refineries. OK? Shell's answer, "We have no buyers." "We have

no buyers." The Attorney General of the State of California went in—of course, the FTC—I tried to get them to do something. Nothing. But, thank goodness we had an attorney general there that went. And, guess what? They sold it. It's operational. Shell didn't want to see the supply, because they have a conflict in all of this, because of the vertical integration.

I wanted to talk about new source review, which the President has already—and this Senate went along—not a lot of us on this side of the aisle—they're doing away with it. It's a fairly simple thing. It says, if you're going to pollute more by expanding, then clean up your act.

And I guess my question to you is this, because we do have competing interests here: the health of the people—the fact that, in Los Angeles, a baby born today has 20 percent less lung capacity there than in San Francisco because of air pollution. And we're finally making some progress. It used to be worse than that. So, I guess my question to you: why is it so wrong to ask these giants, who saw their profits go up in the first quarter of this year—80 percent for Conoco, and the others are right behind it—a little less, but 44 percent, Exxon Mobil; BP, 29 percent; Shell, 28 percent—just in the first quarter of 2005—is it wrong, in your opinion, to ask these giants, who are having record profits, to clean up their act before they expand?

Mr. WEST. A couple of points, Senator. I think that—I think that the industry should be expected to maintain a high standard. I am not in favor of children with low lung capacity in Los Angeles. Let me say that for the record.

Senator BOXER. But you are in favor of repealing new source review.

Mr. WEST. No, but I think there may be other ways to manage that. I'm not an expert in——

Senator BOXER. Good.

Mr. WEST.—this area.

Senator BOXER. I'm happy to hear——

Mr. WEST. But I'm——

Senator BOXER.—you say that.

Mr. WEST.—for the record, I'm in favor of clean air. But let me make a point. You know, it interests me that you point—you discuss the profitability of the industry. And I think it's very important to look at this industry, first over 10 or 15 years, and, second, relative to other industries. The——

Senator BOXER. Mr. West, I have so little time, I don't have time to look at this industry over the years. We are called here by our Chairman, because there's a bit of a crisis going on right now. So, I'm looking at first-quarter profits. I'm just looking at—I've—please forgive me, because I want to move on and ask you something about drilling in Alaska, that both my Chairman and my Co-Chair support very strongly. And they know I'm in a different place. They won. All right? So, we're not re-fighting it. They won.

I want to ask you something. You say how important it is to increase supply. I think we all agree, it's a question of how it's done. Now, would you——

Mr. WEST. I think it's also very important to deal with demand, as well. We—there's no——

Senator BOXER. I know it is——

Mr. WEST.—disagreement between us here.

Senator BOXER. You said that, and I'm very happy about that. And I think we all agree—well, at least I hope we do—that we need to do work on both sides of the equation, if you believe supply-and-demand. As an "old," economics major, that's what I believe in, if it really works.

So, I want to ask you this. Drilling in Alaska is controversial. It's going to move forward, it looks like. What do you think if—because—we're here because we're worried about our consumers. If that oil is exported, do you think we should think about—because we once did say, "We have to sell it here in America, rather than export it to Japan or China or elsewhere." Do you have any feeling on that?

I just want to ask his opinion.

Mr. WEST. My sense is, frankly, Senator, that it—the oil market is a world market. I don't think it's going to make much difference. If it makes you feel better, in California, to bring it to California, then you can do so. It may cause distortions in the market. But I don't—I don't think that's the critical issue.

One of the things that's important to keep in mind is that the United States is the only country that I'm aware of—and I'm—follow this quite closely—there is drilling in the fishing waters of Norway, there is drilling in the Paris Basin, and there is drilling in the countryside of England. We are the only country, the only developed country—and those countries, I might add—Norway, The Netherlands, France, U.K.—their scene is much more developed, environmentally, than we are, and much more sophisticated. But they drill in areas which we would not be permitted to drill in, in the United States. And I just think that it's important to recognize that there are certain standards which, I think, the industry can realistically meet, and I don't think the industry has been credited for it.

Senator BOXER. Mr. Chairman, I know my time is up. Could I just finish, in 30 seconds, if I might?

The CHAIRMAN. Sure.

Senator BOXER. Thank you so much.

On the drilling question, there's more to the economy than just energy. There are other things that happen in states. In my state, the number one industry is tourism. People come for the beauty. So, there are lots of different competing interests. And when you say—and I love it, because I know you were in Ronald Reagan's Administration—you say, "It's wonderful that the Federal Government voted to overstep the states and allow the Federal Government to place LNG terminals." And you mentioned something else you thought was good that we ought to do, where we would——

Mr. WEST. I said that there's a national energy need. And I think that local interests have to recognize that national need. That's all I said, Senator.

Senator BOXER. Well, you said it was a good thing. I just think it's interesting.

Thank you.

The CHAIRMAN. Senator Allen?

Senator ALLEN. Thank you, Mr. Chairman. Thank you to both our witnesses. Very good insight from a variety of perspectives. I do think we do need to look at alternatives—alternatives, including, I would—in addition to the biofuels and the advanced materials, and the research that'll be going forward in nanotechnology, which will affect materials engineering—stronger, lighter materials—and also in the—and making, I think, solar—or solar photovoltaic more available in that regard.

Mr. Bustnes, what do you—do you have any comments on coal? Coal diesel? We are the Saudi Arabia of the world in coal.

Mr. BUSTNES. Yes, we are, Senator. That is correct, relatively speaking. We have a lot of coal here. And my overview on coal, I guess, would be fairly simple. I think it is a resource that, if we can manage it, put it to use, in a way that deals with the air-quality issues, and so forth, that we have already heard discussion of, I don't see any reason why we should not deploy that resource as long as we can manage it in a way that makes sense for the health of the people in the country.

Senator ALLEN. All right, but, yes or no, do you see that the promise of, say, a coal diesel—Germany has used it, South Africa has used it. We're not going to——

Mr. BUSTNES. Absolutely, Senator. I think that's—that is clearly in the deck of cards of alternative fuels.

Senator ALLEN. All right. Now, let me get—this whole refinery issue is a big issue. So is how we use a clearly, valuable resource, oil and natural gas. It can be used in a variety of fronts. There—you could say that we're at world capacity, and there are some—I think Kazakhstan, and Alaska, and Africa, and elsewhere, we can get more oil and natural gas. The question is: where are we using this? It should be used, in my view, in manufacturing, particularly the natural gas—clean-burning natural gas—and for transportation. There's a percentage—I don't know what it is—but it is used for generating electricity. And when you're using oil or natural gas for generating electricity, it's like using bottled water to wash dishes. It's a great resource that we need for transportation, for our economy, for heating our homes. And you add—this is why I talk about electricity being generated with nuclear or clean coal.

Now, refinery capacity. Sure, there are fewer refineries. They have greater capacity. But are they meeting demand? From the Energy Committee, we had—that, sure, demand is—capacity is up, but demand is far outpacing the capacity of our refineries. Is that not true? All right, nodding yes. Inducing that.

Now, back to the issue of all these different specialty fuels. If we took—and there's supposedly over 50—and we're going to hear from Mr. Wells, with the Government Accountability Office—there are supposedly, over a hundred different fuel blends, maybe 50 or a hundred—if we took the top three, top five, cleanest-burning fuels—say, for the Los Angeles area, Washington, D.C., Atlanta, Philadelphia, New York—and said to localities in nonattainment areas, "Pick one of those three for your area," as opposed to all of them having these different ones. And you just choose. It's their choice. And then, in the areas that do have air quality—good air quality, they wouldn't have to be in these reformulated fuels. Would that not help us with our refinery capacity, which is really

going at full-bore? And would it not also reduce the cost of gasoline?

Mr. West, could you share your——

Mr. WEST. Yes, Senator. I would agree. The only thing I would say is to make sure that the standards are contiguous to each other, so that they are—you can move the—the key thing is to be able to move the product around between markets. And what you—I think you're—what you're proposing is excellent, and I think it's just—as I say, it's important that you be able to have—this is a fungible commodity, that you can move it as much as possible.

Senator ALLEN. Well, I wouldn't say that you'd have Fairfax County having a different fuel than the—Washington, D.C. The whole nonattainment region would have that same fuel. The Atlanta area, all the counties around Atlanta would have it. The counties in New Jersey and Pennsylvania, around Philadelphia, would have that.

Mr. WEST. I think it's an excellent idea. I——

Mr. BUSTNES. Could I add something to record——

Senator ALLEN. Sure.

Mr. BUSTNES.—just regarding coal? When I say "clean coal," I do mean, also, climate-neutral coal. I do believe that most of us here in the room would agree that there is a risk of climate change. And I would like to just point out that, in the case of coal, if you convert the coal unfettered, if you will, as we do today, and take it from the ground and put it into the atmosphere, that conversion, the coal that we know of today, would raise the CO_2 concentrations in the atmosphere probably by a factor of three. And this is a serious issue, given that, generally, it's thought that raising it by 20 to 30 percent would seriously destabilize—unstabilize, if you will, the current climate.

Senator ALLEN. Understood. That's why I always use the term clean coal technology, not just burning coal, as is. And it'll take more processing to do that, but it is a fuel source that we have in this country. And, with advances in technology, I believe it can be done. And, with these high prices, which are likely to stay, because of the demands from India, China, and other growing countries, a lot of these alternatives do now make economic sense.

Thank you. My time is up, and I appreciate it, Mr. Chairman, and our witnesses.

The CHAIRMAN. Thank you very much.

Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Gentlemen, thank you both for being here. Your testimony is very illuminating.

I have a number of questions, so I would ask you to keep your answers short, because I'm trying to learn about this. It is my perception that increases in gasoline and aviation fuel are rising faster than crude prices. Is that correct, or not?

Mr. WEST. I think it depends—right after Katrina, yes. Now it's falling. I mean, it's—the market can be more volatile than crude markets.

Senator SMITH. So, it is a consequence of the market responding to an emergency or a catastrophe, and that the market will soon correct that. Is that your understanding?

Mr. WEST. Yes, sir.

Senator SMITH. It seems to me that the wholesale and the retail price of gasoline is also widening. Why is that? And will the market correct that?

Mr. WEST. The market should correct it, yes.

Senator SMITH. Are they, in fact, widening?

Mr. WEST. I honestly don't know the answer to that, Senator.

Senator SMITH. Can the market correct it, if Senator Boxer's point is accurate, that these companies are so vertically integrated now that they have no interest in correcting it? We're not talking about crude from abroad. We're talking about a West Coast supply, in particular, that is vertically integrated to the point where there is no incentive, any longer, to correct it.

Mr. WEST. Senator, I—my impression is that the—for example, the California gas business is a pretty competitive business, and it's a tough business, and, at times, has been a very low-margin business, and that there may be certain distortions going on right now. But, generally, I think the market corrects itself, and that it is competitive.

Senator SMITH. Do you believe——

Mr. WEST. Senator Boxer doesn't look like she agrees.

Senator SMITH. Does the FTC track both the wholesale and the retail price? Do they have the power do that, and are they doing that?

Mr. WEST. I think they do it when they're asked to do it. I don't know that they do it all the time.

The CHAIRMAN. Mr. Bustnes, I was very interested in your testimony about cellulosics, and other alternatives to ethanol. Can you elaborate on that? Can you tell me why is—are wood products better than corn products or other farm products?

Mr. BUSTNES. I think the short answer, Senator, would be that, basically, there is less of a need for input energy to generate these woody plants, point number one. Point number two, the conversion technologies, if you will, that are either pre-commercial, or in the R&D pipeline, promise an extraordinarily high yield compared to today's levels. And——

Senator SMITH. Higher than corn?

Mr. BUSTNES. Yes, sir, significantly higher than corn. And, third, you can use the whole plant. In the case of corn, you use a teeny amount, truly, right? If you take the stalk and the—et cetera. So——

Senator SMITH. The recovery is very——

Mr. BUSTNES. Yes.

Senator SMITH.—very low.

Mr. BUSTNES. So, the actual—of the total mass moved and harvested, and so forth, not only does corn take a large quantity of water and fertilizer, unlike some of these other feedstocks, you can also use only a very small part of that plant.

Senator SMITH. So, does it have to do with the waste, versus the material that actually is produced?

Mr. BUSTNES. Yes.

Senator SMITH. Did we do enough in the energy bill, as you read it, for biomass, and cellulosics, in particular? Is it going to work, in your view, to provide the infrastructure to use this resource?

Mr. BUSTNES. I don't want to comment specifically on the energy bill. I believe there is now some insignificant funding for cellulosic ethanol. The way I would probably look at it, though, if I were making some thoughts about cellulosic ethanol, is, I would take a portfolio approach, Senator, and I would actively pursue multiple pathways, and of which there are multiple pathways, to get there.

Senator SMITH. Mr. Bustnes, in your testimony, and also in other publications for your Institute, you've talked about the automobile industry and the retooling that needs to be done. You've indicated in those publications that the industry needs to spend $90 billion for composites and new technologies. Is that accurate?

Mr. BUSTNES. That figure, Senator, is including automobile, heavy trucking, and aircraft industries.

Senator SMITH. In your opinion, are the domestic automakers moving in this direction?

Mr. BUSTNES. I guess I would have to answer a maybe to that. It's very hard, sometimes, to tell, in very large corporations, what exactly is going on under the hoods, Senator. But——

Senator SMITH. I don't want to tell them what to do, but I've got to tell them that we have an emergency going on here. Frankly, I have often voted for CAFE-standard increases, while acknowledging they're a fairly clumsy instrument. And the auto dealers hate it, too. Have you seen another model for driving this efficiency, other than just the market? I don't know how long we can wait, given the emergency we have in energy. Is there a better model than CAFE standards that you have seen or would recommend?

Mr. BUSTNES. I would have to say probably, unequivocally, yes, but let me caveat that answer first. The caveat is that CAFE standards can be, if managed on a continuous basis, useful. Now, the alternative framework that we actually proposed, in our study, is a framework that is based on feebates as an instrument of policy. And feebates are simple, Senator. They basically work on a class-based method. And each class, all vehicles—and this is basically designed this way so that you end up not having to choose a small car. If you want a big car, that's OK, but the feebate schedule for each of these classes of vehicles basically encourage you to buy the efficient large vehicle, and it penalizes you, if you will—and those penalties, those fees, finance the rebates to those customers that would—and the net effect is very important, Senator. It would correct a market failure that we see today. So, when you and I——

Senator SMITH. We do that through tax policy, not to drive industrial policy.

Mr. BUSTNES. This—oh——

Senator SMITH. Is that what you're suggesting?

Mr. BUSTNES. I am——

Senator SMITH. I'm sorry. My time is up.

Mr. BUSTNES.—I am suggesting that there is such an instrument out there, and I'd be happy to——

Senator SMITH. Well, I would appreciate it, and I think many of my colleagues would, too. I think we need to do something. I think we need to revisit this component of the energy bill. But, frankly,

I'd like a better model than CAFE standards, because I think that they're a clumsy model.

Mr. BUSTNES. Very short—if I may add, on this instrument—it encourages continuous adoption of new technology in a very different way from what we see today.

Thank you very much. Sorry to——

The CHAIRMAN. Thank you.

Senator Snowe?

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. I thank you, Mr. Chairman.

Just to continue that discussion, because I am a leading sponsor of the initiative with Senator Feinstein, with respect to improving fuel efficiency—it's long overdue. I mean, we now get the lowest of fuel efficiency standards since 1980, the equivalent. At that time, we were just off the heels of the gasoline and energy crisis that produced the long lines for an extended period of time. That was a very wrenching period for this country and for American consumers. So, here we are today, ironically, less—you know, maybe several months since we passed an energy policy that, frankly, did not embody any efforts for conservation, limited provisions that I included with respect to incentives for fuel efficiency—I mean, for efficiency standards in commercial and residential buildings. So, we created, for the first time, in our energy policy, separate energy-efficiency incentives with a tax component. But here we are today, not having done anything in that energy package to significantly reduce our ability for our dependency on imported oil and consumption and demand. And fuel efficiency is clearly one major step in that direction. In fact, *Business Week,* online, released a column, and it said that—you know, that we rank dead last when it comes to the gap between us and our trading partners. China, Japan, and Europe continue to raise mileage standards. And the Pew Center on Global Climate Change that normalized mileage rules in top auto markets, U.S. rules rank dead last, and the gap only widens as scheduled hikes overseas take effect.

So, we see what the impact has been on the automakers, because their unwillingness to adopt something forward-thinking. Nothing was immediate. It was incremental. It was reasonable to go up to 27 miles per gallon for, you know, SUVs, ultimately, when they're consuming—you know, the transportation sector's consuming 42 percent, you know, of our consumption of petroleum in this country. So, this is problematic that we're at this point now, because anything we do isn't going to affect the demand and our position overnight. And yet it should have been incorporated in our policy long ago. And our consumers are bearing the brunt of that because of the failure to reach that consensus.

Is there anything that we can do within the next year, or two, to reduce demand when we discuss short-term? Is there any—what's "short-term"? I mean, is that a year? Two years? Five years?

Mr. WEST. The lead times in this industry are very long. And I think—also, you have a massive investment in the transportation stock, the capital stock, all the cars in the country. So, it's going

to take a long, long time. I think the feebates idea is a very interesting idea.

One concept I'd like to put forward, though, that I think is very important, and that is that structural demand in the United States has changed. One of the things that has transformed the U.S. economy is the rise of the suburbs, and the exurbs, in the last 20 or 25 years. And people live and work and recreate in their cars in ways that they never have before, and that the suburbs were really—creation of the suburbs were driven by cheap land, cheap energy, cheap credit, and the Federal Highway Bill and—plus the American dream. And it represents trillions of dollars of investment. And, furthermore, it is the real-estate business which has given the consumer a sense of wealth, which has driven the economy. The consumer is 70 percent of the economy, which is—in turn, the U.S. economy is the flywheel of the world economy.

So, I think whatever steps you take, you have to be very, very careful. And what is interesting, I think, about a lot of the suggestions that have been made, they're going to take a while. They're going to take a while.

Senator SNOWE. I know. We would understand that. That's why it was not so unreasonable to put in place at least these improvements in efficiency standards.

Mr. WEST. Oh, I'm all in favor of——

Senator SNOWE. I mean, I just didn't have—I've never understood the resistance. It was modest. It was doable. The industry was in a good position to adopt them over a period of time, so we'd be well on our way. We've been trying for many years now to get them incorporated. We just passed an energy bill in June, and here we are talking today about: what can we do to improve our energy conservation and reduce demand and consumption?

Mr. WEST. Can I——

Senator SNOWE. It hardly makes sense. We're supposed to extend the vision——

Mr. WEST. One——

Senator SNOWE.—for America, but——

Mr. WEST.—words that are used interchangeably is "efficiency" and "conservation." And they're not the same. And there's one slight problem with efficiency. The more efficient you make energy, the more people will use it. We must also conserve.

Senator SNOWE. Well, I wouldn't—I wouldn't disagree with that, but we have to create incentives——

Mr. WEST. Oh, I agree.

Senator SNOWE.—on both sides of the equation, and we have ignored a very important part. What I find immensely ironic now is that, you know, you've got China that's moving ahead. And, according to this article, which I think is interesting, Beijing recently unveiled mileage goals that are 22 percent more demanding than today's U.S. levels, and should be 35 percent stricter still coming in in 2008.

Mr. WEST. Senator, the Chinese just put high taxes on inefficient luxury vehicles. I mean, they're, kind of, taking part of the lesson here. So, the Chinese are actually starting to act, as a——

Senator SNOWE. Well, I just don't understand why—what we don't get.

Mr. BUSTNES. Senator, let me add to these comments just a very short—there are immediate things that we could do—and I'd be happy to cough up a list for you, after this testimony is over, and forward it to you—that basically would focus on immediate demand reduction, things that wouldn't impede, let's say, on getting to the suburbs, or whatever you have. So, I would be happy to work up a list for you.

Senator SNOWE. I would appreciate that. Thank you.

[The information referred to is contained in the appendix.]

Mr. WEST. One other area that's very important to recognize is that an enormous source of demand for diesel in the United States is the trucking sector. And if there are ways to move more freight by rail than by diesel, this is something which may be able to be affected fairly quickly and would be significant.

Senator SNOWE. OK, thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Unfortunately, I have an appointment. And Senator Inouye will chair now for the balance of this morning. And it's my understanding you want to move on to the next panel after yielding a couple of minutes to Senator Boxer and Senator Cantwell. Is that correct?

Senator INOUYE. Yes.

The CHAIRMAN. But I would urge you to try and finish this morning. We do have two panels this afternoon, also.

Thank you very much.

Senator INOUYE. I thank you very much, Mr. Chairman.

I'd like to yield 2 minutes to Senator Cantwell.

Senator CANTWELL. Thank you, Mr. Chairman. Just a question. So you're going to reconvene, then, at——

Senator INOUYE. At 2 o'clock.

Senator CANTWELL. We're going to break—thank you.

Senator INOUYE. At 2 o'clock——

Senator INOUYE. Thank you.

Senator INOUYE.—we'll have——

The CHAIRMAN. We will reconvene at 2 o'clock for the next two panels, as scheduled.

Senator CANTWELL. Thank you.

Mr. West, if I could go back to the transparency question, and this particular aspect of pricing, are you concerned about the volatility of this market?

Mr. WEST. I think the volatility is inevitable right now, because markets are so tight, there are risks—and there are risk factors in there. I—one of the points that my colleague made, but also I would——

Senator CANTWELL. Since I only have a couple of——

Mr. WEST. OK. At any rate, it's——

Senator CANTWELL.—only have 2 minutes—so, you think it's inevitable. Do you think that the CFTC and the FTC have enough investigative powers to investigate that volatility?

Mr. WEST. I'm—I would assume so, but I'm really not an expert in that. I mean, I really—with all due respect, I can't answer that question.

Senator CANTWELL. I can't think of any other area of futures that has as much volatility as this does, and I can't think of any company in my state that trades, you know, on the NASDAQ that would get away with this much volatility without an SEC investigation. If you would look at that and give us more detailed specifics.

Why aren't we seeing more long-term contracts on oil price?

Mr. WEST. Again, it's the volatility of the market. I mean, I think people—the markets are seen as being extremely efficient, and people—you have—don't forget you have——

Senator CANTWELL. Efficient?

Mr. WEST.—you have suppliers. Can they manage their inventory, based on this? And then you've got, basically, traders. And you really have two classes of people who use the market. And I think the market works for them and their requirements now.

Senator CANTWELL. I'm sorry, who is the market working for? Because I know a lot of people that are being impacted. And so, I——

Mr. WEST. No, No, what I'm trying to say—but the consumer is not in the commodities market. The two players, primarily, in the commodities market are, one, basically people who need the physical oil, the oil companies, the refiners. And then the other group are commodities traders. And they manage it for different purposes. But they have—you know, they manage their risks differently.

Senator CANTWELL. So, do you think that the market should see more long-term contracts? I mean, when Southwest can basically come in and finance oil at $26 a barrel, juxtaposed to what's happening on the spot market any given day, from $60 to almost $70 a barrel, there's a huge difference.

Mr. WEST. Oh, and it's being able to manage this risk, and being willing to take those risks. That's an element of risk management. And risk management is a big part of this business now.

Senator CANTWELL. Risk—I'm sorry?

Mr. WEST. Price risk management.

Senator CANTWELL. The risk at——

Mr. WEST. I mean, as you say, on Southwest——

Senator CANTWELL.—$26 a barrel is——

Mr. WEST.—versus the risk at $60 a barrel.

Senator CANTWELL. What's the risk at $26 a barrel?

Mr. WEST. Well, the risk was—I mean, there are other companies that did not go into the market and take those same positions. And, basically, Southwest was prepared to do that, and others weren't. And others may have been—either didn't have the balance sheet to be able to do it, or they felt the price might go lower and they'd get squeezed.

Senator CANTWELL. I see my time is up, Mr. Chairman. But if you could get back to us, Mr. West, on any changes to the FTC or CFTC as it relates to transparency, that would be great.

Mr. WEST. Yes.

Senator INOUYE. Thank you.

Senator BOXER. Thanks, Mr. Chairman.

OK, I'm going to talk fast, because, Mr. West, you reminded me of something. And what I want to do is two comments and then two

questions to both of you, if you could each answer yes or no, because they're easy questions.

OK, here's the comment. Something you said, Mr. West, reminded me of my beautiful late mom. When I was a kid, there was——

Mr. WEST. I'm flattered.

Senator BOXER. Yes, you should be very flattered. When I was a child, I lived in an apartment building, and there was a girl upstairs, her name was Sheila. Sheila got everything. And so, anytime I wanted something from my mother that my mother wouldn't give me, I'd say, "Mom, Sheila can stay up to midnight. Why can't I?" And then she'd look at me, she'd say, "No." Then I'd say, "Sheila wears lipstick. Why can't I?" And she'd be quiet. Then finally one day she had had it with the questions, and she said, "If Sheila jumped off the bridge, would you?" And when you said, "The Netherlands allows drilling. Norway allows drilling. Places in Europe—and they're so great, and we don't."

So, my point is, this is America, and we are different, just like I was different from Sheila, and my mother was different from Sheila's mother. There are values here that are involved, and there are economics involved. Our fishery industry is against it. Our tourist industry is against it. Our people are against it. Our Republican Governor is against it. Everyone's against it. So, therefore, I would hope we can keep that decision with the Federal Government, with the states in mind. And I think that's very important. That's the first comment.

The second. I wanted to comment that if we just allowed the SUVs to get the same—if we forced them to get the same mileage as the rest of the fleet, on average, 28 or whatever it is, we would have one ANWR every 7 years. So, I'm curious as to whether or not you agree with that. So, that's a question. I want you to answer yes or no.

And then I want you to answer yes or no to this, both. You believe in free markets, Mr. West. Did you agree or disagree with President Bush's decision, that I supported, to go to the SPR, and release 30 million barrels in an unspecified amount in a swap? Did you agree or disagree? Because that does interfere with supply-and-demand.

And those are my two questions.

Mr. WEST. Yes and yes.

Senator BOXER. OK.

Mr. BUSTNES. I would need to rerun the numbers, Senator, but yes and also——

Mr. WEST. Assuming your numbers are correct, yes and yes.

Mr. BUSTNES.—also yes.

Senator BOXER. I got them straight out of——

Mr. BUSTNES. Yes. Yes.

Senator BOXER.—the Bush Administration, 30 million barrels and an unspecified amount was swapped.

Mr. BUSTNES. Terrific. The answer is yes.

Senator BOXER. Thank you.

Senator INOUYE. Mr. West, Mr. Bustnes, on behalf of the Committee, I thank you very much for your patience and, personally,

would like to get together with you again. Obviously, we are concerned, just as much as you are.

Mr. WEST. I'm sure we'd be happy to meet——

Senator INOUYE. Something has to be done.

Mr. WEST. Be happy to, sir.

Mr. BUSTNES. Be happy to.

Senator INOUYE. So, with that, may I call upon Mr. John Seesel, Associate General Counsel for Energy of the FTC, and Jim Wells, Director of Energy, Resources, Science Issues of the GAO?

Mr. Seesel and Mr. Wells, we welcome you, and we apologize for this lateness, but we will be here, because it is important.

May I now call upon the Associate General Counsel for his remarks?

STATEMENT OF JOHN H. SEESEL, ASSOCIATE GENERAL COUNSEL FOR ENERGY, FEDERAL TRADE COMMISSION

Mr. SEESEL. Good morning, Mr. Chairman and members of the Committee. I am John Seesel, the Associate General Counsel for Energy at the Federal Trade Commission. I am pleased to have this opportunity to discuss the FTC's actions to promote competition in the petroleum industry and to protect consumers who use gasoline, diesel, and the other petroleum products so vital to our Nation's economy.

I want to re-emphasize what I told the House Energy and Commerce Committee 2 weeks ago. The FTC fully shares in the terrible shock and sadness that the Nation has experienced, since Hurricane Katrina wrought such tragic devastation in the Gulf Coast region. We, as an agency, are doing all that we can within our competition and consumer-protection missions to assist the victims and to aid in recovery efforts.

Today's hearing focuses on one of the truly critical issues facing the United States and the world in coming decades: the price of energy. I want to assure this committee that the FTC is acutely aware of the pain that high gasoline prices that we have experienced recently, have caused American families and businesses, and we are continuing our intense scrutiny of conduct in the petroleum industry in the aftermath of Katrina. The FTC will proceed aggressively against any violations of the antitrust and consumer-protection laws that it enforces.

The Commission is committed to maintaining competitive markets in refined petroleum products, and has pursued a three-pronged approach to this industry, consisting of vigorous law enforcement against anticompetitive mergers and business conduct, careful study of various developments with competitive implications for the petroleum industry, and an ongoing project to monitor gasoline and diesel prices in order to detect unusual price movements.

Before I outline these elements of our program, however, I want to address, briefly, a topic that has loomed large in the public consciousness and in the minds of many in Congress in recent weeks, the subject of gasoline price manipulation and gasoline price-gouging.

The FTC has already launched an investigation pursuant to Section 1809 of the recently enacted Energy Policy Act, to search for

evidence of gasoline price manipulation, and expeditiously prepare a report to Congress on its findings. Although dealing with the concept of price-gouging presents tremendous complexities, as discussed in today's FTC written testimony, there should be no doubt that the FTC will take aggressive enforcement action against any conduct unearthed in its Section 1809 investigation that violates the Federal antitrust laws.

A significant, recent development in the FTC's law enforcement program was the issuance of dual consent orders in late July designed to remedy the anticompetitive effects of Unocal's allegedly deceptive conduct in connection with the development of reformulated gasoline in California, as well as the alleged anticompetitive effects that were anticipated from Chevron's acquisition of Unocal. The Commission's first complaint alleged that Unocal had deceived the California Air Resources Board—CARB, for short—in developing standards for reformulated gasoline. The Commission challenged Unocal's misrepresentation that certain technology was in the public domain, while it pursued patents on that technology to enable it to charge substantial royalties.

The proposed merger between Chevron and Unocal raised the concern that if Chevron had acquired Unocal's patents, Chevron could have obtained sensitive information, and, thus, could have used this information and power to facilitate coordination among competitors to raise gasoline prices. The two consent orders embodying Chevron's commitment not to enforce the Unocal's patents provided a significant victory for consumers. The Commission has estimated that the main relief provided by these orders could save California gasoline consumers around $500 million per year. The FTC will continue its energetic enforcement of the antitrust laws against collusive and monopolistic practices in the petroleum industry.

In aid of its extensive law-enforcement work, the FTC also conducts careful research on key competitive issues in the petroleum industry. I especially commend our recent report on gasoline price changes to the Committee's attention. The report sets forth in detail the numerous supply, demand, and competitive factors that influence gasoline prices, or cause gasoline price spikes. The report shows that the market for gasoline functions as any other market is expected to, when supply is significantly constrained and demand keeps rising. As important, the report also shows that market forces, in the form of changes in how much gasoline producers supply and consumers demand, can ameliorate price increases.

A related FTC study issued last year was our staff report on *Mergers, Structural Change, and Antitrust Enforcement in the Petroleum Industry* over the past 20 years.

The third prong of our approach is a continuous effort by our staff to identify unusual gasoline and diesel price movements. Our economists monitor daily pricing data from 20 wholesale regions and nearly 360 retail areas across the Nation. If the statistical model that they apply detects any unusual pricing movements that cannot be explained by a refinery outage, a pipeline break or another business-related cause, the FTC staff, in consultation with other Federal and State officials, will examine whether a law violation has been committed.

In view of the escalating prices that consumers have been paying for gasoline and other energy products, we will examine any information that we receive about pricing to determine whether there is a basis for legal action under the anti-collusion and anti-monopoly statutes that the FTC enforces. For those complaints that are not a violation of Federal law, the State Attorneys General appear to be going forward with the major multi-state initiatives that they began in the wake of Katrina to pursue such complaints under State statutes.

The energy industry, especially the petroleum sector, has been a centerpiece of FTC antitrust enforcement for decades, and the Commission expects to devote substantial resources to policing the competitiveness of the industry in this time of economic duress for many of our fellow citizens. Moreover, as it always does, the Commission will give state and local officials as much assistance as it can as those authorities carry out their responsibilities.

Thank you, again, for this opportunity to present the FTC's views, Mr. Chairman, and I would be happy to answer any questions.

[The prepared statement of Mr. Seesel follows:]

PREPARED STATEMENT OF JOHN H. SEESEL, ASSOCIATE GENERAL COUNSEL FOR ENERGY, FEDERAL TRADE COMMISSION

I. Introduction

Mr. Chairman, and members of the Committee, I am John Seesel, the Federal Trade Commission's Associate General Counsel for Energy. I am pleased to appear before you to present the Commission's testimony on FTC initiatives to protect competitive markets in the production, distribution, and sale of gasoline, and to discuss an important recent Commission study on the factors that affect gasoline prices.[1]

The petroleum industry plays a crucial role in our economy. Not only do changes in gasoline prices affect consumers directly, but the price and availability of gasoline also influences many other economic sectors. No other industry's performance is more deeply felt, and no other industry is so carefully scrutinized by the FTC.

Prior to Hurricane Katrina, increasing crude oil prices had resulted in rising gasoline prices during much of this year. Despite these rising prices, the demand for gasoline during this past summer was strong and exceeded summer demand in 2004. In the recent weeks since Hurricane Katrina, gasoline prices rose sharply to $3.00 per gallon or more in most markets. In part because of the soaring prices associated with Katrina, gasoline demand has decreased somewhat. National gasoline inventories remain at the lower end of the average range.

On top of an already tight market, Katrina has temporarily disrupted an important source of crude oil and gasoline supply. At one point, over 95 percent of Gulf Coast crude oil production was shut-in, and numerous refineries and pipelines were either damaged or without electricity.[2] As of one week ago, 56.1 percent of Gulf Coast production remained shut-in.[3] Because of this massive supply disruption, substantial price relief has been, and will be, delayed. Although it is heartening to see that much Gulf Coast production is back online, full-scale production in that region has yet to resume. Our past studies suggest that, as gasoline supplies return to pre-Katrina levels, prices should recede from recent high levels. Indeed, retail prices in nearly all areas have fallen in recent days, and accompanying declines in wholesale prices presage further price declines at retail. It is important to remember, however, that Katrina damaged important parts of the energy infrastructure in the Gulf Coast region, including oil and gas production and refining and processing facilities. Some adverse effect on energy prices may persist until the infrastructure recovers fully—a process that could take months.

Katrina has affected more than gasoline markets; the storm is expected to have widespread effects throughout the economy. The Congressional Budget Office tentatively estimated that Katrina could reduce real gross domestic product growth in the second half of this year by one-half to 1 percentage point and could reduce employment by about 400,000 through the end of the year.[4] Higher energy prices will be a burden on other sectors of the economy and will affect consumers not only di-

rectly in the gasoline and other energy products that they purchase, but also indirectly in raising prices of inputs into other goods and services. In addition, Katrina damaged many other industries and businesses on the Gulf Coast, and some of those impacts—such as the damage to port facilities—may significantly impede the flow of raw materials or finished goods to producers and distributors in many industries.

The Commission is very conscious of the swift and severe price spikes that occurred immediately before and after Katrina made landfall. There have been numerous calls for investigations of "price-gouging," particularly at the retail gasoline level. Legislation that would require the Commission to study this issue recently passed the Senate.[5] In addition, Section 1809 of the recently enacted Energy Policy Act[6] mandates an FTC investigation "to determine if the price of gasoline is being artificially manipulated by reducing refinery capacity or by any other form of market manipulation or price-gouging practices." The Commission staff already has launched an investigation to scrutinize whether unlawful conduct affecting refinery capacity or other forms of illegal behavior have provided a foundation for price manipulation. A determination that unlawful conduct has occurred will result in aggressive law enforcement activity by the FTC.

The FTC has initiated this inquiry with a keen understanding of its importance to the American consumer and intends faithfully to fulfill its obligation to search for and stop illegal conduct. We recognize, of course, that our investigation will not be a simple one. As many have already pointed out, "price-gouging" is not prohibited by Federal law. Consumers justifiably are upset when they face dramatic price increases within very short periods of time, especially during a disaster. Some prices increases, however, benefit consumers in the long run. In our economy, prices play a critical role: they signal producers to increase or decrease supply, and they also signal consumers to increase or decrease demand. In a period of shortage—particularly with a fungible product, like gasoline, that can be sold anywhere in the world—higher prices create incentives for suppliers to send more product into the market, while also creating incentives for consumers to use less of the product. Higher prices ultimately help make the shortage shorter-lived than it otherwise would have been. There may be situations where sellers go beyond the necessary market-induced price increase, taking advantage of a crisis to "gouge" consumers. However, it can be very difficult to determine the extent to which any price increases are greater than necessary. Furthermore, even these "gouging" types of price increases do not fit well under long-standing principles of antitrust injury. Under the antitrust laws, a seller with lawfully acquired market power—including market power arising from an act of God—can charge whatever price the market will bear, so long as this seller does not join with others to set prices or restrict supply.

Finally, many states have statutes that address short-term price spikes in the aftermath of a disaster, and we understand that a number of them have opened investigations of gasoline price-gouging. At the retail level, state officials—because of their proximity to local retail outlets—can react more expeditiously than a Federal agency could to the many complaints that consumers have filed about local gasoline prices. Nevertheless, these issues will not deter the FTC from investigating and responding to any manipulation of gasoline prices we are able to uncover that violates Federal antitrust law.

In addition to the recently commenced investigation, recent FTC activity in the gasoline industry includes the acceptance on June 10, 2005, of two consent orders that resolved the competitive concerns relating to Chevron's acquisition of Union Oil of California (Unocal) and settled the Commission's 2003 monopolization complaint against Unocal. The Unocal settlement alone has the potential to save billions of dollars for California consumers in future years. In addition, in early July of this year, the Commission published its study explaining the competitive dynamics of gasoline pricing and price changes.[7] This study grew out of conferences of industry, consumer, academic, and government participants held by the Commission over the past 4 years, as well as years of research and experience, and sheds light on how gasoline prices are set.

In 2004, the FTC staff published a study reviewing the petroleum industry's mergers and structural changes as well as the antitrust enforcement actions that the Agency has taken over the past 20 years.[8] Commission enforcement statistics show that the FTC has challenged proposed mergers in this industry at lower concentration levels than in other industries. Since 1981, the FTC has filed complaints against 19 large petroleum mergers. In 13 of these cases, the FTC obtained significant divestitures. Of the six other matters, the parties in four cases abandoned the transactions altogether after Agency antitrust challenges; one case resulted in a remedy requiring the acquiring firm to provide the Commission with advance notice

of its intent to acquire or merge with another entity; and the sixth case was resolved recently.[9]

In addition to litigation and industry studies, the Commission has taken aggressive measures to protect consumers through other initiatives. For example, in a program unique to the petroleum industry, the Commission actively and continuously monitors retail and wholesale prices of gasoline and diesel fuel.[10] Three years ago, the FTC launched this initiative to monitor gasoline and diesel prices to identify "unusual" price movements[11] and then examine whether any such movements might result from anticompetitive conduct that violates Section 5 of the FTC Act. FTC economists developed a statistical model for identifying such movements. The Agency's economists scrutinize regularly price movements in 20 wholesale regions and approximately 360 retail areas across the country. Again, in no other industry does the Commission so closely monitor prices.

The staff reviews daily data from the Oil Price Information Service, a private data-collection agency, and receives information weekly from the public gasoline price hotline maintained by the U.S. Department of Energy (DOE). The staff monitoring team uses an econometric model to determine whether current retail and wholesale prices are anomalous in comparison to the historical price relationships among cities. When there are unusual changes in gasoline or diesel prices, the project alerts the staff to those anomalies so that we can make further inquiries into the situation.

This gasoline and diesel monitoring and investigation initiative, which focuses on the timely identification of unusual movements in prices (compared to historical trends), is one of the tools that the FTC uses to determine whether a law enforcement investigation is warranted. If the FTC staff detects unusual price movements in an area, it researches the possible causes, including, where appropriate, through consultation with the state attorneys general, state energy agencies, and DOE's Energy Information Administration. In addition to monitoring DOE's gasoline price hotline complaints, this project includes scrutiny of gasoline price complaints received by the Commission's Consumer Response Center and of similar information provided to the FTC by state and local officials. If the staff concludes that an unusual price movement likely results from a business-related cause (*i.e.*, a cause unrelated to anticompetitive conduct), it continues to monitor but—absent indications of potentially anticompetitive conduct—it does not investigate further.[12] The Commission's experience from its past investigations and from the current monitoring initiative indicates that unusual movements in gasoline prices typically have a business-related cause. FTC staff further investigates unusual price movements that do not appear to be explained by business-related causes to determine whether anticompetitive conduct may underlie the pricing anomaly. Cooperation with state law enforcement officials is an important element of such investigations.

The Commission's testimony today addresses the Committee's inquiries in two parts. It first reviews the basic tools that the Commission uses to promote competition in the petroleum industry: challenging potentially anticompetitive mergers, prosecuting nonmerger antitrust violations, monitoring industry behavior to detect possible anticompetitive conduct, and researching petroleum sector developments. This review of the Commission's petroleum industry agenda highlights the FTC's contributions to promoting and maintaining competition in the industry. The Commission places a premium on careful research, industry monitoring, and investigations to understand current petroleum industry developments and to identify accurately obstacles to competition, whether arising from private behavior or from public policies. The petroleum industry's performance is shaped by the interaction of extraordinarily complex, fast-changing commercial arrangements and an elaborate set of public regulatory commands. A well-informed understanding of these factors is essential if FTC actions are to benefit consumers.

The second part of this testimony reviews the learning the Commission has derived from its conferences and research and its review of recent gasoline price changes. Among other findings, this discussion highlights the paramount role that crude oil prices play in determining both the levels and the volatility of gasoline prices in the United States. Over the period 1984 to 2003, changes in crude oil prices accounted for approximately 85 percent of the variability of gasoline prices.[13] When crude oil prices rise, so do gasoline prices. Crude oil prices are determined by supply-and-demand conditions worldwide. The supply of crude is strongly influenced by production levels set by members of the Organization of Petroleum Exporting Countries (OPEC).[14] Demand has increased substantially over the past few years, both in the United States and in the developing economies of China and India. When worldwide supply-and-demand conditions result in crude oil prices in the range of $70 per barrel—a level from which we are all doubtless glad to have

seen the price recede somewhat in recent days—it is not surprising to see higher gasoline prices nationwide.

II. FTC Activities To Maintain and Promote Competition in the Petroleum Industry

A. Merger Enforcement in the Petroleum Industry

The Commission has gained much of its antitrust enforcement experience in the petroleum industry by analyzing proposed mergers and challenging transactions that likely would reduce competition, thus resulting in higher prices.[15] In 2004, the Commission released data on all horizontal merger investigations and enforcement actions from 1996 to 2003.[16] These data show that the Commission has brought more merger cases at lower levels of concentration in the petroleum industry than in other industries. Unlike in other industries, the Commission has obtained merger relief in moderately concentrated petroleum markets.

Several recent merger investigations illustrate the FTC's approach to merger analysis in the petroleum industry. The most recently completed case involved Chevron's acquisition of Unocal. When the merger investigation began, the Commission was in the middle of an ongoing monopolization case against Unocal that would have been affected by the merger. Thus, the Commission settled both the merger and the monopolization matters with separate consent orders that preserved competition in all relevant merger markets and obtained complete relief on the monopolization claim.[17] The nonmerger case is discussed below.

Another recent merger case that resulted in a divestiture order resolved a complaint concerning the acquisition of Kaneb Services and Kaneb Pipe Line Partners, companies that engaged in petroleum transportation and terminaling in a number of markets, by Valero L.P., the largest petroleum terminal operator and second largest operator of liquid petroleum pipelines in the United States.[18] The complaint alleged that the acquisition had the potential to increase prices in bulk gasoline and diesel markets.[19]

The FTC's consent order requires the parties to divest assets sufficient to maintain premerger competition, including certain Kaneb Philadelphia-area terminals, Kaneb's West pipeline system in Colorado's Front Range, and Kaneb's Martinez and Richmond terminals in Northern California.[20] In addition, the order forbids Valero L.P. from discriminating in favor of or otherwise preferring its Valero Energy affiliate in bulk ethanol terminaling services, and requires Valero to maintain customer confidentiality at the Selby and Stockton terminals in Northern California. The order succeeds in maintaining import possibilities for wholesale customers in Northern California, Denver, and greater Philadelphia and precludes the merging parties from undertaking an anticompetitive price increase.

Most recently, the Commission filed a complaint on July 27, 2005, in Federal district court in Hawaii, alleging that Aloha Petroleum's proposed acquisition of Trustreet Properties' half interest in an import-capable terminal and retail gasoline assets on the island of Oahu would reduce the number of gasoline marketers and could lead to higher gasoline prices for Hawaii consumers.[21] The recently announced resolution of this case involved the execution by the parties of a 20-year throughput agreement that will preserve competition allegedly threatened by the acquisition.[22]

In the past few years, the Commission has brought a number of other important merger cases. One of these involved the merger of Chevron and Texaco,[23] which combined assets located throughout the United States. Following an investigation in which 12 states participated, the Commission issued a consent order against the merging parties requiring numerous divestitures to maintain competition in particular relevant markets, primarily in the western and southern United States.[24] Among other requirements, the consent order compelled Texaco to: (a) divest to Shell and/or Saudi Refining, Inc., all of its interests in two joint ventures—Equilon[25] and Motiva[26]—through which Texaco had been competing with Chevron in gasoline marketing in the western and southern United States; (b) divest all assets relating to the refining, bulk supply, and marketing of gasoline satisfying California's environmental quality standards; (c) divest assets relating to the refining and bulk supply of gasoline and jet fuel in the Pacific Northwest; and (d) divest various pipelines used to transport petroleum products.

Another petroleum industry transaction that the Commission challenged successfully was the $6 billion merger between Valero Energy Corp. (Valero) and Ultramar Diamond Shamrock Corp. (Ultramar).[27] Both Valero and Ultramar were leading refiners and marketers of gasoline that met the specifications of the California Air Resources Board (CARB), and they were the only significant suppliers to independent stations in California. The Commission's complaint alleged competitive concerns in both the refining and bulk supply of CARB gasoline in two separate geographic markets—Northern California and the entire State of California—and the Commission

contended that the merger could raise the cost to California consumers by at least $150 million annually for every one-cent-per-gallon price increase at retail.[28] To remedy the alleged violations, the consent order settling the case required Valero to divest: (a) an Ultramar refinery in Avon, California; (b) all bulk gasoline supply contracts associated with that refinery; and (c) 70 Ultramar retail stations in Northern California.[29]

Another example is the Commission's 2002 challenge to the merger of Phillips Petroleum Company and Conoco Inc., alleging that the transaction would harm competition in the Midwest and Rocky Mountain regions of the United States. To resolve that challenge, the Commission required the divestiture of: (a) the Phillips refinery in Woods Cross, Utah, and all of the Phillips-related marketing assets served by that refinery; (b) Conoco's refinery in Commerce City, Colorado (near Denver), and all of the Phillips marketing assets in Eastern Colorado; and (c) the Phillips light petroleum products terminal in Spokane, Washington.[30] The Commission's order ensured that competition would not be lost and that gasoline prices would not increase as a result of the merger.

B. Nonmerger Investigations Into Gasoline Pricing

In addition to scrutinizing mergers, the Commission aggressively polices anticompetitive conduct. When it appears that higher prices might result from collusive activity or from anticompetitive unilateral activity by a firm with market power, the agency investigates to determine whether unfair methods of competition have been used. If the facts warrant, the Commission challenges the anticompetitive behavior, usually by issuing an administrative complaint.

Several recent petroleum investigations are illustrative. On March 4, 2003, the Commission issued the administrative complaint against Unocal discussed earlier, stating that it had reason to believe that Unocal had violated Section 5 of the FTC Act.[31] The Commission alleged that Unocal deceived the California Air Resources Board (CARB) in connection with regulatory proceedings to develop the reformulated gasoline (RFG) standards that CARB adopted. Unocal allegedly misrepresented that certain technology was non-proprietary and in the public domain, while at the same time it pursued patents that would enable it to charge substantial royalties if CARB mandated the use of Unocal's technology in the refining of CARB-compliant summertime RFG. The Commission alleged that, as a result of these activities, Unocal illegally acquired monopoly power in the technology market for producing the new CARB-compliant summertime RFG, thus undermining competition and harming consumers in the downstream product market for CARB-compliant summertime RFG in California. The Commission estimated that Unocal's enforcement of its patents could potentially result in over $500 million of additional consumer costs each year.

The proposed merger between Chevron and Unocal raised additional concerns. Although Unocal had no horizontal refining or retailing overlaps with Chevron, it had claimed the right to collect patent royalties from companies that had refining and retailing assets (including Chevron). If Chevron had unconditionally inherited these patents by acquisition, it would have been in a position to obtain sensitive information and to claim royalties from its own horizontal downstream competitors. Chevron, the Commission alleged, could have used this information and this power to facilitate coordinated interaction and detect any deviations.

The Commission resolved both the Chevron/Unocal merger investigation and the monopolization case against Unocal with consent orders. The key element in these orders is Chevron's agreement not to enforce the Unocal patents.[32] The FTC's settlement of these two matters is a substantial victory for California consumers. The Commission's monopolization case against Unocal was complex and, with possible appeals, could have taken years to resolve, with substantial royalties to Unocal—and higher consumer prices—in the interim. The settlement provides the full relief sought in the monopolization case and also resolves the only competitive issue raised by the merger. With the settlement, consumers will benefit immediately from the elimination of royalty payments on the Unocal patents, and potential merger efficiencies could result in additional savings at the pump.

The FTC undertook another major nonmerger investigation during 1998–2001, examining the major oil refiners' marketing and distribution practices in Arizona, California, Nevada, Oregon, and Washington (the "Western States" investigation).[33] The agency initiated the Western States investigation out of concern that differences in gasoline prices in Los Angeles, San Francisco, and San Diego might be due partly to anticompetitive activities. The Commission's staff examined over 300 boxes of documents, conducted 100 interviews, held over 30 investigational hearings, and analyzed a substantial amount of pricing data. The investigation uncovered no basis to allege an antitrust violation. Specifically, the investigation detected no evidence

of a horizontal agreement on price or output or the adoption of any illegal vertical distribution practice at any level of supply. The investigation also found no evidence that any refiner had the unilateral ability to raise prices profitably in any market or reduce output at the wholesale level. Accordingly, the Commission closed the investigation in May 2001.

In conducting these and other inquiries, the Commission makes the important distinction between short-term and long-term effects. While a refinery outage on the West Coast could significantly affect short-term prices, the FTC did not find that it would be profitable in the long run for a refiner to restrict its output to raise the level of prices in the market. For example, absent planned maintenance or unplanned outages, refineries on the West Coast (and in the rest of the country) generally run at full (or nearly full) capacity. If gasoline is in short supply in a locality due to refinery or pipeline outages, and there are no immediate alternatives, a market participant may find that it can profitably increase prices as demand for its products increases—generally only for a short time, until the outage is fixed or alternative supply becomes available. This transient power-over-price—which occurs infrequently and lasts only as long as the shortage—should not be confused with the durable power over price that is the hallmark of market power in antitrust law.

In addition to the *Unocal* and Western States pricing investigations, the Commission conducted a 9-month investigation into the causes of gasoline price spikes in local markets in the Midwest in the Spring and early Summer of 2000.[34] As explained in a 2001 report, the Commission found that a variety of factors contributed in different degrees to the price spikes. Primary factors included refinery production problems (*e.g.*, refinery breakdowns and unexpected difficulties in producing the new summer-grade RFG gasoline required for use in Chicago and Milwaukee), pipeline disruptions, and low inventories. Secondary factors included high crude oil prices that contributed to low inventory levels, the unavailability of substitutes for certain environmentally required gasoline formulations, increased demand for gasoline in the Midwest, and *ad valorem* taxes in certain states. The industry responded quickly to the price spike. Within three or 4 weeks, an increased supply of product had been delivered to the Midwest areas suffering from the supply disruption. By mid-July 2000, prices had receded to pre-spike or even lower levels.

The Commission's merger investigations also are relevant to the detection of nonmerger antitrust violations. FTC oil and gas merger investigations during the past decade uniformly have been major undertakings that have reviewed all pertinent facets of the relevant markets. These investigations have involved the review of thousands of boxes of documents in discovery, examination of witnesses under oath, and exhaustive questioning of outside experts. The FTC staff, therefore, has learned information that also could assist in detecting and investigating potentially anticompetitive conduct.

III. Commission Report on Factors That Affect the Price of Gasoline

What are the causes of high gasoline prices and gasoline price spikes? These important questions require a thorough and accurate analysis of the factors—supply, demand, and competition, as well as Federal, state, and local regulations—that drive gasoline prices, so that policymakers can evaluate and choose strategies likely to succeed in addressing high gasoline prices.

The Commission addressed these issues by conducting extensive research concerning gasoline price fluctuations, analyzing specific instances of apparent gasoline price anomalies, and holding a series of conferences[35] on the factors that affect gasoline prices, leading to the publication of a report[36] that draws on what the Commission has learned about the factors that can influence gasoline prices or cause gasoline price spikes. The testimony discusses the findings of the study, but first sets out three basic lessons that emerge from this collective work.

First, in general, the price of gasoline reflects producers' costs and consumers' willingness to pay. Gasoline prices rise if it costs more to produce and supply gasoline, or if people wish to buy more gasoline at the current price—that is, when demand is greater than supply. Gasoline prices fall if it costs less to produce and supply gasoline, or if people wish to buy less gasoline at the current price—that is, when supply is greater than demand. Gasoline prices will stop rising or falling when they reach the level at which the quantity consumers demand matches the quantity that producers will supply.

Second, how consumers respond to price changes will affect how high prices rise and how low they fall. Limited substitutes for gasoline restrict the options available to consumers to respond to price increases in the short run. Because gasoline consumers typically do not reduce their purchases substantially in response to price increases, they are vulnerable to substantial price increases.

Third, producers' responses to price changes will affect how high prices rise and how low they fall. In general, when there is not enough gasoline to meet consumers' demands at current prices, higher prices will signal a potential profit opportunity and may bring additional supply into the market. Additional supply will be available to the extent that an increase in price exceeds the producers' cost of expanding output.

The vast majority of the Commission's investigations and studies have revealed market factors as the primary drivers of both price increases and price spikes. There is a complex landscape of market forces that affect gasoline prices in the United States.

A. Worldwide Supply, Demand, and Competition for Crude Oil Are the Most Important Factors in the National Average Price of Gasoline in the United States

Crude oil is a commodity that is traded on world markets, and the world price of crude oil is the most important factor in the price of gasoline in the United States and all other markets. Over the past 20 years, changes in crude oil prices have explained approximately 85 percent of the changes in the price of gasoline.[37] United States refiners compete with refiners all around the world to obtain crude, and the United States now imports more than 60 percent of its crude from foreign sources.

If world crude prices rise, then U.S. refiners must pay higher prices for the crude they buy. Facing higher input costs from crude, refiners charge more for the gasoline they sell at wholesale. This requires retail stations to pay more for their gasoline. In turn, retail stations, facing higher input costs, charge consumers more at the pump. In short, when crude oil prices rise, gasoline prices rise because gasoline becomes more costly to produce.

Crude oil prices are not wholly market-determined. Since 1973, decisions by OPEC have been a significant factor in the prices that refiners pay for crude oil. Over time, OPEC has met with varying degrees of success in raising crude oil prices. (For example, OPEC members can be tempted to "cheat" and sometimes sell more crude oil than specified by OPEC limits.) Higher world crude prices due to OPEC's actions, however, increased the incentives to search for oil in other areas, and crude supplies from non-OPEC members such as Canada, the United Kingdom, and Norway have increased significantly. Nonetheless, OPEC still produces a large enough share of world crude oil to exert market power and strongly influence the price of crude oil when its members adhere to their assigned production quotas. Especially when demand surges unexpectedly, as in 2004, OPEC decisions on whether to increase supply to meet demand can have a significant impact on world crude oil prices.

Crude oil consumption has fallen during some periods over the past 30 years, partially in reaction to higher prices and partially in response to Federal laws, such as requirements to increase the fuel efficiency of cars. Gasoline consumption in the United States fell significantly between 1978 and 1982, and remained lower during the 1980s than it had been at the beginning of 1978.[38] Overall, however, the long-run trend is toward significantly increased demand for crude oil. Over the last 20 years, United States consumption of all refined petroleum products increased on average by 1.4 percent per year, leading to a total increase of nearly 30 percent.[39]

Although they have receded from the record levels they reached immediately after Hurricane Katrina, crude oil prices have been increasing rapidly in recent months. Demand has remained high in the United States, and large demand increases from rapidly industrializing nations, particularly China and India, have made supplies much tighter than expected.[40]

B. Gasoline Supply, Demand, and Competition Produced Relatively Low and Stable Prices From 1984 Until 2004, Despite Substantial Increases in United States Gasoline Consumption

Consumer demand for gasoline in the United States has risen substantially, especially since 1990.[41] In 1978, U.S. gasoline consumption was about 7.4 million barrels per day. By 1981, in the face of sharply escalating crude oil and gasoline prices and a recession, U.S. gasoline consumption had fallen to approximately 6.5 million barrels per day.[42] As gasoline prices began to fall in the 1980s, U.S. consumption of gasoline began to rise once again. By 1993, consumption rose above 1978 levels, and it has continued to increase at a fairly steady rate since then. In 2004, U.S. gasoline consumption averaged about 9 million barrels per day, and the EIA's forecast as of last spring was for 9.2 million barrels per day this year.[43]

Despite high gasoline prices across the Nation, demand generally has not fallen off in 2005 (although there are reports of some diminution in demand in the wake of Katrina). Gasoline demand this Summer driving season was above last year's record driving-season demand and well above the average for the previous 4 years.

Average daily demand for finished gasoline for May was 9.3 millions barrels per day, an increase of 1.2 percent over May of 2004, and 5.5 percent higher than the average demand for the previous four summers. Similarly, June's demand was up 2.8 percent over last June (up 5.4 percent from the average of the previous 4 years) and July's demand increase was up 3.2 percent over July of 2004 (up 4.6 percent from average of the last 4 years). Gasoline demand for the 4-weeks that ended on August 26 of this year was 1.2 percent higher than demand during all of August 2004, despite much higher prices.[44]

Notwithstanding these substantial demand increases, increased supply from U.S. refineries and imports kept gasoline prices relatively steady until 2004. A comparison of "real" average annual retail gasoline prices and average annual retail gasoline consumption in the United States from 1978 through 2004 shows that, in general, gasoline prices remained relatively stable despite significantly increased demand.[45] Indeed, over the very long run in the 84-year period between 1919 and 2003, real annual average retail gasoline prices in the United States did not increase at all. The data show that, from 1986 through 2003, real national average retail prices for gasoline, including taxes, generally were below $2.00 per gallon (in 2004 dollars). By contrast, between 1919 and 1985, real national average retail gasoline prices were above $2.00 per gallon (in 2004 dollars) more often than not.[46]

Average U.S. retail prices have been increasing since 2003, however, from an average of $1.56 in 2003 to an average of $2.04 in the first 5 months of 2005.[47] In the last several months, the prices have moved even higher. Setting aside whatever short-term effects may be associated with Hurricane Katrina, it is difficult to predict whether these increases represent the beginning of a longer-term trend or are merely normal market fluctuations caused by unexpectedly strong short-term worldwide demand for crude oil, as well as reflecting the effects of instability in such producing areas as the Middle East and Venezuela.

One reason why long-term real prices have been relatively contained is that United States refiners have taken advantage of economies of scale and adopted more efficient technologies and business strategies. Between 1985 and 2005, U.S. refineries increased their total capacity to refine crude oil into various refined petroleum products by 8.9 percent, moving from 15.7 million barrels per day in 1985 to 17.133 million barrels per day as of August 2005.[48] This increase—approximately 1.4 million barrels per day—is roughly equivalent to adding approximately 10 to 12 average-sized refineries to industry supply. Yet U.S. refiners did not build any new refineries during this time. Rather, they added this capacity through the expansion of existing refineries. They also have adopted methods that broaden the range of crude oils that they can process and allow them to produce more refined product for each barrel of crude processed. In addition, they have decreased their inventory costs by lowering their inventory holdings (although lower inventory holdings may also make an area more susceptible to short-term price spikes when there is a disruption in supply).

Offsetting some of the observed efficiency gains, increased environmental requirements since 1992 have likely raised the retail price of gasoline by a few cents per gallon in some areas. Because gasoline use is a major factor in air pollution in the United States, the U.S. Environmental Protection Agency—under the Clean Air Act[49]—requires various gasoline blends for particular geographic areas that have not met certain air quality standards. Although available information shows that the air quality in the United States has improved due to the Clean Air Act,[50] costs come with the benefits (as they do with any regulatory program). Environmental laws and regulations have required substantial and expensive refinery upgrades, particularly over the past 15 years. It costs more to produce cleaner gasoline than to produce conventional gasoline. Estimates of the increased costs of environmentally mandated gasoline range from $0.03 to $0.11 per gallon.[51]

FTC studies indicate that higher retail prices have not been caused by excess oil company profits. Although recent oil company profits may be high in absolute terms, industry profits have varied widely over time, as well as over industry segments and among firms.

EIA's Financial Reporting System (FRS) tracks the financial performance of the 28 major energy producers currently operating in the United States. In 2003, these firms had a return on capital employed of 12.8 percent, as compared to the 10 percent return on capital employed for the overall Standard & Poors (S&P) Industrials. Between 1973 and 2003, however, the annual average return on equity for FRS companies was 12.6 percent, while it was 13.1 percent for the S&P Industrials.[52] High absolute profits do not contradict numbers showing that oil companies may at times earn less (as a percentage of capital or equity) than other industrial firms. This simply reflects the large amount of capital necessary to find, refine, and distribute petroleum products.

The rates of return on equity for FRS companies have varied widely over the years, ranging from as low as 1.1 percent to as high as 21.1 percent during the period from 1974 to 2003.[53] Returns on equity vary across firms as well. Crude oil exploration and production operations typically generate much higher and more volatile returns than refining and marketing. In essence, companies with exploration and production operations now find themselves in a position analogous to that of a homeowner who bought a house in a popular area just before increased demand for housing caused real estate prices to escalate. Like the homeowner, crude oil producers can charge higher prices due to increased demand. If high prices and high profits are expected to continue, they may draw greater investments over time into the oil industry—in particular, to crude exploration and production. Over the long run, these investments are likely to elicit more crude supply, which would exert a downward pressure on prices.

C. Other Factors, Such as Retail Station Density, New Retail Formats, and State and Local Regulations, Also Can Affect Retail Gasoline Prices

The interaction of supply-and-demand and industry efficiency are not the only factors that impact retail gasoline prices. State and local taxes can be a significant component of the final price of gasoline. In 2004, the average state sales tax was $0.225 per gallon, with the highest state tax at $0.334 per gallon (New York).[54] Some local governments also impose gasoline taxes.[55]

Local regulations may also have an impact on retail gasoline prices. For example, bans on self-service sales or below-cost sales appear to raise gasoline prices. New Jersey and Oregon ban self-service sales, thus requiring consumers to buy gasoline bundled with services that increase costs—that is, having staff available to pump the gasoline.[56] Some experts have estimated that self-service bans cost consumers between $0.02 and $0.05 per gallon.[57] In addition, some 11 states have laws banning below-cost sales, so that a gas station is required to charge a minimum amount above its wholesale gasoline price.[58] These laws harm consumers by depriving them of the lower prices that more efficient (*e.g.*, high-volume) stations can charge.

Not surprisingly, retail gasoline prices are likely to be lower when consumers can choose—and can switch their purchases—among a greater number of retail stations. A small number of empirical studies have examined gasoline station density in relation to prices. One study found that stations in Southern California that imposed a 1 percent price increase lost different amounts of sales, depending on how many competitors were close by.[59] Those with a large number of nearby competitors (27 or more within 2 miles) lost 4.4 percent of sales in response to a 1 percent price increase; those with a smaller number of nearby competitors (fewer than 19 within 2 miles) lost only 1.5 percent of sales.[60] With all else equal, stations that face greater lost sales from raising prices likely will have lower retail prices than stations that lose fewer sales from raising prices.

Station density depends on cost conditions in an area. For example, the size and density of a market will influence how many stations can operate and cover their fixed costs. Fixed costs will depend on the costs of land and of building a station. Zoning regulations also may limit the number of stations in an area below what market conditions indicate the area could profitably sustain. Studies suggest that entry by new gasoline competitors tends to be more difficult in areas with high land prices and strict zoning regulations.[61]

One of the biggest changes in the retail sale of gasoline in the past three decades has been the development of such new formats as convenience stores and high-volume operations. These new formats appear to lower retail gasoline prices. The number of traditional gasoline-pump-and-repair-bay outlets has dwindled for a number of years, as brand-name gasoline retailers have moved toward a convenience store format. Independent gasoline/convenience stores—such as RaceTrac, Sheetz, QuikTrip, and Wawa—typically feature large convenience stores with multiple fuel islands and multi-product dispensers. They are sometimes called "pumpers" because of their large-volume fuel sales. By 1999, the latest year for which comparable data are available, brand-name and independent convenience store and pumper stations accounted for almost 67 percent of the volume of U.S. retail gasoline sales.[62]

Another change to the retail gasoline market that appears to have helped keep gasoline prices lower is the entry of hypermarkets. Hypermarkets are large retailers of general merchandise and grocery items, such as Wal-Mart and Safeway, that have begun to sell gasoline. Hypermarket sites typically sell even larger volumes of gasoline than pumper stations—sometimes four to eight times larger.[63] Hypermarkets' substantial economies of scale generally enable them to sell significantly greater volumes of gasoline at lower prices.

This list of factors that have an impact on retail gasoline prices is not exhaustive, but it shows that prices are set by a complex array of market and regulatory forces

working throughout the economy. In the long run, these forces have historically combined to produce relatively stable real prices in the face of consistently growing demand. Short-run variations, while sometimes painful to consumers, are unavoidable in an industry that depends on the demand and supply decisions of literally billions of people.

IV. Conclusion

The Federal Trade Commission has an aggressive program to enforce the antitrust laws in the petroleum industry. The Commission has taken action whenever a merger or nonmerger conduct has violated the law and threatened the welfare of consumers or competition in the industry. The Commission continues to search for appropriate targets of antitrust law enforcement, to monitor retail and wholesale gasoline and diesel prices closely, and to study this industry in detail.

Thank you for this opportunity to present the FTC's views on this important topic. I would be glad to answer any questions that the Committee may have.

ENDNOTES

[1] This written statement represents the views of the Federal Trade Commission. My oral presentation and responses to questions are my own and do not necessarily represent the views of the Commission or any Commissioner.

[2] *See* Minerals Mgmt. Serv., U.S. Dep't of the Interior, Release No. 3328, *Hurricane Katrina Evacuation and Production Shut-in Statistics Report as of Tuesday, August 30, 2005,* at *http://www.mms.gov/ooc/press/2005/press0830.htm.*

[3] *See* Minerals Mgmt. Serv., U.S. Dep't of the Interior, Release No. 3347, *Hurricane Katrina Evacuation and Production Shut-in Statistics Report as of Thursday, September 15, 2005,* at *http://www.mms.gov/ooc/press/2005/press0915.htm*.

[4] Letter and Attachment from Douglas Holtz-Eakin, Director of the Congressional Budget Office, to Honorable William H. Frist, M.D. (Sept. 6, 2005), available at *http://www.cbo.gov/ftpdocs/66xx/doc6627/09-06-ImpactKatrina.pdf.*

[5] On September 15, 2005, the Senate passed the Fiscal Year 2006 Commerce-Justice-Science Appropriations bill, which included funding for the FTC. An amendment to this bill introduced by Senator Mark Pryor requires the FTC to conduct an investigation into gasoline prices in the aftermath of Hurricane Katrina.

[6] Energy Policy Act of 2005, Pub. L. No. 109–58 § 1809, __ Stat.__ (2005).

[7] Federal Trade Commission, *Gasoline Price Changes: the Dynamic of Supply, Demand, and Competition* (2005) [Hereinafter *Gasoline Price Changes*], available at *http://www.ftc.gov/reports/gasprices05/050705gaspricesrpt.pdf.*

[8] Bureau of Economics, Federal Trade Commission, *The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement* (2004) [Hereinafter *Petroleum Merger Report*], available at *http://www.ftc.gov/os/2004/08/040813mergersinpetrolberpt.pdf.*

[9] *See infra* at 11 (discussing *Aloha Petroleum, Ltd.,* FTC File No. 051 0131).

[10] *See* FTC, *Oil and Gas Industry Initiatives, at http://www.ftc.gov/ftc/oilgas/index.html.*

[11] An "unusual" price movement in a given area is a price that is significantly out of line with the historical relationship between the price of gasoline in that area and the gasoline prices prevailing in other areas.

[12] Business-related causes include movements in crude oil prices, supply outages (*e.g.,* from refinery fires or pipeline disruptions), or changes in and/or transitions to new fuel requirements imposed by air quality standards.

[13] *See Gasoline Price Changes, supra* note 7, at 13.

[14] FTC investigations of mergers and potentially anticompetitive conduct in the petroleum industry have generally focused on issues arising at the midstream and downstream stages of the industry—transportation, refining, terminaling, wholesaling, and retailing. In view of the minuscule shares of crude oil reserves and production held by individual private firms, as well as OPEC's key role in establishing global crude oil supply and price levels, antitrust enforcement opportunities have been far less likely to arise at the crude exploration and production stage. For a further discussion of crude oil, *see* Section III.A. of this testimony, *infra*.

[15] Section 7 of the Clayton Act prohibits acquisitions that may have anticompetitive effects "in any line of commerce or in any activity affecting commerce in any section of the country." 15 U.S.C. § 18.

[16] Federal Trade Commission Horizontal Merger Investigation Data, Fiscal Years 1996–2003 (Feb. 2, 2004), Table 3.1, et seq.; FTC Horizontal Merger Investigations Post-Merger HHI and Change in HHI for Oil Markets, Fiscal Year 1996 through Fiscal Year 2003 (May 27, 2004), available at *http://www.ftc.gov/opa/2004/05/040527petrolactionsHHIdeltachart.pdf.*

[17] *Chevron Corp.,* FTC Docket No. C–4144 (July 27, 2005) (consent order), at *http://www.ftc.gov/os/caselist/0510125/050802do0510125.pdf; Union Oil Co. of California,* FTC Docket No. 9305 (July 27, 2005) (consent order), at *http://www.ftc.gov/os/adjpro/d9305/050802do.pdf.*

[18] *Valero L. P.,* FTC Docket No. C–4141 (June 14, 2005) (complaint), at *http://www.ftc.gov/os/caselist/0510022/050615comp0510022.pdf.*

[19] *Id.*

[20] *Valero L. P.,* FTC Docket No. C–4141 (July 22, 2005) (consent order), at *http://www.ftc.gov/os/caselist/0510022/050726do0510022.pdf.*

[21] *Aloha Petroleum Ltd.,* FTC File No. 051 0131 (July 27, 2005) (complaint), at *http://www.ftc.gov/os/caselist/1510131/050728comp1510131.pdf.*

[22] FTC Press Release, *FTC Resolves Aloha Petroleum Litigation* (Sept. 6, 2005), available at *http://www.ftc.gov/opa/2005/09/alohapetrol.htm.*

[23] *Chevron Corp.,* FTC Docket No. C–4023 (Jan. 2, 2002) (consent order), at *http://www.ftc.gov/os/2002/01/chevronorder.pdf.*

[24] *Id.*

[25] Shell and Texaco jointly controlled the Equilon venture, whose major assets included full or partial ownership in four refineries, about 65 terminals, and various pipelines. Equilon marketed gasoline through approximately 9,700 branded gas stations nationwide.

[26] Motiva, jointly controlled by Texaco, Shell, and Saudi Refining, consisted of their eastern and Gulf Coast refining and marketing businesses. Its major assets included full or partial ownership in four refineries and about 50 terminals, with the companies' products marketed through about 14,000 branded gas stations nationwide.

[27] *Valero Energy Corp.,* FTC Docket No. C–4031 (Feb. 19, 2002) (consent order), at *http://www.ftc.gov/os/2002/02/valerodo.pdf.*

[28] *Valero Energy Corp,* FTC. Docket No. C–4031 (Dec. 18, 2001) (complaint), at *http://www.ftc.gov/os/2001/12/valerocmp.pdf.*

[29] *Valero Energy Corp., supra* note 27.

[30] *Conoco Inc. and Phillips Petroleum Corp.,* FTC Docket No. C–4058 (Aug. 30, 2002) (Analysis of Proposed Consent Order to Aid Public Comment), at *http://www.ftc.gov/os/2002/08/conocophillipsan.htm.* Not all oil industry merger activity raises competitive concerns. For example, in 2003, the Commission closed its investigation of Sunoco's acquisition of the Coastal Eagle Point refinery in the Philadelphia area without requiring relief. The Commission noted that the acquisition would have no anticompetitive effects and seemed likely to yield substantial efficiencies that would benefit consumers. *Sunoco Inc./Coastal Eagle Point Oil Co.,* FTC File No. 031 0139 (Dec. 29, 2003) (Statement of the Commission), at *http://www.ftc.gov/os/caselist/0310139/031229stmt0310139.pdf.* The FTC also considered the likely competitive effects of Phillips Petroleum's proposed acquisition of Tosco. After careful scrutiny, the Commission declined to challenge the acquisition. A statement issued in connection with the closing of the investigation set forth the FTC's reasoning in detail. *Phillips Petroleum Corp.,* FTC File No. 011 0095 (Sept. 17, 2001) (Statement of the Commission), at *http://www.ftc.gov/os/2001/09/phillipstoscostmt.htm.*

As noted above (*supra* note 14), acquisitions of firms operating mainly in oil or natural gas exploration and production are unlikely to raise antitrust concerns, because that segment of the industry is generally unconcentrated. Acquisitions involving firms with *de minimis* market shares, or with production capacity or operations that do not overlap geographically, are also unlikely to raise antitrust concerns.

[31] *Union Oil Co. of California,* FTC Docket No. 9305 (Mar. 4, 2003) (complaint), at *http://www.ftc.gov/os/2003/03/unocalcmp.htm.*

[32] *Chevron Corp., supra* note 17.

[33] FTC Press Release, *FTC Closes Western States Gasoline Investigation* (May 7, 2001), available at *http://www.ftc.gov/opa/2001/05/westerngas.htm.* In part, this investigation focused on "zone pricing" and "redlining." *See Statement of Commissioners Sheila F. Anthony, Orson Swindle and Thomas B. Leary,* available at *http://www.ftc.gov/os/2001/05/wsgpiswindle.htm,* and *Statement of Commissioner Mozelle W. Thompson,* available at *http://www.ftc.gov/os/2001/05/wsgpithompson.htm,* for a more detailed discussion of these practices and the Commission's findings. *See also* Cary A. Deck & Bart J. Wilson, *Experimental Gasoline Markets,* Federal Trade Commission, Bureau of Economics Working Paper (Aug. 2003), available at *http://www.ftc.gov/be/workpapers/wp263.pdf,* and David W. Meyer & Jeffrey H. Fischer, *The Economics of Price Zones and Territorial Restrictions in Gasoline Marketing,* Federal Trade Commission, Bureau of Economics Working Paper (Mar. 2004), available at *http://www.ftc.gov/be/workpapers/wp271.pdf.*

[34] Midwest Gasoline Price Investigation, Final Report of the Federal Trade Commission (Mar. 29, 2001), available at *http://www.ftc.gov/os/2001/03/mwgas rpt.htm; see also* Remarks of Jeremy Bulow, Director, Bureau of Economics, Federal Trade Commission, *The Midwest Gasoline Investigation,* available at *http://www.ftc.gov/speeches/other/midwestgas.htm.*

[35] FTC Press Release, *FTC to Hold Second Public Conference on the U.S. Oil and Gasoline Industry in May 2002* (Dec. 21, 2001), available at *http://www.ftc.gov/opa/2001/12/gasconf.htm.*

[36] *Gasoline Price Changes, supra* note 7.

[37] A simple regression of the monthly average national price of gasoline on the monthly average price of West Texas Intermediate crude oil shows that the variation in the price of crude oil—based on data for the period January 1984 to October 2003—explains approximately 85 percent of the variation in the price of gasoline. This is similar to the range of effects given in United States Department of Energy/Energy Information Administration, *Price Changes in the Gasoline Market: Are Midwestern Gasoline Prices Downward Sticky?,* DOE/EIA–0626 (Feb. 1999). More complex regression analysis and more disaggregated data may give somewhat different estimates, but the latter estimates are likely to be of the same general magnitude.

This percentage may vary across states or regions. See Prepared Statement of Justine Hastings before the Committee on the Judiciary, Subcommittee on Antitrust, Competition Policy and Consumer Rights, U.S. Senate, *Crude Oil: The Source of Higher Gas Prices* (Apr. 7, 2004). Dr. Hastings found a range from approximately 70 percent for California to 91 percent for South Carolina. South Carolina uses only conventional gasoline and is supplied largely by major product pipelines that pass through the state on their way north from the large refinery centers on the Gulf Coast. California, with its unique fuel specifications and its relative isolation from refinery centers in other parts of the United States, historically has been more susceptible to supply disruptions that can cause major gasoline price changes, independent of crude oil price changes.

[38] *Gasoline Price Changes, supra* note 7, at 43–45.

[39] *Id.* at 19.

[40] This phenomenon was not limited to crude oil: other commodities that form the basis for expanded growth in developing economies, such as steel and lumber, also saw unexpectedly rapid growth in demand, along with higher prices. *Id.* at 27.

[41] *Id.* at 48.

[42] *Id.*

[43] *See id.* at 49; EIA, DOE/EIA–0202, *Short-term Energy Outlook,* Apr. 2005, app. at 5 tbl.A5, at *http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/apr05.pdf.*

[44] EIA, DOE/EIA–0208(2005–34), *Weekly Petroleum Status Report,* August 31, 2005, at 17, tbl.11, at *http://www.eia.doe.gov/pub/oil—gas/petroleum/data—publications/weekly__petroleum__status__report/historical/2005/2005__08__31/pdf/wpsrall.pdf.*

[45] "Real" prices are adjusted for inflation and therefore reflect the different values of a dollar at different times; they provide more accurate comparisons of prices in different time periods. "Nominal" prices are the literal prices shown at the time of purchase.

[46] *See Gasoline Price Changes, supra* note 7, at 43–47.

[47] The higher prices in 2005 appear to be the result of market factors that have uniformly affected the entire country. At least for the part of this year that preceded Hurricane Katrina, the FTC's Gasoline Price Monitoring Project has detected no evidence of significant unusual local or regional gasoline pricing anywhere in the United States during this summer driving season. This contrasts with the past two summers, during which various regional supply shocks, such as the Arizona pipeline shutdown and the Northeast blackouts of August 2003, and the several unanticipated regional refinery outages and late summer hurricanes during the summer of 2004, significantly increased prices in some areas above levels that might be expected based on historical price patterns.

[48] *Petroleum Merger Report, supra* note 8, at 196, tbl.7–1; EIA, DOE/EIA–0340(04)/1, 1 *Petroleum Supply Annual* 2004, at 78, tbl.36 (2005), at *http://www.eia.doe.gov/pub/oil__gas/petroleum/data__publications/petroleum__supply__annual/psa__volume1/current/pdf/volume1__all.pdf.* EIA, DOE/EIA–0208(2005–33), *Weekly Petroleum Status Report,* August 24, 2005, at *http://www.eia.doe.gov/pub/oil__gas/petroleum/data__publications/weekly__petroleum__status__report/historical/2005/2005__08__24/pdf/wpsrall.pdf.*

[49] Beginning with the Clean Air Act Amendments of 1970 (Pub. L. No. 91–604, 84 Stat. 1698) and continuing with further amendments in 1990 (Pub. L. No. 101–549, 104 Stat. 2468) and the Energy Policy Act of 1992 (Pub. L. No. 102–486, 106

Stat. 2776), Congress has mandated substantial changes in the quality of gasoline, as well as diesel, that can be sold in the United States.

[50] Robert Larson, Acting Director of the Transportation and Regional Programs, Environmental Protection Agency, Remarks at the FTC Conference on Factors that Affect Prices of Refined Petroleum Products 79–80 (May 8, 2002).

[51] *See* EIA, *1995 Reformulated Gasoline Market Affected Refiners Differently*, in DOE/EIA–0380(1996/01), *Petroleum Marketing Monthly* (1996), and studies cited therein. Environmental mandates are not the same in all areas of the country. The EPA requires particular gasoline blends for certain geographic areas, but it sometimes allows variations on those blends. Differing fuel specifications in different areas can limit the ability of gasoline wholesalers to find adequate substitutes in the event of a supply shortage. Thus, boutique fuels may exacerbate price variability in areas, such as California, that are not interconnected with large refining centers in other areas.

[52] *See Gasoline Price Changes, supra* note 7, at 61.

[53] *Id.*

[54] *Id.* at 111 (noting that the other four states with the highest average taxes on gasoline in 2004 were Wisconsin ($0.33 per gallon), Connecticut ($0.325 per gallon), Rhode Island ($0.306 per gallon), and California ($0.301 per gallon)).

[55] *Id.* For example, all areas in Florida also have a local tax between $0.099 and $0.178 per gallon. Similarly, Honolulu has a local tax of $0.165 per gallon.

[56] *See, e.g.,* Oregon Rev. Stat., ch. 480, § 480.315.

[57] *See* Michael G. Vita, *Regulatory Restrictions on Vertical Integration and Control: The Competitive Impact of Gasoline Divorcement Policies,* 18 J. Reg. Econ. 217 (2000); *see also* Ronald N. Johnson & Charles J. Romeo, *The Impact of Self-Service Bans in the Retail Gasoline Market,* 82 Rev. Econ. & Stat. 625 (2000); Donald Vandegrift & Joseph A. Bisti, *The Economic Effect of New Jersey's Self-Service Operations Ban on Retail Gasoline Markets,* 24 J. Consumer Pol'y 63 (2001).

[58] *See Gasoline Price Changes, supra* note 7, at 113.

[59] John M. Barron et al., *Consumer and Competitor Reactions: Evidence from a Retail-gasoline Field Experiment* (Mar. 2004), at *http://ssrn.com/abstract=616761.*

[60] *Id.* at 13, 15, 30–31.

[61] *See id.* at 30–31; Gov't Accountability Office, GAO/RCED–00–121, *Motor Fuels: California Gasoline Price Behavior 20* (2000), available at *http://www.gao.gov/new.items/rc00121.pdf.*

[62] *Petroleum Merger Report, supra* note 8, at 246 tbl.9–5.

[63] *Id.* at 239.

Senator INOUYE. I thank you very much, Mr. Seesel.

Mr. Wells?

STATEMENT OF JIM WELLS, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. WELLS. Thank you, Mr. Chairman and Members. We, too, are pleased to be here today.

We've done a lot of work in gasoline. We tried to understand what's going on. Quite frankly, the more we look, the more we would like to look at some other things, too. It's a very complex industry, and it's tough to understand what's exactly happening today. But we did accept the challenge to come here in 10 minutes and talk about what we think about gasoline prices.

A week after Katrina, regular gasoline hit $3.07 a gallon, and 860,000 barrels per day of production is still closed in the Gulf. While gasoline prices have retreated somewhat, just yesterday, Hurricane Rita entered the Gulf, as crude oil futures surged $4, the biggest one-time jump ever in history for one day. Heating oil and gasoline futures have also jumped, as well.

It's clear that the pain is real, both for individuals and our economy. We did a calculation of—each additional ten cents per gallon of gasoline adds $14 billion to the—America's annual gasoline bill. That comes out of your pocket, my pocket. Our consumers have

questions as they fill up their tanks with 380 million gallons a day, and then they read the newspapers about high oil company profits.

This search for potential solutions about "What do we do?" begins with understanding the key factors relating to gas. We gave our part and tried to do a gasoline primer for the American consumer. We put pages together to help the consumer try to understand this complex marketplace. It also depends on who you ask, the people that we talk to. If you ask the industry, the answers we got were, "It's the crude oil cost. It's the lack of refining capacity. It's the low inventories. It's supply disruptions. It's regulatory requirements for clean air. It's the taxes. It's profit." If you talk to the consumer, you hear from them, "price-gouging, illegal activity or behavior, collusion by the industry." If you talk to an economist, "It's all about supply-and-demand or some sort of imbalance." If you talk to a GAO auditor, and we would say that "It's probably all of the above that I just mentioned, and probably more that we're not aware of."

On a big-picture level, the price of gasoline is basically—a gallon of gasoline consists, from a price standpoint, about half of crude oil, a fourth for taxes, and a fourth for refining, marketing, and Federal and State taxes, as well as profit. If you look at it on a more detailed level, there are clearly a lot of additional factors that influence prices, such as risk premiums, fear premiums, if you will, financial speculation in the marketplace, extremely variable profit margins being observed in the industry, and business targets-of-opportunity.

I think the biggest lesson I learned, as we tried to explain to the American people what goes into the price of gasoline, was that the price of gasoline has little to do with the cost—what it costs to get it, what it costs to make it. But it really has a lot to do with the world market conditions, financial speculation, and how the industry works in today's environment to move that particular product—gasoline—to the market.

Clearly, in 10 minutes I can't talk about the 1,001 factors that relate to how the gasoline got priced as high as it has been today. I'm reminded, borrowing from an old car commercial, "Today's gasoline marketplace is not your father's old Oldsmobile." The industry is vastly different today than it was yesterday. The Federal regulations, the oversight we provide, much of what was put in place in the 1950s, 1960s, and 1970s was meant to deal with a marketplace that no longer exists today. The marketplace is clearly different.

We used to make what gasoline we needed in this country. Today, we import about 42 million gallons a day, over 10 percent of our need. Not long ago, we had 202,000 gasoline service stations. Some of these, many of these, were mom-and-pops. Today, we have 165,000, far fewer independents. We have fewer petroleum companies today than in the past, because of a wave of 2,600 mergers that occurred in the 1990s. Industry used to maintain a standing 40-plus days of gasoline inventory in storage. Today, it has 23 days, on average, a lot less to deal with immediate disruptions, like what we are experiencing. But, clearly, it is more cost efficient for the industry.

We had over 300 refineries. Today, we have less than 150. Although refining capacity has increased slightly in the last 20 years,

and that's due primarily to the expansion of existing facilities and the closure of inefficient refineries, but, clearly, the statistics show that it is not keeping pace with the demand—*i.e.,* increasing imports that we bring in from foreign countries.

Not too many years ago, we had one blend of gas. Today, for clean-air reasons, we have requirements for 11 special blends to be sold in 55 locations throughout the country, and it clearly costs more to provide that type of gas. GAO recently did a study looking at special blends. We documented costs in selected areas, anywhere from 14 to 44 cents per gallon. In 1970, we had an average fuel economy for cars at 13 miles a gallon. Today we average 22 for cars, yet demand continues to rise as we drive more SUVs.

I give you this portrayal of an industry today that is different than it used to be. In these events, I do not mean to portray that they're necessarily bad, in terms of how the industry has changed, but my point is that the industry and the world has changed, and questions remain whether the government regulations that are in place, and the private industry can find solutions, and work together cooperatively, in a partnership to find better solutions than to put the American consumer and the American economy through extreme volatility that they've been experiencing in the gasoline marketplace.

Everyone around the table today understands that we depend on the foreign oil supply, which limits our ability to control things beyond our borders. OPEC is currently supplying about 40 percent of the 83 million-barrels-per-day consumption in the world. If crude prices go up, like 80 percent in the last 15 months, gasoline prices will follow, and have followed. Crude oil is clearly a worldwide commodity, and its point—its price at any point in time has little to do with the cost to get it out of the ground. This is something for the—that's difficult for the consumer to understand. The price today is what the market will bear. The last tanker of oil that comes across the ocean will steer to the port that's willing to pay the highest price, whether that is China or the United States. That's the reality of the marketplace.

Turning more immediately to the recent events that have caused the spread between retail gasoline price and crude oil to widen, we have looked at this and saw that the—historically, if you go back 30, 40, 50 years and you track it, the spread was fairly consistent, in terms of about a 50-percent—50-cent-per-gallon spread between crude oil cost and retail price. Clearly, refining capacity has not kept pace with demand, and volatility has become extremely high.

There's no question that the industry has responded. It's improving its efficiencies, and it has weeded-out inefficiencies by closing refineries. The industry, when asked the question, "Why are you not building new refineries?" they cite high costs, regulations, NIMBY, and low refining profits for reasons why no refineries are being built.

It is true that, over time, low and volatile margins have been a disincentive to investing in the refining sector. We would agree. However, just prior to coming today, our staff began compiling some data that we just got from Deutsche Bank, and, looking from—back since 2003, relating to estimates of refining margins, which would indicate that the U.S. refining margins are signifi-

cantly higher today than margins in the rest of the world, and are increasing.

The question might be posed by this Committee to the industry later in the panels that: If this trend continues and if it's sustained, could this be a situation where the industry might be inspired to increase the U.S. refining capacity, as opposed to some of the reasons why they cited that they were not building refineries earlier?

Mr. Chairman, I'm going to stop here, and I'm going to say, in summary, that the future of gasoline prices is uncertain, but, most likely, it will remain higher than what we've been accustomed to in the past. We would agree with Mr. West's earlier comment that the marketplace is extremely fragile. We agree with Senator Dorgan and Senator Allen, and others earlier today that raised the issue about: What are we doing about price-gouging? We agree, these are issues and questions that need to be asked.

Overall, GAO would conclude, from the body of work that we have done, that the challenge is going to be to boost supply and reduce demand. You need to work on both sides of that equation. Clearly, we need to choose wisely our course of actions, and we need to act soon. We also need to stay vigilant, in terms of our oversight. As an auditor working for you, the U.S. Congress, and the American taxpayer, I think it's important that we continue to hold Federal agencies accountable, like the Federal Trade Commission, Mr. Seesel here, and the Justice Department. And we need to make sure that they're up to the task to, in fact, look at and find out if, in fact, that the industry is performing correctly, and there is no price-gouging going on. We, GAO, are ready to help, if requested.

I welcome the opportunity to answer any questions.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Wells follows:]

PREPARED STATEMENT OF JIM WELLS, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. Chairman and members of the Committee:

I am pleased to participate in the Committee's hearing to discuss current gasoline prices and the factors that will likely influence trends in those prices. Soaring retail gasoline prices have garnered extensive media attention and generated considerable public anxiety in recent months, particularly in the aftermath of Hurricane Katrina. Prices in many areas hit by the hurricane saw retail gasoline prices increase to over $3.00 per gallon, and in one reported case to almost $6.00 per gallon, with some gasoline stations running out of gasoline entirely. In addition, retail gasoline prices have shot up in many areas of the country that were not directly affected by the hurricane. It was not uncommon to see pump prices rise not just daily, but multiple times in the same day. Overall, gasoline prices have been significantly higher this year than last, costing American consumers considerably. According to the Department of Energy's Energy Information Administration (EIA), nationally, each additional ten cents per gallon of gasoline adds about $14 billion to America's annual gasoline bill.

The availability of relatively inexpensive gasoline over past decades has helped foster economic growth and prosperity in the United States. However, large price increases, especially if sustained over a long period, pose long-term challenges to the economy and consumers. Importantly, some recent analyses suggest that gasoline prices may stay at today's relatively high level or even increase significantly in the future. In contrast, others suggest that prices may fall as oil companies invest in more crude oil producing capacity and as consumers respond to higher prices by adopting more energy-efficient practices. Regardless of what happens in the future, the impact of gasoline prices is felt in virtually every sector of the U.S. economy

and when prices increase sharply, as they have in recent months, consumers feel it immediately and are reminded every time they fill up their tanks.

It is therefore essential to understand the market for gasoline. In this context, you asked us to discuss: (1) how gasoline prices are determined, and (2) what key factors will likely influence trends in future gasoline prices?

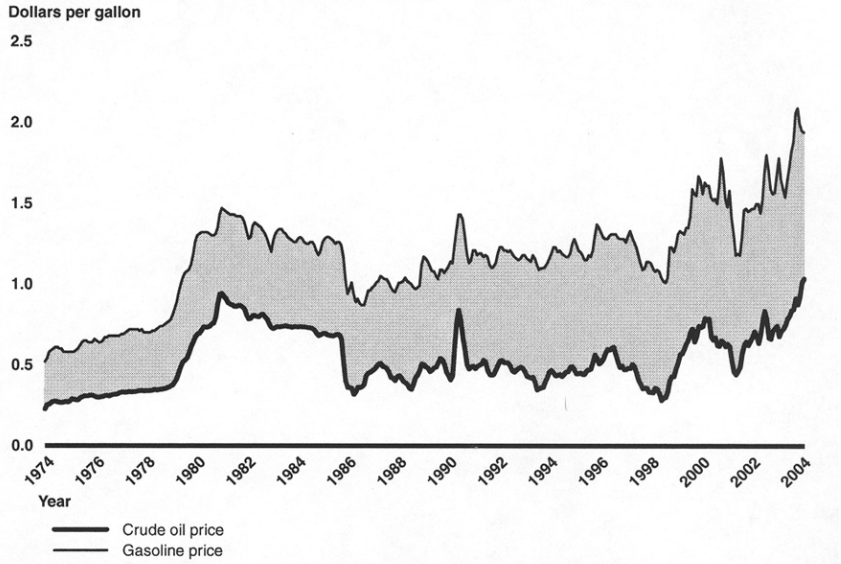
To respond to your questions, we relied heavily on the gasoline primer, *"Motor Fuels: Understanding the Factors That Influence the Retail Price of Gasoline,"* [1] and 17 other GAO products on gasoline prices and other aspects of the petroleum products industry. (See Related GAO Products at the end of this testimony.) We also collected updated data from a number of sources that we deemed reliable. This work was performed in accordance with generally accepted government auditing standards.

In summary, our work has shown:

- Crude oil prices and gasoline prices are inherently linked, because crude oil is the primary raw material from which gasoline and other petroleum products are produced. In the past year, crude oil prices have risen significantly—from August 31, 2004 to August 31, 2005, the price of West Texas Intermediate crude oil, a benchmark for international oil prices, rose by almost $27 per barrel, an increase of almost 64 percent. Over about the same period, average retail prices for regular gasoline rose nationally from $1.87 to $2.61 per gallon, an increase of about 40 percent. Explanations for the large increase in crude oil and gasoline prices include the rapid growth in world demand for crude oil and petroleum products, particularly in China and the rest of Asia; instability in the Persian Gulf region (the source of a large proportion of the world's oil reserves); and actions by the Organization of Petroleum Exporting Countries (OPEC) to restrict the production of crude oil and thereby increase its price on the world market. *Figure 1* illustrates the relationship between crude oil and gasoline prices over the past three decades. The figure shows that major upward and downward movements of crude oil prices are generally mirrored by movements in the same direction by gasoline prices. However, based on recent events, at least in the short-term, this historical trend has not held, and retail prices have risen faster than crude oil prices.

[1] GAO, *Motor Fuels: Understanding the Factors That Influence the Retail Price of Gasoline,* GAO–05–525SP (Washington, D.C.: May 2, 2005).

Figure 1: Gasoline and Crude Oil Prices—1974-2004 (Not adjusted for inflation)



Source: GAO analysis of Energy Information Administration, Department of Energy, Monthly Energy Review, Monthly Refiner Acquisition Cost of Crude Oil, Composite and and Bureau of Labor Statistics, Monthly Motor Gasoline Prices, U.S. City Averages, Regular Gasoline.

- While the price and availability of crude oil is a fundamental determinant of gasoline prices, a number of other factors also play a role in determining how gasoline prices vary across different locations and over time. For example, refinery capacity in the United States has not expanded at the same pace as demand for gasoline and other petroleum products in recent years. During the same period the United States has imported larger and larger volumes of gasoline from Europe, Canada, and other countries. The American Petroleum Institute has recently reported that U.S. average refinery capacity utilization has increased to 92 percent. As a result, domestic refineries have little room to expand production in the event of a temporary supply shortfall. Further, the fact that imported gasoline comes from farther away than domestically produced gasoline means that when supply disruptions occur in the United States, it might take longer to get replacement gasoline than if we had excess refining capacity in the United States, and this could cause gasoline prices to rise and stay high until these new supplies can reach the market.
- Gasoline inventories maintained by refiners or marketers of gasoline can also have an impact on prices. As with trends in a number of other industries, the petroleum products industry has seen a general downward trend in the level of gasoline inventories in the United States. Lower levels of inventories may cause prices to be more volatile because when a supply disruption occurs, there are fewer stocks of readily available gasoline to draw from, putting upward pressure on prices. Regulatory factors also play a role. For example, in order to meet national air quality standards under the Clean Air Act, as amended, many states have adopted the use of special gasoline blends—so-called "Boutique Fuels." Many experts have concluded that the proliferation of these special gasoline blends has caused gasoline prices to rise and/or become more volatile, especially in regions such as California that use unique blends of gasoline, because the fuels have increased the complexity and costs associated with supplying gasoline to all the different markets. Finally, the structure of the gasoline market can play a role in determining prices. For example, we recently reported that some mergers of oil companies during the 1990s led to reduced competition among gasoline suppliers and may have been responsible for an increase in gasoline prices by as much as 2 cents per gallon on average, with boutique fuels increasing from between 1 to 7 cents per gallon.

- Gasoline prices may also be affected by unexpected refinery outages or accidents that significantly disrupt the delivery of gasoline supply. Most recently, Hurricane Katrina hit the Gulf Coast, doing tremendous damage to homes, businesses, and physical infrastructure, including roads; electricity transmission lines; and oil producing, refining, and pipeline facilities. The DOE reported on August 31, 2005, that as many as 2.3 million customers were without electricity in Louisiana, Mississippi, Alabama, Florida, and Georgia. The DOE further reported that 21 refineries in affected states were either shut down or operating at reduced capacity in the aftermath of the hurricane. This amounted to a reduction of over 10 percent of the Nation's total refining capacity. Two petroleum product pipelines that serve the Midwest and East Coast from Gulf Coast refineries were also out. In addition, the Minerals Management Service in the Department of the Interior reported that as of September 1, 2005, over 90 percent of crude oil production in the Gulf of Mexico was out of operation. Because the Gulf Coast refining region is a net exporter of petroleum products to all other regions of the country, retail gasoline prices in many parts of the Nation rose dramatically. Average retail gasoline prices increased 45 cents per gallon between August 29 and September 5. The average price for a gallon of regular gasoline on September 5 was $3.07, the highest nominal price ever. In addition, gasoline stations faced large increases in wholesale gasoline prices, and some even reported running out of gasoline. The spot price for wholesale gasoline delivered to New York Harbor rose by about $0.78 per gallon between August 26 and August 30. Gasoline supply is recovering in the wake of the storm, however, and prices have begun to decrease. Between September 5 and September 12, average gasoline prices decreased 11 cents to $2.96 per gallon. Gasoline production increased dramatically over this time, rising by more than 400,000 barrels per day as most of the refineries shut down after the storm resumed production. Until production, refining, and pipeline facilities are fully operating at normal levels, prices are expected to continue to be higher in affected areas. Coming as this has on the heels of a period of high crude oil prices and a tight balance worldwide between petroleum demand and supply, the effects of the hurricane illustrate the volatility of gasoline prices given the vulnerability of the gasoline infrastructure to natural or other disruptions.
- Future gasoline prices will reflect the world supply-and-demand balance. If demand for oil and petroleum products continues to rise as it has in past years, then oil supply will have to expand significantly to keep up. The EIA projects that world demand for crude oil will rise by at least 25 percent by the year 2025. However, world surplus crude oil production capacity—the amount by which oil production can be increased in the short run without installing more drilling equipment or developing new oil fields—is currently very small. Moreover, many of the world's known and easily accessible crude oil deposits have already been developed and many of these are experiencing declining volumes as the fields become depleted. Other new sources may be more expensive to develop. For example, there are large stores of crude oil in tar sands and oil shale, or potentially beneath deep water in the ocean, but these sources are more costly to extract and process than many of the sources of oil that we have already tapped. If developing, extracting, and refining new sources of crude oil are more costly than extracting and refining oil from existing fields, crude oil and petroleum product prices likely will rise to make these activities economically feasible. If, on the other hand, technological innovations improve the ability to extract and process oil, this will increase the available future supply and may ease pressure on petroleum product prices.
- Although demand for crude oil is projected to increase, it could fall below current expectations if consumers choose more energy efficient products or otherwise conserve more energy. Such a reduction in demand could lead to lower-than-expected future prices. For example, in response to high gasoline prices in the United States, in the 1980s many consumers chose to switch to smaller or more fuel-efficient vehicles, which reduced demand for gasoline. Environmental issues could also have an impact on world crude oil and petroleum product prices. For example, international efforts to reduce greenhouse emissions could cause reductions in demand for crude oil and petroleum products as more fuel-efficient processes are adopted or as cleaner sources of energy are developed. Additional factors that will likely influence future oil and gasoline prices include geopolitical issues, such as the stability of the Middle East; the valuation of the U.S. dollar in world currency markets; and the pace of development of alternative energy supplies, such as hydrogen fuel cell technology.

Background

In 2004, the United States consumed about 20.5 million barrels per day of crude oil accounting for roughly 25 percent of world oil production. A great deal of the crude oil consumed in this country goes into production of gasoline and, as a nation, we use about 45 percent of all gasoline produced in the world.[2] Products made from crude oil—petroleum products, including gasoline—have been instrumental in the development of our modern lifestyle. In particular, gasoline, diesel, and jet fuel have provided the Nation with affordable fuel for automobiles, trucks, airplanes and other forms of public and goods transportation. Together, these fuels account for over 98 percent of the U.S. transportation sector's fuel consumption. In addition, petroleum products are used as raw materials in manufacturing and industry; for heating homes and businesses; and, in small amounts, for generating electric power. Gasoline use alone constitutes about 44 percent of our consumption of petroleum products in the United States, so when gasoline prices rise, as they have in recent months, the effects are felt throughout the country, increasing the costs of producing and delivering basic retail goods and making it more expensive to commute to work. It is often the case that prices of other petroleum products also increase at the same time and for the same reasons that gasoline prices rise. For example, today's high gasoline prices are mirrored by high jet fuel prices, creating financial pressure on airline companies, some of which are currently in the midst of economic difficulties. Gasoline prices vary a great deal over time. For example, in the period January 1, 1995 through August 29, 2005, the national average price for a gallon of regular grade gasoline has been as low as $1.10 and as high as $2.80 without adjusting for inflation.

The future path of gasoline prices is difficult to predict, but it is clear that the use of petroleum products worldwide is going to increase for the near term and maybe beyond. Some analysts have predicted much higher crude oil prices—and as a result, higher prices for petroleum products—while others expect prices to moderate as producers respond to high prices by producing more crude oil and consumers respond by conserving more, and investing in more energy-efficient cars and other products. In either case, the price of gasoline will continue to be an important factor affecting the household budgets of individual Americans for the foreseeable future and therefore, it is important to understand how prices are determined so that consumers can make wise choices.

Gasoline Prices Are Determined by the Price of Crude Oil and a Number of Other Factors

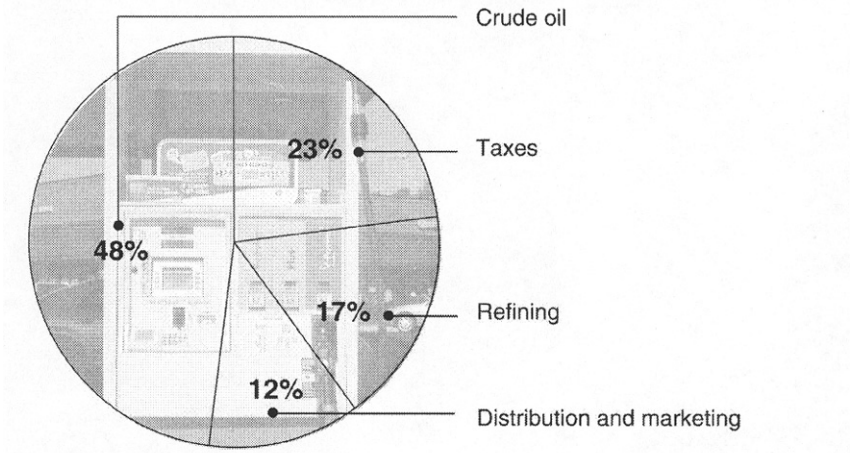
Crude oil prices directly affect the price of gasoline, because crude oil is the primary raw material from which gasoline is produced. For example, according to our analysis of EIA data, in 2004 crude oil accounted for about 48 percent of the price of a gallon of gasoline on average in the United States. When crude oil prices rise, as they have over the past year, refiners find their cost of producing gasoline also rises, and in general, these higher costs are passed on to consumers in the form of higher gasoline prices at the pump. However, based on recent events, at least in the short-term, this historical trend has not held, and retail prices have risen faster than crude oil prices. *Figure 2* illustrates the importance of crude oil in the price of gasoline. The figure also shows that taxes, refining, and distribution and marketing also play important roles.[3]

---

[2] The large percentage of total world gasoline production consumed by the United States, in part, reflects the fact that diesel is a commonly used fuel for cars in Europe, while automobiles in the United States primarily run on gasoline. If all motor vehicle fuels were accounted for, the United States' share of these fuels would be smaller than its share of gasoline. However, we do not have the data to present this more comprehensive measure.

[3] The latter two categories, refining and distribution and marketing, includes costs associated with these activities as well as profits. The figure is a snapshot of how much each component contributes to the price of a gallon of gasoline, and how the relative proportions attributable to each component vary over time as crude oil prices and other factors change.

Figure 2: Elements in the Price of a Gallon of Gasoline (Average for 2004)



Source: GAO analysis based on EIA data.

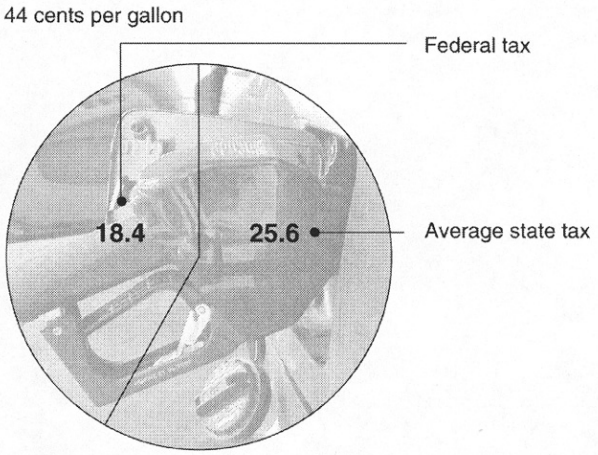
Because crude oil is the primary raw material used in the production of gasoline, understanding what determines gasoline prices requires examining how crude oil prices are set. Overall, the price of crude oil is determined by the balance between world demand and supply. A major cause of rising crude oil prices in recent months has been rapid growth in world demand, without a similar growth in available supplies. In particular, the economy of China has grown rapidly in recent years, leading to increases in their demand for crude oil. In contrast, oil production capacity has grown more slowly, leading to a reduction in surplus capacity—the amount of crude oil that is left in the ground, but could be extracted on short notice in the event of a supply shortfall. EIA has stated that the world's surplus crude oil production capacity has fallen to about one million barrels per day, or just over 1 percent of the world's current daily consumption, making the balance between world demand and supply of crude oil very tight. This tight balance between world crude oil demand and supply means that any significant supply disruptions will likely cause prices to rise. Such a disruption occurred in Nigeria in October 2004, when a workers' strike in Nigeria's oil sector forced world crude oil prices to record highs. (Nigeria is the world's seventh largest oil producer, supplying an average 2.5 million barrels per day in 2004.)

Another important factor affecting crude oil prices is the behavior of the Organization of Petroleum Exporting Countries (OPEC)—members of which include Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela. OPEC members produce almost 40 percent of the world's crude oil and control almost 70 percent of the world's proven oil reserves. In the recent past and on numerous other occasions, OPEC members have collectively agreed to restrict the production of crude oil in order to increase world prices.

Turning now to the price of gasoline seen at the pump, it is important to discuss the role of taxes. In the United States, on average, taxes accounted for 23 percent of what consumers paid for a gallon of gasoline in 2004, according to EIA's data. This percentage includes estimated Federal and average state taxes totaling 44 cents per gallon (see *Figure 3*).[4] Federal taxes accounted for 18.4 cents of this total, while state taxes averaged 25.6 cents per gallon, although taxes vary among states.

[4] EIA uses tax data from the American Petroleum Institute (API) for its tax analysis. According to API, these data include applicable state sales taxes, gross receipts taxes, and other applicable fees but largely exclude local taxes, which may average about 2 cents per gallon nationwide.

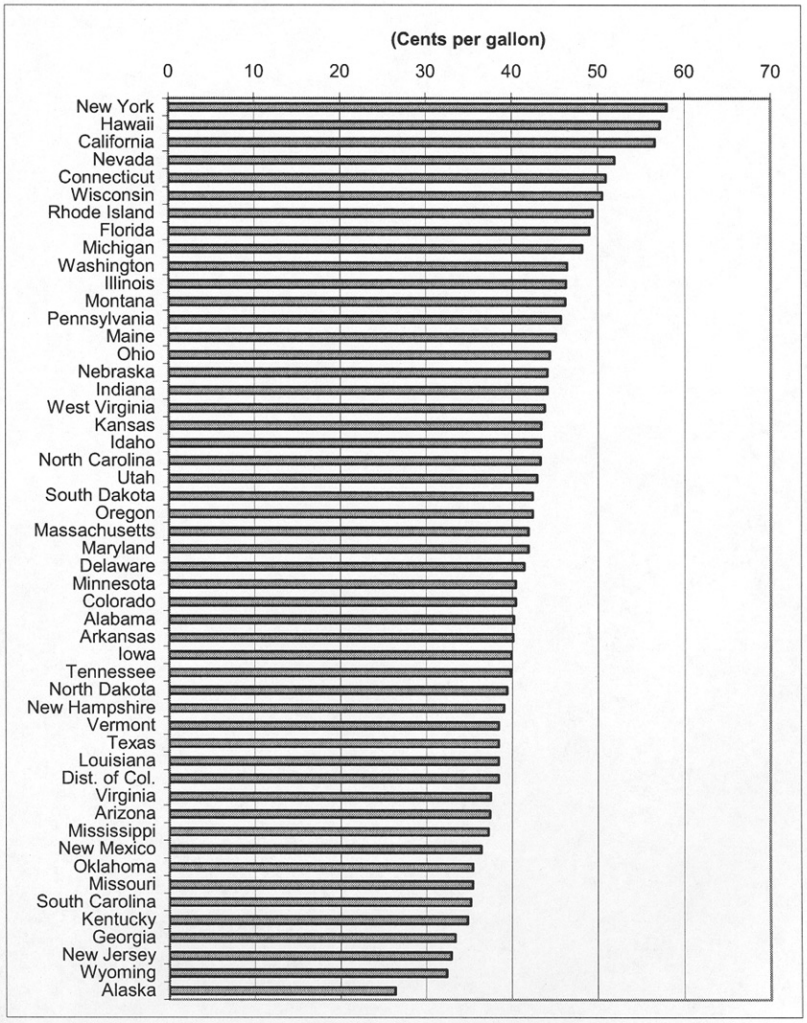
Figure 3: Estimated Federal and Average State Gasoline Taxes per Gallon (2004)



Source: GAO analysis based on API data.

Differences in gasoline taxes across states help explain why gasoline prices vary from place to place in the United States. In addition to Federal taxes that apply across the board, states and, in some cases, local jurisdictions also impose taxes and other fees on gasoline that add to the price. *Figure 4* shows total state and Federal gasoline taxes for each of the 50 states and the District of Columbia, as of November 2004. New York, Hawaii, and California have the highest total gasoline taxes, while Alaska, Wyoming, and New Jersey have the lowest. While differences in taxes affect the price of gasoline, there is no consistent relationship between high taxes and high prices. For example, on March 7, 2005, gasoline cost $1.91 per gallon in North Carolina and $1.98 per gallon in Alaska, even though the taxes paid in North Carolina were almost 17 cents per gallon higher.

Figure 4: Motor Gasoline Taxes as of November 2004



Source: GAO Analysis of API data.

Note: According to API, these tax data include applicable state sales taxes, gross receipts taxes, and other applicable fees but largely exclude local taxes, which may average about 2 cents per gallon nationwide.

In addition to the cost of crude oil, taxes, refining, and distribution and marketing costs, gasoline prices are influenced by a variety of other factors. These include refining capacity constraints, low inventories, unexpected refinery or pipeline outages, environmental and other regulations, and mergers and market power in the oil industry.

First, domestic refining capacity has not kept pace with growing demand for gasoline. As demand has grown faster than domestic refining capacity, the United States has imported larger and larger volumes of gasoline and other petroleum products from refiners in Europe, Canada, and other countries. EIA officials told us that, in

general, this increase in imports has reflected the availability of gasoline from foreign sources at lower cost than could be achieved by building and operating additional refining capacity in the United States. However, the American Petroleum Institute (API) has recently reported that capacity utilization has been high in the U.S. refinery sector. Refining capacity has typically averaged over 90 percent, and has recently increased to 92 percent—much higher than the rate in many other industries that API reports as more typically operating at around 80 percent of capacity. As a result, domestic refineries have little room to expand production in the event of a temporary supply shortfall. Furthermore, the fact that imported gasoline comes from farther away than domestically produced gasoline means that when supply disruptions occur in the United States, it might take longer to get replacement gasoline than if we had excess refining capacity in the United States, and this could cause gasoline prices to rise and stay high until these new supplies can reach the market.

Second, the level of gasoline inventories can also play an important role in determining gasoline prices over time because inventories represent the most accessible and available source of supply in the event of a production shortfall or increase in demand. Similar to trends in other industries, the level of gasoline inventories has been falling for a number of years. In part, this reflects a trend in business to more closely balance production with demand in order to reduce the cost of holding large reserves. However, reduced inventories may contribute to increased price volatility, because when unexpected supply disruptions or increases in demand occur, there are lower stocks of readily available gasoline upon which to draw. This puts upward pressure on gasoline prices until new supplies can be refined and delivered domestically, or imported from abroad.

Third, gasoline prices may be affected by unexpected refinery outages or accidents that significantly disrupt the delivery of gasoline supply. Most recently, Hurricane Katrina hit the Gulf Coast, doing tremendous damage to homes, businesses, and physical infrastructure, including roads; electricity transmission lines; and oil producing, refining, and pipeline facilities. The DOE reported on August 31, 2005, that as many as 2.3 million customers were without electricity in Louisiana, Mississippi, Alabama, Florida, and Georgia. The DOE further reported that 21 refineries in affected states were either shut down or operating at reduced capacity in the aftermath of the hurricane. The refining capacity of the shutdown refineries alone is equivalent to over 10 percent of the Nation's total refining capacity. Two petroleum product pipelines that serve the Midwest and East Coast from Gulf Coast refineries were also out. The Minerals Management Service of the Department of the Interior reported that as of September 1, 2005, over 90 percent of crude oil production in the Gulf of Mexico was out of operation. Because the Gulf Coast refining region is a net exporter of petroleum products to all other regions of the country, retail gasoline prices in many parts of the Nation have risen dramatically, with news reports that many locations have seen prices over $3.00 per gallon, and in one reported case to almost $6.00 per gallon. In addition, many gasoline stations have reported running out of stocks and have faced large increases in wholesale gasoline prices—the spot price for wholesale gasoline delivered to New York Harbor rose by about $0.78 per gallon between August 26 and August 30. Until production, refining, and pipeline facilities are back up and running at normal levels, prices are expected to continue to be higher in affected areas. Coming as this has on the heels of a period of high crude oil prices and a tight balance worldwide between petroleum demand and supply, the effects of the hurricane illustrate the volatility of gasoline prices given the vulnerability of the gasoline infrastructure to natural or other disruptions. Such disruptions also have the potential to adversely affect the economy. For example, in 2004, the International Energy Agency reported that a $10 increase in the world price of crude oil would lead to at least a one half percent reduction in world GDP—equivalent to $255 billion—in the year following the price increase. The effects on individual countries would vary depending on whether or not they are net oil importers and on the level of energy intensity of their economies.

Fourth, regulatory steps to reduce air pollution have also influenced gasoline markets and consequently have increased gasoline prices. For example, since the 1990 amendments to the Clean Air Act, the use of various blends of cleaner-burning gasoline—so-called "boutique fuels—has grown as states have adopted the use of such fuels to meet national air quality standards. The use of these special blends has provided environmental and health benefits by reducing emissions of a number of pollutants. However, the proliferation of these special gasoline blends has also put stress on the gasoline supply infrastructure and has led to increased price volatility

because areas that use special blends cannot as easily find suitable replacement gasoline in the event of a local supply disruption.[5]

Finally, we recently reported that industry mergers increased market concentration and in some cases caused higher wholesale gasoline prices in the United States from the mid-1990s through 2000.[6] Overall, the report found that the mergers led to price increases averaging about 2 cents per gallon on average. For conventional gasoline, the predominant type used in the country, the change in the wholesale price, due to specific mergers, ranged from a decrease of about 1 cent per gallon—due to efficiency gains associated with the merger—to an increase of about 5 cents per gallon—attributed to increased market power after the merger. For special blends of gasoline, wholesale prices increased by from between 1 and 7 cents per gallon, depending on location.

Future Oil and Gasoline Prices Will Reflect Supply/Demand Balance, but Technological Change and Conservation Will Also Play a Role

Looking into the future, daunting challenges lie ahead in finding, developing, and providing sufficient quantities of oil to meet projected global demand. For example, according to EIA, world oil demand is expected to grow to nearly 103 million barrels per day in 2025 under low growth assumptions, and may reach as high as 142 million barrels per day in 2025—increases of between 25 and 71 percent from the 2004 consumption level of 83 million barrels per day. Looking further ahead, the rapid pace of economic growth in China and India, two of the world's most populous and fastest growing countries, may lead to a rapid increase in their demand for crude oil and petroleum products. While current consumption of oil by China and India is far below that of the United States, it is projected to grow at a far more rapid rate. Specifically, EIA's medium-growth projections estimate that oil consumption for China and India will each grow by about 4 percent annually through 2025, while consumption in the United States is projected to grow at an annual rate of 1.5 percent over the same period.

To meet the rising demand for gasoline and other petroleum products, new oil deposits will likely be developed and new production facilities built. Currently, many of the world's known and easily accessible crude oil deposits have already been developed, and many of these are experiencing declining volumes as fields become depleted. For example, the existing oil fields in California and Alaska have long since reached their peak production, necessitating an increasing volume of imported crude oil to West Coast refineries. Developing new oil deposits may be more costly than in the past, which could put upward pressure on crude oil prices and the prices of petroleum products derived from it. For example, some large potential new sources, such as oil shales, tar sands, and deep-water oil wells, require different and more costly extraction methods than are typically needed to extract oil from existing fields. In addition, the remaining oil in the ground may be heavier and more difficult to refine, necessitating investment in additional refinery processes to make gasoline and other petroleum products out of this oil. If developing, extracting, and refining new sources of crude oil are more costly than extracting and refining oil from existing fields, crude oil and petroleum product prices likely will rise to make these activities economically feasible.

On the other hand, technological advances in oil exploration, extraction, and refining could mitigate future price increases. In the past, advances in seismic technology significantly improved the ability of oil exploration companies to map oil deposits, while improvements in drilling technology have enabled oil companies to drill in multiple directions from a single platform. Together, these advances have enabled companies to identify and extract oil more efficiently, essentially increasing the supply of oil. Further, refining advances over the years have also enabled U.S. refiners to increase the yield of gasoline from a given barrel of oil—while the total volume of petroleum products has remained relatively constant, refiners have been able to get a greater proportion of the more valuable components, such as gasoline, out of each barrel, thereby increasing the supply of these components. Similar technological improvements in the future that lower costs or increase supply of crude oil or refined products would likely lead to lower prices for such commodities.

Innovations that reduce the costs of alternative sources of energy could also reduce the demand for crude oil and petroleum products, and thereby ease price pressures. For example, hydrogen is the simplest element and most plentiful gas in the

[5] For more details see GAO, *Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices,* GAO–05–421 (Washington, D.C.: June 17, 2005).

[6] GAO, *Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry,* GAO–04–96 (Washington, D.C.: May 17, 2004).

universe and when used in fuel cells produce almost no pollution. In addition, hydrogen fuel cell cars are expected to be roughly three times more fuel-efficient than cars powered by typical internal combustion engines. Currently, enormous technical problems stand in the way of converting America's fleet of automobiles from gasoline to hydrogen, including how to produce, store, and distribute the flammable gas safely and efficiently, and how to build hydrogen cars that people can afford and will want to buy. However, there are Federal and state initiatives under way as well as many private efforts to solve these technical problems, and if they can be solved in an economical way in the future, the implications for gasoline use could be profound.

Greater conservation or improved fuel efficiency could also reduce future demand for crude oil and petroleum products, thereby leading to lower prices. The amount of oil and petroleum products we will consume in the future is, ultimately, a matter of choice. Reducing our consumption of gasoline by driving smaller, more fuel-efficient cars—as occurred in the 1980s in response to high gasoline prices—would reduce future demand for gasoline and put downward pressure on prices. For example, the National Academies of Science recently reported that if fuel-efficiency standards for cars and light trucks had been raised by an additional 15 percent in 2000, gasoline consumption in the year 2015 would be 10 billion gallons lower than it is expected to be under current standards. The Congress established fuel economy standards for passenger cars and light trucks in 1975 with the passage of the Energy Policy and Conservation Act. While these standards have led to increased fuel efficiency for cars and light trucks, in recent years, the switch to light trucks has eroded gains in the overall fuel efficiency of the fleet of American passenger vehicles. Future reductions in demand for gasoline could be achieved if either fuel efficiency standards for cars and light trucks are increased, or if consumers switch to driving smaller or more fuel-efficient cars.

The effect of future environmental regulations and international initiatives on oil and petroleum products prices is uncertain. On one hand, regulations that increase the cost or otherwise limit the building of refining and storage capacity may put pressure on prices in some localities. For example, the California Energy Commission told us the lack of storage capacity for imported crude oil and petroleum products may be a severe problem in the future, potentially leading to supply disruptions and price volatility. Alternatively, international efforts to reduce the generation of greenhouse gas emissions could cause reductions in the demand for crude oil and petroleum products through the development and use of more fuel-efficient processes and as cleaner, lower-emissions fuels are developed and used.

Moreover, geopolitical factors will likely continue to have an impact on the price of crude oil and petroleum products in the future. Because crude oil is a global commodity, the price we pay for it can be affected by any events that may affect world demand or supply. For example, Venezuela—which produces around 2.6 million barrels of crude oil per day, and which supplies about 12 percent of total U.S. oil imports—is currently experiencing considerable social, economic, and political difficulties that have, in the past, impacted oil production. Finally, instability in the Middle East, and particularly the Persian Gulf, has in the past, caused major disruptions in oil supplies, such as occurred toward the end of the first Gulf War, when Kuwaiti oil wells were destroyed by Iraq.

Finally, the value of the U.S. dollar on open currency markets could also affect future crude oil prices. For example, because crude oil is typically denominated in U.S. dollars, the payments that oil-producing countries receive for their oil are also denominated in U.S. dollars. As a result, a weak U.S. dollar decreases the value of the oil sold at a given price. Some analysts have recently reported in the popular press that this devaluation can influence long-term prices in two ways. First, oil-producing countries may wish to increase prices for their crude oil in order to maintain their purchasing power in the face of a weakening U.S. dollar. Second, because the dollars that these countries have accumulated, which they use, in part, to finance additional oil exploration and extraction, are worth less, the costs they pay to purchase technology and equipment from other countries whose currencies have gained relative to the dollar will increase. Such higher costs may deter further expansion of oil production, leading to even higher oil prices.[7]

[7] Higher oil prices, because they increase the U.S. trade deficit, may also contribute to the further devaluation of the dollar. Hence, analysts have called this process a vicious cycle in which a weak dollar drives up oil prices, which then feeds back into the trade deficit causing the dollar to weaken further.

Conclusions

In closing, the wide-ranging effects of Hurricane Katrina on gasoline prices nationwide are a stark illustration of the interconnectedness of our petroleum markets and reveal the vulnerability of these markets to disruptions, natural or otherwise. Current U.S. energy supplies remain highly dependent on fossil energy sources that are costly, largely imported, and potentially harmful to the environment. No matter what the price of petroleum is, alternative energy options seem always to remain uneconomic. Striking a balance between efforts to boost petroleum supply, provide incentives for developing of alternative energy sources, develop policies and technologies focused on improving the fuel efficiency of petroleum burning vehicles, and promote overall energy conservation, presents challenges as well as opportunities. Clearly, all providers and consumers of energy need to get serious about conserving energy. The challenge is to boost supply and reduce demand. We need to choose wisely and we need to act soon. How we choose to meet the challenges and seize the opportunities will help determine our quality of life and economic prosperity in the future.

We are currently studying the determinants of gasoline prices in particular, and the petroleum industry more generally, including an evaluation of world oil reserves; an assessment of the security of maritime facilities for handling and transporting petroleum, natural gas, and petroleum products; an analysis of the viability of the Strategic Petroleum Reserve; and an assessment of the impacts of a potential disruption of Venezuelan oil imports. With this body of work, we hope to continue to provide Congress and the American people the information needed to make informed decisions about energy that will have far-reaching effects on our economy and our way of life.

Mr. Chairman, this completes my prepared statement. I would be happy to respond to any questions you or the other members of the Committee may have at this time.

Staff Acknowledgments

Individuals who made key contributions to this statement include Godwin Agbara, Byron Galloway, Dan Haas, Michelle Munn, Melissa Arzaga Roye, and Frank Rusco.

Related GAO Products

Oil and Gasoline

Motor Fuels: Understanding the Factors That Influence the Retail Price of Gasoline. GAO–05–525SP. Washington, D.C.: May 2, 2005.

Oil and Gas Development: Increased Permitting Activity Has Lessened BLM's Ability to Meet Its Environmental Protection Responsibilities. GAO–05–418. Washington, D.C.: June 17, 2005.

Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, But Complicate Supply and Contribute to Higher Prices. GAO–05–421. Washington, D.C.: June 17, 2005.

Energy Markets: Understanding Current Gasoline Prices and Potential Future Trends. GAO–05–675T. Washington, D.C.: May 9, 2005.

Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry. GAO–04–96. Washington, D.C.: May 17, 2004.

Research and Development: Lessons Learned from Previous Research Could Benefit Freedom CAR Initiative. GAO–02–810T. Washington, D.C.: June 6, 2002.

U.S. Ethanol Market: MTBE Ban in California. GAO–02–440R. Washington, D.C.: February 27, 2002.

Motor Fuels: Gasoline Prices in the West Coast Market. GAO–01–608T. Washington, D.C.: April 25, 2001.

Motor Fuels: Gasoline Prices in Oregon. GAO–01–433R. Washington, D.C.: February 23, 2001.

Petroleum and Ethanol Fuels: Tax Incentives and Related GAO Work. RCED–00–301R. Washington, D.C.: September 25, 2000.

Cooperative Research: Results of U.S.-Industry Partnership to Develop a New Generation of Vehicles. RCED–00–81. Washington, D.C.: March 30, 2000.

Alaskan North Slope Oil: Limited Effects of Lifting Export Ban on Oil and Shipping Industries and Consumers. RCED–99–191. Washington, D.C.: July 1, 1999.

International Energy Agency: How the Agency Prepares Its World Oil Market Statistics. RCED–99–142. Washington, D.C.: May 7, 1999.

Energy Security and Policy: Analysis of the Pricing of Crude Oil and Petroleum Products. RCED–93–17. Washington, D.C.: March 19, 1993.

Energy Policy: Options to Reduce Environmental and Other Costs of Gasoline Consumption. T–RCED–92–94. Washington, D.C.: September 17, 1992.

Energy Policy: Options to Reduce Environmental and Other Costs of Gasoline Consumption. RCED–92–260. Washington, D.C.: September 17, 1992.

Alaskan Crude Oil Exports. T–RCED–90–59. Washington, D.C.: April 5, 1990.

Energy Security: An Overview of Changes in the World Oil Market. RCED–88–170. Washington, D.C.: August 31, 1988.

Senator INOUYE. Thank you very much, Mr. Wells.

Senator Pryor?

Senator PRYOR. Thank you, Mr. Chairman.

Mr. Chairman, before I start, if this doesn't work against my time, did we ask the FTC Chairman to be here today, or—I mean, no offense to Mr.—oh, this afternoon? This afternoon, OK.

Mr. Chairman, thank you. And, if I may, let me start with our—John Seesel from the FTC, and that is, I've seen some conflicting testimony from different people. I think in the Maryland House of Representatives, they have a committee on economic matters, and apparently someone from the oil industry there testified that one of the reasons—maybe the reason—that Maryland was paying higher prices is because they were so dependent on the pipeline to get their petroleum. And, in Delaware, apparently there was similar inquiry—I think maybe this was just a newspaper question—about why. And, in Delaware, they said that there are refineries in Delaware, and the reason prices were so high in Delaware is because they do not rely on the pipeline. Have you seen these types of statements?

Mr. SEESEL. Senator Pryor, I haven't seen those statements. I do know that this particular part of the country we're in right now—and I'm sure we've all read quite a bit about this—was quite affected by the Colonial and Plantation Pipeline problems that occurred right after Hurricane Katrina. So, the whole mid-Atlantic area, really stretching up toward the area of New York, I think, which depends a lot on supply through those very important product pipelines, was affected. And probably—at least that particular short-term impact would have affected Maryland and Delaware in the same way. But I haven't—I haven't—I'm not familiar with the proceedings you're citing.

Senator PRYOR. Just when I hear the industry say those kind of things, it sounds like double-talk to me, and I think it does to most Americans. They just feel like they're not getting a straight answer on that. So, when I hear that, I just think that's inconsistent, and I don't always understand. But thank you for your assistance with the FTC and the investigation that, hopefully, you'll do, assuming the President signs that.

Let me ask this question about gas, the price of a gallon of gas. I've heard different figures, but, basically, as I understand it, the crude oil price in a gallon of gas is—and, again, I hear different figures, but one figure I have is only 55 percent of the price of a gallon of gas, and that refining is about 18 percent, distribution and marketing is about 8 percent, taxes are about 19 percent. Now, I hear different fluctuations in that, but I was curious if either one of you know if there's a definitive number there, in what really makes up a price of gasoline. And maybe it depends on the price of the gallon so that you can assign percentages. But, do either one of you all have an answer on that?

Mr. WELLS. Senator Pryor, we did a body of work relating to trying to explain what it costs in a gallon of gasoline. We relied on Federal statistics that are available to us. We tried to take the entire average price that was occurring nationwide over an entire year, 2004, and we, too, came up with the similar numbers—48 percent was crude; 23, tax; 17, refinery; 12 percent, marketing. But you also have to realize that these are points in time over a given year. Many of the numbers will vary all over the ballpark, depending on whether you pick a time when the price is high, in the summer, or lower, in the winter, so you will have—but they're, relatively, pretty close.

The uncertainty is relating to the softer areas of that equation. Clearly, we can document taxes without looking at the IRS tax returns of the industry. We certainly know what they're trying to pay for crude oil. But some of those softer issues, in terms of proprietary data within the industry—what it costs to market, what is their profit margins—those are little tougher to come by.

Senator PRYOR. The reason I ask is because there is a story in today's press that talked about how there are eight Governors that are asking the Congress, and the White House, to do an investigation of price-gouging and try to give some relief out there, and they have a study—I may be wrong, but I believe it's out of the University of Wisconsin—an economist there has done a study, and he says that 85 to 90 cents of each gallon is for refining, distribution, and taxes. And then he says that in order for gas at the pump to get to $3 per gallon, the price per barrel would have to be $95 per barrel. Are you aware of his findings? And do you have any thought on that?

Mr. WELLS. I have not had an opportunity to see that particular study. My staff has pointed out that they heard about it. We will take a look at it. I will point out that that's one of the things that we're beginning to gather statistics on, is, why the spread is increasing between what traditionally had been a fairly consistent margin between what it—what the crude oil costs versus the retail price—and that spread seems to be doubling or tripling today—and asking questions, "Why is that," and, "What's—why is it occurring?"—similar to what that study found.

Senator PRYOR. Right. And let me ask, of the FTC, if I can, is it your view that, given the American oil market today—and I know we're part of a global market, and I understand that, but I'm talking about in America and what we pay for petroleum products here today—is it your view that the FTC has the tools necessary to keep this market free and working like it should?

Mr. SEESEL. Senator, I think that the Federal Trade Commission does have those tools. The primary tools, as you know, are the antitrust laws that we enforce against collusive and coordinated conduct and against monopolistic behavior, such as in the Unocal case that I mentioned. And I think those are the—our experience has been, those are the kinds of practices that are really, over the long run, likely to end up in market power in the hands of firms and pernicious effects for consumers. So, I think the full panoply of the antitrust laws that we enforce, as well as the consumer-protection work that we do, is actually sufficient to deal with these problems.

Senator PRYOR. Thank you, Mr. Chairman.

Senator INOUYE. Thank you.

Senator Nelson?

Senator BEN NELSON. Thank you, Mr. Chairman.

Mr. Seesel, it would appear, from your concern about collusion, that it relates more to mergers than to market manipulation. I don't think that's a fair assessment on my part, but if you're worried about the Unocal acquisition, that they would then have control over some products or some technologies. But could there be collusion in the markets today, apart from, let's say, market concentration because of mergers or acquisitions?

Mr. SEESEL. Oh, certainly, Senator. And I didn't want to imply that——

Senator BEN NELSON. No, that's why I said it——

Mr. SEESEL.—mergers are——

Senator BEN NELSON.—the way I said it.

Mr. SEESEL. And, for example, when I mentioned the gasoline and diesel price-monitoring project that we conducted in those 360 cities around the country, that is really intended to find out whether there is collusive or coordinated behavior going on, on a day-to-day basis. If we see prices in a particular area starting to get out of line with their historical relationship with prices in the rest of the country, that's something that we want to look at more closely. And, as I said, we might find an innocuous explanation for that, in terms of a pipeline or refinery problem. But we also, if we don't find an innocuous explanation, it's something we do want to look at, and that would, perhaps, imply collusive behavior.

Senator BEN NELSON. Could you give me an example of what would be collusive behavior?

Mr. SEESEL. I think agreements among competitors, whether they take the form of express agreement or some kind of implicit understanding among competitors, to restrict supply, to set prices at a particular level——

Senator BEN NELSON. Well, if you go down the list—go down a major thoroughfare, and you take a look, and the prices are all the same through all the competitors, could that constitute collusion? Where's the competition there? Wouldn't you think there would be some adjustment from station A to B to C to D? They're all the same.

Mr. SEESEL. Well, Senator, certainly in my experience I've seen markets similar to what you're describing. And I've also seen markets where there's actually a difference of quite a bit. For example, there are low price retailers that are selling the gasoline for a nickel or a dime lower than traditional stations. But, even if you saw absolute, total uniformity, it would certainly be enough to raise your eyebrows and my eyebrows, but it also might imply that, simply, the companies are coalescing around a particular price. They might have similar input costs and so forth. And they look at each other and say, "Yes, that looks like a fairly reasonable price." I think you could see that phenomenon without necessarily being able to infer some kind of agreement.

Senator BEN NELSON. And I think it's safe to say that the potential for collusion is less likely with the local station operators back in the States, or with the suppliers to them directly, the wholesaler there, then somewhere after—pre-wholesaler, pre-retailer. And

that's why I think, for example, in Nebraska, the Nebraska Attorney General said, after his investigation, he didn't find any collusion. So, that leaves us with something pre-. And I'm hopeful that's what your investigation will look into. Do you have any idea of how long we might be waiting until we get some sort of an investigation report?

Mr. SEESEL. Well, certainly, Senator, the investigation under Section 1809 of the Energy Policy Act is something we're—we've got our staff of economists and lawyers working on that right now, and trying to go as quickly as they can. We're going to try to produce a report for the Congress as quickly as we can.

Senator BEN NELSON. Well, I'm not a very patient person, I only require the appearance of it. I'm not patient.

Mr. SEESEL. We certainly won't——

Senator BEN NELSON. So, Senator Pryor and I have worked, and we've gotten the support for a quicker study than that, one that is perhaps not as exhaustive or thorough, but would give an immediate answer to what's going on with supply-and-demand, as well as some idea of what might happen in the future. Obviously, not totally thorough. And we hope that that will survive the legislation that it's part of right now, and that that will come to you, because it's going to ask you to give us answers in 15 days. Because Grandma Milly, this—going in into this fall, needs to know whether her heating expenses are going to go up 30 percent, 40 percent—she has to have some idea of what's going to happen.

Finally, I want to ask you, is your—are you planning to do anything as an inquiry on natural gas, apart from what the energy bill would require?

Mr. SEESEL. Well, certainly, Senator, obviously, the focus of the whole country and the Commission in recent weeks has been on the gasoline market, but we're aware that natural gas is going to be a critical issue, and a big issue over the winter in this country. And certainly if competition issues arise in the natural gas industry, the FTC will treat those with equal energy, so to speak, so that we will look at any kind of antitrust issue that arises in natural gas.

Senator BEN NELSON. Will you be—or will the GAO—be making any kind of an inquiry into the potential disparity between market prices driven by speculation? Is there a way to put a safety valve on spikes in the market at any one particular day, either significant drops or significant spikes that could otherwise drive the price, as it seems to have driven in the past?

Mr. WELLS. Senator, we're clearly aware that there's no current Federal statute or law prohibiting price-gouging. We know that about half the states do have some type of legislative provisions. But we——

Senator BEN NELSON. But they can't get to the—they can't get to the level of inquiry that you can.

Mr. WELLS. Absolutely. And we work for you. You guys, you send a request and we certainly try to look into it and figure out what we can do.

Senator BEN NELSON. Well, then I'll be sending an inquiry.

Mr. WELLS. We'd be glad to help you.

Senator BEN NELSON. OK.

Thank you, Mr. Chairman.

Senator INOUYE. Thank you very much.

This morning, we've heard the words "global market," "global industry," "global economy." About 5 years ago, I was a member of a Congressional delegation, and we were in Italy. At that time, if my recollection is correct, I noted that the dollar equivalent for a gallon of gas in Italy was about $1.50. At the same time here it was about—no, no—here, it was $1.50 but there it was about $3.50 a gallon. Today, without Katrina in Italy, I have been told that the price of gasoline exceeds $7 a gallon. Now, this is all part of the global industry and global economy. Why this difference? I notice they have smaller cars, for one thing, fuel-efficient cars.

Mr. WELLS. At $7 a gallon, perhaps more people would be driving fuel-efficient cars, there's no question. Primarily, throughout the entire world, everybody is paying 80 percent more for the cost of crude oil today than they were 15 months ago. It's not just a U.S. issue; it is a world issue. Primarily, as I understand it, the big difference is tax policies generated by the countries. For instance, our average tax in the United States is 44 cents a gallon, consisting of about 18 cents Federal, 20-some cents State. Canada is $1. U.K., for instance, is $4. Gasoline outside the United States is taxed very heavily compared to our tax structure.

Senator INOUYE. So, we have very cheap gas.

Mr. WELLS. That is correct. We have built an economy and a lifestyle that has grown accustomed to cheap energy. And the question is—"Can we have cheap energy for our children?" is a big question mark.

Senator INOUYE. Do you believe that this cheap gas should be made a bit more expensive, as a disincentive——

Mr. WELLS. I believe we have to make wise choices, and we have to go and get energy wherever we can get it. And we need to work on both sides, supply and reduction of demand—is the only way we'll be able to achieve getting the quantity of energy that we're just going to need to maintain our same standard of living that we're accustomed to today.

Senator INOUYE. When you speak of "seeking energy anywhere you can," are you speaking of drilling elsewhere?

Mr. WELLS. I was speaking of—we have a policy and practice in place that has focused on—80 percent of our energy delivery is coming to us from the fossil arena. My belief is that that will not be able to provide the quantity we're going to need in the next 20 years. I'm speaking to going out and looking for renewables—wind energy, nuclear. It's looking at wherever you may go to find energy sources that will meet this—pick an energy source, Mr. Chairman. Any energy source is projected to have a demand 20 to 50 percent greater than what we're currently using today. Those are huge numbers. Somewhere, that has got to be provided. And I believe we're going to have to go everywhere to look for it.

Senator INOUYE. Should we provide changes in the law that would bring about some incentive for this movement?

Mr. WELLS. Clearly, we have a policy/practice in place to use our tax incentives with tax credits to promote and foster the development, R&D, but we need to do everything. We need tax incentives, we need modernization of equipment, we need a partnership with the Federal, as well as the private sector, which delivers these com-

modities. We need everybody working together and pulling together to find that quantity of energy we're going to need.

Senator INOUYE. Mr. Seesel?

Mr. SEESEL. Mr. Chairman, some of these questions, obviously, are outside the purview of what the FTC does, but I certainly agree with Mr. Wells that the Nation needs to focus on—very seriously on both the supply and the demand sides of the equation. Speaking just for myself, I think that that is—it's important, really, to find solutions on both sides of the problem.

Senator INOUYE. Mr. Seesel, this is a question for you. On September 9, the mid-Atlantic AAA issued a press release—I'm certain you've seen that—in which they cited the clamor among the Exxon/Chevron dealers complaining about the high prices—these are dealers complaining—in which they've cited that, in a 24-hour period, the price of gas went up 24 cents. Did that cause you any concern?

Mr. SEESEL. Mr. Chairman, it's certainly something that we are aware of. I don't know if I've seen that specific AAA release, but we're—we certainly got a lot of information, beyond that, about large increases, within a day or 2 days, of 20—you know, 20–30-cent range, even more, in the wake of Katrina. I don't—generally, I mean, we've been looking at those data very carefully since the hurricane and trying to ascertain what's going on. My sense is, as I testified a couple of weeks ago in the House, is that, to a great extent, there was a fairly panicked reaction going on, on the part of both sellers and buyers of a commodity that was getting scarcer and scarcer; with all of the refineries and pipelines shut down. So, that kind of spike is certainly something that deserves scrutiny. It is not automatically suspicious, on its face, but it certainly needs a careful look.

Senator INOUYE. Was there any economic justification or rationale for $6 a gallon gas in Atlanta?

Mr. SEESEL. Mr. Chairman, I don't know if it's really possible to speak, in economic terms, about that. My understanding, from reading about what that particular dealer did—and I believe it was an isolated retailer in Atlanta—was that he was very concerned about having any supply the following day, given what was going on with the Colonial and Plantation Pipelines. And so, he decided, "The only way I'm going to have supply tomorrow and the next day is to ration demand, and the only way I'm going to do that is by putting my price at a very high level." I'm not—I'm certainly not speaking of justification of that, but I think that was an individual retailer who actually said, in the papers after that happened, that he had really panicked. And his—I think his wholesaler had raised prices quite a bit, also, so he raised his own retail price. But I think, to a great extent, it was an almost irrational reaction to what was going on. It's very hard to analyze it in economic terms.

Mr. WELLS. Mr. Chairman, could I add that I was in Alaska the week after the hurricane. Chairman of the States, and I, too, with Senator Pryor, asking the question relating to: Why were prices going up all over the country that were not directly related to Katrina? There was a gas station that we filled up in, in Valdez, Alaska, on the morning in which the *USA Today* newspaper picture appeared on the front page. I asked the person pumping the gas into the rental car, "Why did your price go up $2 overnight?"

And he pointed to the picture on the *USA Today* and said, "This is why I raised my price." It had nothing to do with what he thought the price of gas may be; it was an opportunity for him. That's an anecdotal one incident, but it happened throughout the country, had no bearing, necessarily, on shortage of supply; it was a fear-risk-premium decision by owners.

Senator INOUYE. If that's the case, there's a hurricane called Rita, Category 4, headed toward Texas. And I suppose it's going to affect the global oil industry. Are we to anticipate further hikes?

Mr. WELLS. We saw $4—as soon as Hurricane Rita turned the corner on the Florida Keys, it went to $4. First, you'll see the reaction in the futures market. You'll see the speculators getting involved in looking at the volatility and price movement, because that's where they make the money. I'm not necessarily sure that that's where you're going to get your pegging of what the price of gasoline is going to be, because that will calm as we get more information about what damage the hurricane may or may not do to our facilities there in the Gulf. And it may settle back. But there is a high risk of having a major impact on the marketplace, no question.

Senator INOUYE. You mean we——

Mr. WELLS. We should be——

Senator INOUYE.—could see five, six dollars a gallon?

Mr. WELLS. I would be unwise to try to predict. That's why I would not deal in the futures market.

Senator INOUYE. I thank you very much, Mr. Wells, Mr. Seesel. You've been very patient, very helpful.

Do you have any further questions?

Senator PRYOR. Mr. Chairman, I really just wanted to say a couple of things as we wrap up here, and that is that, for the FTC's benefit, I share what—the concern that Senator Nelson had, where I'm not sure collusion is the right standard. I think that the fact that—I think you need to be looking more at market-power concepts. And the fact that there's just low elasticity of demand for oil in this country. I mean, if gas goes up, we're still all going to have to drive to work, and that's just—we're just dependent on it. So, I would think that we—just, the FTC needs to consider that. And I'm sure you probably do.

But the other couple of anecdotal stories—and since we're talking about anecdotes, is—one is, I heard a story—I heard—talked to a man the other day who is a gas-station owner, and, right after the hurricane, he got a call from his distributor, and he said—and the distributor said, "Look," he said, "you're going to get only a limited amount of gasoline. I only have X number of trucks available. So, you know, typically, you get four trucks." And he said, "I'm not"—over a certain period of time—he said, "I cannot tell you right now what the price is, but you've got to take it or leave it right now." So, he just had to agree to some open-ended blank check without having any idea what he was going to be charged for that, and what he was going to have to charge his customers for that.

So, I think a lot of that happened. Again, I think some of that is based on fear, some of it is based on speculation, or whatever the case may be. But I think some of it is not really based on sound market principles. And this particular gas-station owner had no-

where else to go. He didn't have another option, or at least he didn't have many other options. Maybe he had another one, I don't know. But he felt like he didn't have any options, under the circumstances. He felt like he needed to take that. And, of course, whatever the price was, he just had to pass it on to his customers.

The other thing is, on 9/11, I was the Attorney General in my state, and we saw some immediate price hikes, just like in Arkansas after Hurricane Katrina. We had some complaints around the state that a few gas stations—we know of a few that raised their prices as much as 60 cents a gallon in one day, based on fear and all this in the marketplace. But we have a price-gouging law in our state. And so, as Attorney General—you know, the emergency had been declared, and that—and so, we were able to invoke the price-gouging statute. And we feel like we kept the market stable in Arkansas in 9/11. That was a very scary day in American history, in the aftermath. There was a lot of uncertainty. But we felt like we helped keep the gasoline market stable in our State.

And I noticed, in *USA Today,* one thing that was interesting is, they recently ran a map of the prices from September 3 through 5, so just a few days after the hurricane, Mr. Chairman. In looking at the map, one thing I noticed, that comes through crystal clear, is, down in that Gulf Coast area, the area that was hit by the hurricane, they had the lowest prices for gasoline in the country. And one reason I think that may be true is, in Louisiana and Mississippi, they have price-gouging laws, and their local leaders there got the word out that they were not going to tolerate price-gouging. And I think that probably helped keep the markets there at the market level and not have this crazy fluctuation in it.

So, those are just thoughts. Personally, I think we probably ought to give strong consideration to a Federal price-gouging standard. But, you know, we're not going to resolve that today. But I do think we ought to give that strong consideration.

Thank you, Mr. Chairman.

Senator INOUYE. Once again, thank you very much.

The Committee will stand in recess until 2 o'clock this afternoon—2:30, I'm sorry.

[Whereupon, at 12:45 p.m., the hearing was recessed.]

ENERGY PRICING—AFTERNOON SESSION

WEDNESDAY, SEPTEMBER 21, 2005

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 2:30 p.m. in room SD–562, Dirksen Senate Office Building, Hon. Ted Stevens, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKA

The CHAIRMAN. This is the second hearing the Committee has conducted today to address the issues of energy prices. This morning, we heard from private-sector energy experts, as well as the Federal Government, all of whom provided valuable testimony regarding the multiple factors that contribute to energy prices. During this session, we'll hear from witnesses from the oil production and refinery industry, consumer and trade groups, and the Federal Government.

Senator Inouye, and I, thank the witnesses for being here and for agreeing to join us on such short notice. As I indicated this morning, these hearings are designed to examine the short- and long-term rise in domestic energy prices and will explore whether price-gouging is occurring, or whether the market is controlling prices in response to an abnormal market circumstance.

Senator Inouye, do you have a statement this afternoon?

Senator INOUYE. No.

The CHAIRMAN. Our first witness this afternoon will be Senator Wyden. We're pleased to listen to you. We're going to limit witnesses to 5 minutes this afternoon, Senator, because we want to try to get to that briefing at 4 o'clock, if that's all possible.

Senator WYDEN. Mr. Chairman, I——

The CHAIRMAN. We'll call the two panels at the same time.

We'd like to have you join us at the table, if you wish, after you testify.

STATEMENT OF HON. RON WYDEN, U.S. SENATOR FROM OREGON

Senator WYDEN. Thank you for your thoughtfulness, Mr. Chairman. I very much appreciate you, and the Ranking Minority Member having me. I know you've had a long day already.

Mr. Chairman, I've been cranking out investigative reports on this issue now since I've come to the Senate, and I've come to the conclusion that there is a need to strengthen consumer protection

law in this area. But, this is not primarily a question of strengthening the law, it's a question of political will. And you can write laws by the crateful, and that's not going to protect the consumer if the consumer watchdog remains far from the beat. And that's the situation we're in today.

And I want to start by saying, that it seems to me, that the Federal Trade Commission can get results for the consumer when they sincerely want to. And we saw that specifically with the Do Not Call Program. Like on this gas-pricing situation, we had a challenge where the marketplace wasn't working, we go to Alaska, Hawaii, and Oregon, people would say, "Stand up for us." The Congress responded. The Congress passed a law. It had teeth. It worked. And it has made a real difference.

So, in my view, what Congress needs to do is, in effect, give the Federal Trade Commission the authority to run the equivalent of a Do Not Gouge Program and require, in effect, that the Federal Trade Commission stiffen its backbone and exhibit the political will to act.

Here are the four areas that I think would constitute what amounts to an energy approach that would be like "Do Not Call." I call it "Do Not Gouge," but I think the point is, it would be an energy equivalent to something that has made the Federal Trade Commission actually produce some results.

The first is, give the Federal Trade Commission authority so they can no longer say their hands are tied by the law. This morning, the Federal Trade Commission testified that, under Section 1809 of the Energy bill, they're investigating gas prices for possible antitrust violations. That's not the same thing as saying they're investigating for price-gouging. Price gouging without collusion isn't covered by the antitrust laws. So, the Federal Trade Commission has already said they can't do anything about price-gouging by individual companies. So, the Federal Trade Commission is now investigating for something they can't find—collusion—because the oil companies don't need to collude to price gouge, and the Federal Trade Commission can't do anything about price-gouging by individual companies that they find. So, by their own admission, there is a clear gap in the agency's authority to protect the consumers.

The agency—the GAO also testified that there's no Federal law prohibiting price-gouging. So, these are areas where the Federal Trade Commission doesn't have the tools that it needs. Congress ought to change the law, give the Federal Trade Commission explicit authority to go after gougers wherever it's taking place.

Second, I would hope that we'd find the facts. Congress could require that when a large individual seller of gas raises prices significantly faster than the price of crude, the Federal Trade Commission would obtain from the seller documentation that the differential is warranted in the marketplace.

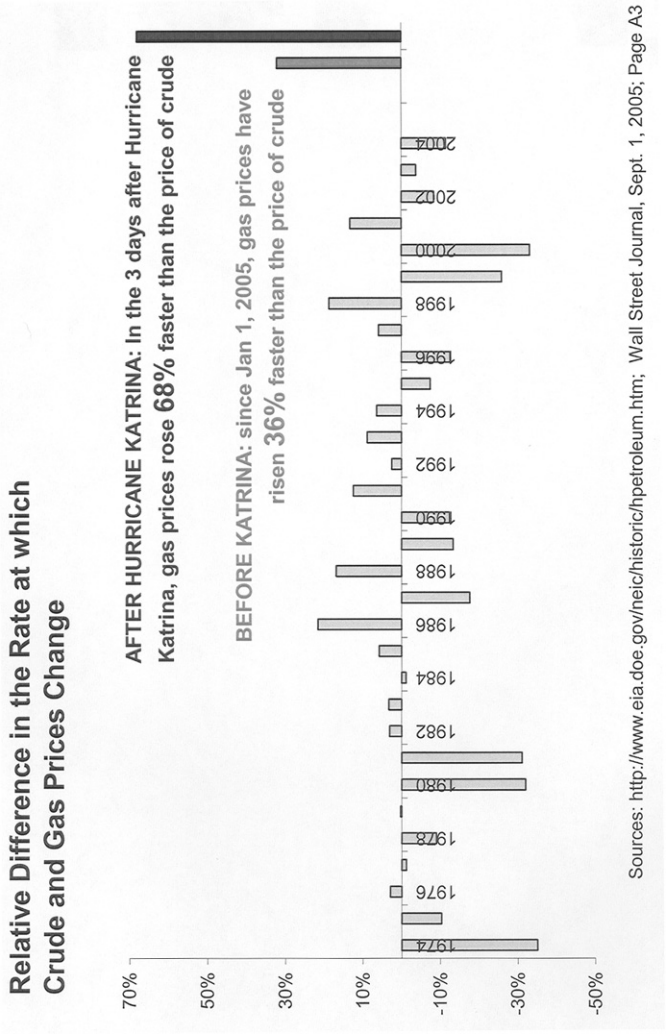
We went to the Congressional Research Service, I would tell my respected colleagues, and got information that has produced stunning results that are on this chart. In all the time for which the data is available, there has never been the price disparity between increases in the price of gas and increase in the price of crude that we have seen in the last year. We found that over the last 30 years,

when crude oil prices went up, annual gasoline prices often didn't even keep pace.

This chart shows the difference with this particular time period. Before Hurricane Katrina, gas prices—increases were 36 percent bigger than crude oil increases. The number ballooned to a shameful 68 percent immediately after the storm. Those kinds of numbers, based on what we have gotten from the Congressional Research Service, the Energy Information Agency, and others, have never existed in our history.

I would ask, Mr. Chairman, that a copy of this chart be placed in the record. And I'd like the Federal Trade Commission to ask the oil companies to explain a chart like this that is unprecedented.

[The information previously referred to follows:]



Senator WYDEN. Third, Mr. Chairman, I would like to see the Federal Trade Commission "out" the price gougers. If a huge differential between crude price spikes and gasoline prices can't be justified by the marketplace, the Federal Trade Commission ought to put suspicious sellers, at least the top 100, on a "Do Not Gouge List" that puts them on notice and lets consumers know whose prices are cause for concern.

Fourth, Mr. Chairman, the agency ought to go after the proven bad actors. If the Federal Trade Commission finds that gas prices go beyond disparity with crude to a level that is simply unconscionable, the Federal Trade Commission ought to have the power and the responsibility to order the price gouger to stop and to fine the gouger.

Finally, Mr. Chairman, two other recommendations that I would make, one that I think the Committee might find a little surprising, coming from me.

I would like to see Congress look at allowing the oil companies to coordinate when they schedule their refinery maintenance, so as to avoid supply shortages from multiple refineries in an area shutting down at the same time. This usually happens every Spring, when multiple refineries shut down for maintenance before they gear up to produce gas for the Summer driving season. To avoid supply disruptions and price spikes for consumers, I think we ought to look at a limited antitrust exemption to allow the refineries to coordinate the timing of their shutdowns as long as it was done to avoid or minimize disruption of fuel supplies.

I see the red light is on, Mr. Chairman. I want to adhere to your schedule. I also have an idea with respect to the CAFE issue, to use marketplace forces to incentivize more fuel efficiency. But, in the interest of time, and, particularly because I'm grateful to you and the Ranking Minority Member, let me break it off now and ask that my full remarks be put into the record.

[The prepared statement of Senator Wyden follows:]

PREPARED STATEMENT OF HON. RON WYDEN, U.S. SENATOR FROM OREGON

Mr. Chairman, thank you for providing me the opportunity to testify today.

I've come to the conclusion that while there is a need to strengthen consumer protection law in the area of energy pricing, specifically gasoline, this is as much a question of political will at the Federal Trade Commission as it is a question of Congress passing new laws. All the laws in the world aren't going to protect the consumer if the consumer watchdog remains far from its beat.

Last year, I issued a report on the FTC's Campaign of Inaction that documented how the agency has failed to act to protect gasoline consumers. My report documented how the FTC has refused to challenge oil industry mergers that the Government Accountability Office says have raised gas prices at the pump by 7 cents a gallon on the West Coast. My report also documented how the FTC failed to act when refineries have been shut down or stop anti-competitive practices like redlining and zone pricing. That report and others are available on my website.

The FTC has shown they can get results when they want to—when there is the political will. Witness the "Do Not Call" program. Just as today, consumers saw there was a problem in the marketplace; they said to their government, "Stand up for us." In that case, the Congress, despite judicial opposition, gave the Federal Trade Commission the authority to run a Do Not Call program. It's made a real difference.

In this case, Congress needs to move to give the agency the authority to run the equivalent of a "Do Not Gouge" program—and require in those laws that the FTC stiffen its backbone and exhibit the political will to act.

Here are ways to jumpstart the "Do Not Gouge" effort:

One—Give the Federal Trade Commission sufficient authority so they can no longer say their hands are tied by the law. The FTC testified this morning that under section 1809 of the Energy Bill, they are investigating gas prices for possible antitrust violations. But that's not the same thing as investigating for price-gouging. Price gouging without collusion isn't covered by the antitrust laws. The FTC has admitted in testimony in the House that they can't do anything about price-gouging by individual companies. So the FTC is investigating for something they can't find—collusion—because the oil companies don't need to collude to price gouge, and the FTC can't do anything about price-gouging by individual companies that they find. By their own admission, there is a clear gap in the agency's authority to protect consumers at the pump. The GAO also testified today that there is no Federal law prohibiting price-gouging. So these are clearly areas where the FTC doesn't have all the tools it needs. Congress should change the law and give FTC the explicit authority to go after anyone who is exploiting consumers. I don't care who the gouger is—whether it's an oil company, a refiner, or an individual station. I want the FTC to find out and crack down.

Two—Get the facts. I believe Congress should require that when a large individual seller of gasoline raises prices significantly faster than the price of crude increases, the FTC must obtain from that seller documentation that the differential is warranted in the marketplace. The media has documented that over the last year gasoline prices have increased much faster than the price of crude. But my office went further. We took data from the Energy Information Administration, verified it with the Congressional Research Service, and we have compiled some stunning results on this chart. In all the time for which data is available, there has never been the kind of disparity between increases in the price of gasoline and the increase in the price of crude oil that we've seen in the last year. We found that during the last 30 years, when crude oil prices went up, annual gasoline price increases often didn't even keep pace. This chart shows what the media found and what we found. Before Hurricane Katrina, gasoline price increases were 36 percent bigger than crude oil increases. That number ballooned to a shameful 68 percent disparity immediately after the storm. And those kinds of numbers just don't exist in the previous 30 years. I ask that a copy of this chart be placed in the record. I'd like the FTC to ask the oil companies to explain that one.

Three—Require the FTC, at a minimum, to "out the gougers." If a huge differential between crude price spikes and gasoline prices can't be justified by marketplace conditions, the FTC should put suspicious sellers—at least the top 100—on a "Do Not Gouge" list, putting them on notice and letting consumers know whose prices are cause for concern.

Four—Go after the proven bad actors. If the FTC finds that the gasoline prices go beyond disparity with crude to a level that is simply unconscionable, the Federal Trade Commission should have the power—and the responsibility in law—to order the price gouger to stop and to fine the gouger.

In addition to giving the FTC new enforcement powers, there are other actions this Committee can take to help out gasoline consumers. One would allow oil companies to coordinate when they schedule their refinery maintenance to avoid supply shortages from multiple refineries in an area shutting down at the same time. This usually happens each Spring when multiple refineries shut down for maintenance before they gear up to produce gasoline for the Summer driving season. To avoid supply disruptions and price spikes for consumers, I propose a limited antitrust exemption to allow the refineries to coordinate the timing of their shutdowns as long as it was done to avoid or minimize disruption of fuel supplies.

To provide relief for consumers at the pump over the long-term and to reduce our Nation's dependence on foreign oil, nothing is more critical than improving fuel economy in the transportation sector. During the energy bill conference, I proposed a very modest one mile per gallon increase each year for the next 5 years in Corporate Average Fuel Economy (CAFE) standards. My proposal is much more modest than what the leading scientific experts in the country have found is both technically feasible and affordable to consumers.

To make this proposal more attractive to carmakers, I would add a market incentive to encourage companies to go beyond the minimum one-mile per year increase. For example, the companies that have the largest increase in fuel economy for either their passenger cars or SUVs and light trucks could get double or even triple credit for the amount they exceed the required increase. This bonus could count toward the company's future model year requirements to provide additional flexibility in meeting the new standards.

In closing, I again urge the Committee to give the Federal Trade Commission more tools to protect consumers at the gas pump. In the wake of Hurricane Katrina, the White House said there would be "zero tolerance for price-gouging." But having

a zero tolerance policy is meaningless unless there's enforcement to back it up and, right now, the Federal Government can only take action against price-gouging when there's out and out collusion. There needs to be stronger Federal remedies to stop unconscionable price-gouging whenever and wherever it takes place.

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

The CHAIRMAN. We will put your full statement in the record, and a copy of that chart. We're pleased to have your comments. And we'll look into that possibility of a partial exemption. I don't think we have the jurisdiction to do that, but we can recommend it—jointly recommend it to the Judiciary Committee. Thank you very much, Senator. We appreciate——

Senator WYDEN. I'd settle for the "Do Not Gouge" effort here.

Thank you both.

The CHAIRMAN. We would like to call the panels, Robert Slaughter, the President of the National Petrochemical & Refiners Association; Tyson Slocum, the Research Director of the Energy Program at the Public Citizen organization; Guy Caruso, the Administrator of the Energy Information Administration; and Ronald Kosh, Vice President of Public Policy and Government Affairs of the American Automobile Association of the Mid-Atlantic. I'd ask you all to come up to the witness table.

For the information of those who are here, the Senate, as a whole, has been called to a briefing by the Secretary of State and the Chairman of the Joint Chiefs at 4 o'clock. And many of us think that is extremely important. Senator Inouye, and I, manage the Defense Appropriations bill, and we will be marking that up next Tuesday. I feel it's necessary for us to be there, if it's at all possible. So, we will try to finish this in time.

We do have an indication there are ten Senators that should join us during this period, and we'd be pleased if each of you would give us an oral presentation of about 5 minutes. And we'll print your statements that you presented to us in full in the record. And we'll look forward to a period of question-and-answer by the Senators as they join us.

So, from the way I read the witnesses, we'll proceed with Mr. Slaughter first.

Do you have any opening here, Senator Inouye?

Senator INOUYE. No.

The CHAIRMAN. Mr. Slaughter?

STATEMENT OF ROBERT G. SLAUGHTER, PRESIDENT, NATIONAL PETROCHEMICAL & REFINERS ASSOCIATION (NPRA)

Mr. SLAUGHTER. Thank you, Mr. Chairman. And thank you, Senator Inouye and Senator Lautenberg.

NPRA, the National Petrochemical & Refiners Association, appreciates your invitation to appear today. Our members include virtually all U.S. refiners and petrochemical manufacturers.

We appreciate the level of concern in Congress, and among your constituents, about the supply and price of refined petroleum products, including gasoline, diesel, jet fuel, and heating oil, and the fact that you want to be certain that markets are competitive and that prices reflect market conditions.

The energy industry is vast, transparent, and highly competitive. You heard this morning from the Federal Trade Commission, the pervasive extent of scrutiny that is applied to our business operations because of the importance of our products to the economic health of our Nation and the daily lives of Americans.

You will hear, in just a minute, from the Energy Information Administration, the extent to which current market conditions result from stiff competition for available supplies of crude oil worldwide, and the limited margin of spare crude supply capacity that is available. All this has resulted in high prices for crude, refiner's feedstock, which must be reflected in the price of gasoline and the other products we sell.

This chart, Senator, shows the correlation between crude prices and product prices.

You know, also, about the catastrophe of Hurricane Katrina, a direct hit upon the energy heartland of America, which affected the supply of crude oil and products and natural gas to much of the Nation. The storm affected 20 percent of U.S. refining capacity and 5 percent of refining capacity is still out of service. The good news is that substantial progress has been made in recovering from this crippling blow. But much remains to be done. But Hurricane Rita now threatens to deliver another attack on the Nation's energy infrastructure.

The market pricing system the Nation has relied on for so many years is helping to balance supply-and-demand, and allocate available supplies during this difficult period. There have been allegations of price-gouging in the aftermath of Hurricane Katrina. NPRA and its membership do not tolerate price-gouging, and we recommend that any allegations of price-gouging be thoroughly investigated and that prosecutions move forward where actual and compelling evidence of this behavior is found.

It is important, above all, however, that our Nation not lose faith in the market pricing system that so efficiently has managed to provide supplies of energy products at prices reflecting market conditions throughout the years. This is not the time to return to the failed policies of the 1970s, with government intervention that resulted in gasoline lines and shortages. U.S. policy must restore an emphasis on the importance of adequate energy supplies and investment in our energy infrastructure.

I have, in front of me, study reports done at several times over the past 10 years by the National Petroleum Council, a joint industry and government advisory committee. The good news is that these studies, which were requested by the Administration or Congress during this period, recommended ways to increase fuel supply and encourage more domestic refining capacity. The bad news is that their advice was never implemented, a major reason why we are here today and still discussing the problems that face us after many years of neglect of energy supply concerns.

One of their paramount recommendations was that we sequence environmental projects so that they make greater sense and put less strain upon capital requirements in the industry. I'd like to show you a regulatory blizzard chart, which shows that the number of environmental programs that the industry is complying with, just in this time frame, cost roughly $20 billion total in this decade,

2000 to 2010. And I'll put on top of that—they're not well sequenced, and they all hit at the same time, contrary to these recommendations. I'd like to show you, then, out of—after the recent Energy bill, these are the requirements that the refining industry has to comply with, just in the next 2 years. All of these programs have to be implemented at the same time to carry forward the requirements that we already face from environmental regulations and those from the new bill.

The recently passed Energy bill asks for another study of this type. Will it be treated as a worthwhile product or another doorstop? Time will tell. But we'd offer our advice. We urge Congress to pay greater attention to the need for additional domestically-produced energy supplies of oil, oil products, and natural gas, and greater attention to the needs of our energy infrastructure, by streamlining permitting requirements to allow increased refining capacity. Energy policy should at least eliminate disincentives to production of greater supplies of domestic energy, and allow the national interest in greater energy supplies to take its rightful place alongside environmental progress and other quality-of-life considerations, rather than pretend that those considerations are not inextricably linked, as they are. But, unfortunately, our public policy has not recognized those links for many years.

I look forward to responding to your questions.

[The prepared statement of Mr. Slaughter follows:]

PREPARED STATEMENT OF ROBERT G. SLAUGHTER, PRESIDENT, NATIONAL PETROCHEMICAL & REFINERS ASSOCIATION (NPRA)

Mr. Chairman and members of the Committee, thank you for the opportunity to appear today to discuss the multiple factors that influence the price of energy and related issues. My name is Bob Slaughter and I am President of NPRA, the National Petrochemical & Refiners Association. NPRA is a national trade association with 450 members, including those who own or operate virtually all U.S. refining capacity, and most U.S. petrochemical manufacturers. My comments today will address the supply of transportation fuels, chiefly oil and oil products; I will also discuss the importance of adequate supplies of natural gas.

Introduction

This hearing is intended to inquire into the factors affecting the gasoline market. The recent natural disaster resulting from Hurricane Katrina has had a significant impact on the Nation's energy markets, and that subject will be discussed later. But it is important to remember that the effect of Hurricane Katrina is an overlay on a pre-existing condition. That was and is a situation characterized by high crude prices, strong demand for gasoline, diesel and other petroleum products, and a challenged energy infrastructure, especially in refining. NPRA is pleased to provide the Committee the following discussion of these conditions and NPRA's policy recommendations for addressing them. We urge Members of the Committee to consider the need for long overdue—and perhaps even bold—policy changes to increase the Nation's supply of oil, oil products and natural gas as soon as possible.

NPRA supports requirements for the orderly production and use of cleaner-burning fuels to address health and environmental concerns, while at the same time maintaining the flow of adequate and affordable gasoline and diesel supplies to the consuming public. Since 1970, clean fuels and clean vehicles have accounted for about 70 percent of all U.S. emission reductions from all sources, according to EPA. Over the past 10 years, U.S. refiners have invested about $47 billion in environmental improvements, much of that to make cleaner fuels. For example, according to EPA, the new Tier 2 low sulfur gasoline program, initiated in January 2004, will have the same effect as removing 164 million cars from the road when fully implemented.

Unfortunately, however, Federal environmental policies have often neglected to consider fully the impact of environmental regulations on fuel supply. Frankly, policymakers have often taken supply for granted, except in times of obvious market

instability. This attitude must end. A healthy and growing U.S. economy requires a steady, secure, and predictable supply of petroleum products.

There are no silver bullet solutions for balancing supply-and-demand. Indeed most of the problems in today's gasoline market—without factoring in the market disruptions caused by Katrina—result from the high price of crude oil due to economic recovery abroad together with strong U.S. demand for gasoline and diesel due to the improving U.S. economy.

Understanding Gasoline Market Fundamentals: High Crude Prices; Strong Gasoline Demand Growth

The overwhelming factor affecting gasoline and distillate prices is the supply and price of crude oil. In June of this year the U.S. Federal Trade Commission released a landmark study titled: *"Gasoline Price Changes: The Dynamic of Supply, Demand and Competition."* To quote from the FTC's findings: "Worldwide supply, demand, and competition for crude oil are the most important factors in the national average price of gasoline in the U.S." and "The world price of crude oil is the most important factor in the price of gasoline. Over the last 20 years, changes in crude oil prices have explained 85 percent of the changes in the price of gasoline in the U.S."

Crude prices have been steadily increasing since 2004, largely because of surprising levels of growth in oil demand in countries such as China and India, and in the United States as well. Actual demand growth for oil and oil products in these countries in 2004 exceeded the experts' predictions and has remained strong this year. As a result, world demand for crude is bumping up against the worldwide ability to produce crude.

Strong demand for crude has dissipated the cushion of excess available worldwide oil supply, just as strong U.S. demand for refined products has eliminated excess refining capacity in the United States. The good news is that producing countries will probably be able to add crude production capacity in the years to come. The bad news is that the United States has thus far shown only limited willingness to confront its own energy supply problems.

As shown in Attachment 1, gasoline costs closely track the cost of crude oil. Before Hurricane Katrina, gasoline price increases lagged crude oil price increases on a gallon for gallon basis. This means that refiners did not pass through all of the increased costs in their raw material, crude oil. Crude oil accounts for 55–60 percent of the price of gasoline seen at the service station. The cost of Federal and state taxes adds another 19 percent to the cost of a finished gallon of gasoline. Therefore under current conditions, 74–79 percent of the total cost of a gallon of gasoline is pre-determined before the crude is delivered to the refiner for manufacture into gasoline. (See Attachment 2)

Another contributor to gasoline costs is tightness in our Nation's gasoline markets. While U.S. refiners are producing huge volumes of products, continued strong demand has tightened supply. Gasoline demand currently averages approximately 9 million barrels per day. Domestic refineries produce about 90 percent of U.S. gasoline supply, while about 10 percent is imported. These imports make up over 20 percent of the refined product demand of the Northeast U.S. Thus, steadily increasing demand can only be met either by adding new domestic refinery capacity or by relying on more foreign gasoline imports. Unfortunately, the need to add more domestic gasoline production capacity—the option NPRA believes to be the prudent choice—is often thwarted by other public priorities.

Experience With the Aftermath of Hurricane Katrina Suggests That the Market Pricing System Is Working as Anticipated

In the aftermath of Hurricane Katrina our Nation confronts death, injuries and devastation of staggering proportions. The images of the tragedy displayed on television and other media underscore the human toll and seeming hopelessness in ways more eloquent and compelling than could ever be captured in testimony. We share both the sense of dismay and increased humility felt by all Americans before this latest reminder of nature's power to devastate and confound the best efforts of human beings. NPRA offers our sympathy and prayers to those who have suffered the loss of loved ones among family members, or their neighbors and colleagues, as well as to those who have lost much or all of their personal assets and livelihood in this worst U.S. natural disaster.

The damage left in Hurricane Katrina's wake made significantly worse the troubling supply and price situation already discussed above. The market pricing system did work in the aftermath of that disaster, however. Crude oil and many product prices had retreated to pre-Katrina levels by last Friday, in spite of the fact that considerable offshore crude production remains out of service and about 5 percent of U.S. refinery capacity is still not operating due to storm damage. (See Attachment

3) The approach of Hurricane Rita has since resulted in increased futures prices this week due to concerns about possible additional damage in the Gulf due to this storm.

U.S. National Energy Policy Should Continue To Rely on Market Forces

Continued reliance on market forces provides appropriate market signals to help balance supply-and-demand even during difficult times. President Reagan eliminated price controls on oil products immediately upon taking office in 1981. He was outspoken about the inefficiencies and added costs to consumers that resulted from America's ten-year experiment with energy price controls.

The energy price and allocation controls of the 1970s resulted in supply shortages in the form of long gas lines. Studies have shown that, although intended to reduce costs, controls actually resulted in increased costs and greater inconvenience for consumers. The benefits of market pricing became clear soon after their elimination. The U.S. Federal Trade Commission stated in an extensive study published this June that "Gasoline supply, demand and competition produced relatively low and stable annual average real U.S. gasoline prices from 1984 until 2004, despite substantial increases in U.S. gasoline consumption" and ". . . For most of the past 20 years, real annual average retail gasoline process in the U.S., including taxes, have been lower than at any time since 1919." Price caps and other forms of price regulation are no more effective in the 21st century than they turned out to be in the 1970s. Interference in market forces always creates inefficiencies in the marketplace and extra costs for consumers.

The U.S. Refining Industry Is Diverse and Competitive

Today's U.S. refining industry is highly competitive. Some suggest past mergers are responsible for higher prices. The data do not support such claims. In fact, companies have become more efficient and continue to compete fiercely. There are 54 refining companies in the U.S., hundreds of wholesale and marketing companies, and more than 165,000 retail outlets. The biggest refiner accounts for only about 13 percent of the Nation's total refining capacity; and the large integrated companies own and operate only about 10 percent of the retail outlets. The Federal Trade Commission (FTC) thoroughly evaluates every merger proposal, holds industry mergers to the highest standards of review, and subjects normal industry operations to a higher level of ongoing scrutiny.

In 2004, the FTC published an FTC Staff Study *"The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement."* Among the points made in that publication was the following: ". . . mergers have contributed to the restructuring of the petroleum industry in the past two decades but have had only a limited impact on industry concentration. The FTC has investigated all major petroleum mergers and required relief when it had reason to believe that a merger was likely to lead to competitive harm. . ."

Critics of mergers sometimes suggest that industry is able to affect prices because it has become much more concentrated, with a handful of companies controlling most of the market. This is untrue. According to data compiled by the U.S. Department of Commerce and by Public Citizen, in 2003 the four largest U.S. refining companies controlled a little more than 40 percent of the Nation's refining capacity. In contrast, the top four companies in the auto manufacturing, brewing, tobacco, floor coverings and breakfast cereals industries controlled between 80 percent and 90 percent of the market. Further, several mergers in the refining industry have actively maintained and even increased refining capacity when, without such consolidation, the individual refineries involved might not have been economically viable. One such example represents over 550,000 barrels/day of capacity. In other instances, Valero Energy Corporation has increased the productive capacity of the refineries it has acquired by an aggregate of nearly 400,000 barrels per day over the past several years.

Industry Activities Have Been Scrutinized in Similar Past Situations but No Anticompetitive Behavior Has Been Found

Tight gasoline market conditions have often led to calls for industry investigations. More than two dozen Federal and state investigations over the last several decades have found no evidence of wrongdoing or illegal activity on our industry's part. For example, after a 9-month FTC investigation into the causes of price spikes in local markets in the Midwest during the spring and summer of 2000, former FTC Chairman Robert Pitofsky stated, "There were many causes for the extraordinary price spikes in Midwest markets. Importantly, there is no evidence that the price increases were a result of conspiracy or any other antitrust violation. Indeed, most of the causes were beyond the immediate control of the oil companies." Similar investigations before and since have reached the same conclusion.

A "Windfall Profits Tax" Could Stifle Needed Industry Investment

The U.S. had a "windfall profit tax" on crude oil from 1980 until 1988. That tax, which was actually an *ad valorem* tax imposed on crude oil, discouraged crude oil production in the United States and resulted in other market distortions. It was repealed in 1988.

Current suggestions for re-imposition of a windfall profits tax on refiners reflect a misunderstanding of refining industry economics. In the ten-year period 1993–2002, average return on investment in the refining industry was only about 5.5 percent. This is less than half of the S&P Industrials average return of 12.7 percent for the same period. Refining industry profits as a percentage of operating capital are not excessive. In dollars, they seem large due to the massive scale needed to compete in a large, capital-intensive industry. For example, a new medium scale refinery (100,000 to 200,000 b/d) would cost $2 to $3 billion. In short, company revenues can be in the billions, but so, too are the costs of operations.

The FTC June 2005 study cited above had the following comments on industry profits: "Profits play necessary and important roles in a well-functioning market economy. Recent oil company profits are high but have varied widely over time, over industry segments and among firms . . . Profits also compensate firms for taking risks, such as the risks in the oil industry that war or terrorism may destroy crude production assets or, that new environmental requirements may require substantial new refinery capital investments."

Many other industries have higher earnings than the oil industry. Among these are telecommunication services, software, semiconductors, banking, pharmaceuticals, coal and real estate, to name just a few. Imposition of a windfall profits tax on the industry would discourage investment at a time when significant capital commitments to all parts of the industry, including refining, will be needed.

NPRA Does Not Tolerate Price Gouging

There have been allegations of price-gouging by unscrupulous individuals who seek to profit during the current time of national emergency and crisis. Federal and state laws prohibit actions of this kind in emergency situations like the present. Each alleged situation should be thoroughly investigated by the appropriate state and Federal authorities and prosecution should occur when the law has been broken. It is important, however, that illegal activity be clearly distinguished from the normal operation of market forces attempting to allocate available product in a shortage or near-shortage situation.

U.S. Policy Should Encourage Additional Domestic Refining Capacity

Domestic refining capacity is a scarce asset. There are currently 148 U.S. refineries owned by 54 companies in 33 states, with total crude oil processing capacity at roughly 17 million barrels per day. In 1981, there were 325 refineries in the U.S. with a capacity of 18.6 million barrels per day. Thus, while U.S. demand for gasoline has *increased* over 20 percent in the last twenty years, U.S. refining capacity has *decreased* by 10 percent. No new refinery has been built in the United States since 1976, and it will be difficult to change this situation. This is due to economic, public policy, and political considerations, including siting costs, environmental requirements, a history of low refining industry profitability and, significantly, "not in my backyard" (NIMBY) public attitudes.

Nevertheless, existing refineries have been extensively updated to incorporate the technology needed to produce a large and predictable supply of clean fuels with significantly improved environmental performance. Capacity additions have taken place at many facilities as well. (See Attachment 4) Between 1985 and 2004, U.S. refineries increased their total capacity to refine crude oil by 7.8 percent, from 15.7 mm b/d in 1985 to 16.9 mm b/d in May 2004. This increase is equivalent to adding several mid-size refineries, but it occurred at existing facilities to take advantage of economics of scale. Refiners also changed processing methods to broaden the range of crude oil they can process and to allow them to produce more refined product for each barrel of crude processed. (2005 FTC analysis)

With the increased returns on refining operations in the past 2 years, it is very possible that additional investment in refining will now occur. Some modest additions have been announced. But the increase in capacity at existing sites will probably not keep pace with the growth in U.S. demand for products, meaning that the Nation is increasing its reliance on imports of gasoline and other petroleum products each year.

Proposed capacity expansions can often become controversial and contentious at the state and local level, even when necessary to produce cleaner fuels pursuant to regulatory requirements. We hope that policymakers will recognize the importance of domestic refining capacity expansion to the successful implementation of the Na-

tion's environmental policies, especially clean fuels programs. The Administration's New Source Review reform program is a solid example of policy modifications that, while maintaining desired environmental protections, will provide one tool to help add and update capacity.

NPRA also wants to recognize a provision in the recently enacted energy legislation that will help encourage additional refining investment. This provision allows 50 percent expensing of the costs associated with expanding a refinery's output by more than 5 percent. The refiner must have a signed contract for the work by 1/1/08, and the equipment must be put in service by 1/1/12.

Common sense dictates that it is in our Nation's best interest to manufacture the lion's share of the petroleum products required for U.S. consumption in domestic refineries and petrochemical plants. Nevertheless, we currently import more than 62 percent of the crude oil and oil products we consume. Reduced U.S. refining capacity clearly affects our supply of refined petroleum products and the flexibility of the supply system, particularly in times of unforeseen disruption or other stress. Unfortunately, EIA currently has predicted "substantial growth" in refining capacity only in the Middle East, Central and South America, and the Asia/Pacific region, not in the U.S.

Refiners Face a Blizzard of Regulatory Requirements Affecting Both Facilities and Products

Despite the powerful factors that influence gasoline manufacturing, cost and demand, refiners are addressing current supply challenges and working hard to supply sufficient volumes of gasoline and other petroleum products to the public. Refineries have been running at very high levels, producing gasoline and distillate. Refiners operated at high utilization rates even before the start of the summer driving season. To put this in perspective, peak utilization rates for other manufacturers average about 82 percent. At times during summer, refiners often operate at rates close to 98 percent. However, such high rates cannot be sustained for long periods.

In addition to coping with higher fuel costs and growing demand, refiners are implementing significant transitions in major gasoline markets. Nationwide, the amount of sulfur in gasoline will be reduced to an average of 30 parts per million (ppm) effective January 1, 2006, giving refiners an additional challenge in both the manufacture and distribution of fuel.

Equally significant, California, New York, and Connecticut bans on use of MTBE are in effect. This is a major change affecting one-sixth of the Nation's gasoline market. MTBE use as an oxygenate in reformulated gasoline accounted for as much as 11 percent of RFG supply at its peak; substitution of ethanol for MTBE does not replace all of the volume lost by removing MTBE. (Ethanol's properties generally cause it to replace only about 50 percent of the volume lost when MTBE is removed.) This lost volume must be supplied by additional gasoline or gasoline blendstocks. *Especially during a period of supply concerns it is in the Nation's interest to be prudent in taking any action that affects MTBE use. That product still accounts for 1.6 percent of the Nation's gasoline supply on average, but it provides a larger portion of gasoline supplies in areas with RFG requirements that are not subject to an MTBE ban. As with the case of imports, the Northeast is most dependent on these volumes.*

Refiners currently face the massive task of complying with fourteen new environmental regulatory programs with significant investment requirements, all in the same 2006–2012 time frame. (See Attachment 5) In addition, many programs start soon. (See Attachment 6) For the most part, these regulations are required by the Clean Air Act. Some will require additional emission reductions at facilities and plants, while others will require further changes in clean fuel specifications. NPRA estimates that refiners are in the process of investing about $20 billion to sharply reduce the sulfur content of gasoline and both highway and off-road diesel. Refiners will face additional investment requirements to deal with limitations on ether use, as well as compliance costs for controls on Mobile Source Air Toxics and other limitations. These costs do not include the significant additional investments needed to comply with stationary source regulations that affect refineries.

Other potential environmental regulations on the horizon could force additional large investment requirements. They are: the challenges posed by the energy bill's mandated increased ethanol use, possible additional changes in diesel fuel content involving cetane, and potential proliferation of new fuel specifications driven by the need for states to comply with the new eight-hour ozone NAAQS standard. The 8-hour standard could also result in more regulations affecting facilities such as refiners and petrochemical plants.

These are just some of the pending and potential air quality challenges that the industry faces. Refineries are also subject to extensive regulations under the Clean

Water Act, Toxic Substances Control Act, Safe Drinking Water Act, Oil Pollution Act of 1990, Resource Conservation and Recovery Act, Emergency Planning and Community Right-To-Know (EPCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other Federal statutes. The industry also complies with OSHA standards and many state statutes. A complete list of Federal regulations impacting refineries is included with this statement. (See Attachment 7)*

The high level of mandatory environmental expenditures in the current decade continues a trend established after the passage of the Clean Air Act Amendments in 1990. The American Petroleum Institute (API) estimates that refining accounted for about 53 percent of the petroleum industry's stated environmental expenditures of $98 billion (in 2004 dollars) between 1992 and 2001.

Obviously, refiners face a daunting task in completing many changes to deliver the fuels that consumers and the Nation's economy require. But they are succeeding. And regardless of recent press stories, we need to remember that American gasoline and other petroleum products have long been low when compared to the price consumers in other large industrialized nations pay for those products. The Federal Trade Commission recently found that "Gasoline supply, demand and competition produced relatively low and stable annual average real U.S. gasoline prices from 1984 until 2004, despite substantial increases in U.S. gasoline consumption."

A Key Government Advisory Panel Has Urged Greater Sensitivity to Supply Concerns

The National Petroleum Council (NPC) issued a landmark report on the state of the refining industry in 2000. Given the limited return on investment in the industry and the capital requirements of environmental regulations, the NPC urged policymakers to pay special attention to the timing and sequencing of any changes in product specifications. Failing such action, the report cautioned that adverse fuel supply ramifications may result. Unfortunately, this warning has been widely disregarded. On June 22, 2004 Energy Secretary Abraham asked NPC to update and expand its refining study and a report was released last December. NPRA again urges policymakers to take action to implement NPC's study recommendations in order to address U.S. refining problems.

NPRA Recommendations To Add U.S. Refining Capacity and Increase Future Oil Product and Natural Gas Supply

Make increasing the Nation's supply of oil, oil products and natural gas a number one public policy priority. Now, and for many years in the past, increasing oil and gas supply has often been a number 2 priority. Thus, oil and gas supply concerns have been secondary, and subjugated to whatever policy goal was more politically popular at the time. Enactment of the recent Energy Bill is a first step to making a first priority the supply of energy sources the Nation depends upon.

Remove barriers to increased supplies of domestic oil and gas resources. Recent criticism about the concentration of America's energy infrastructure in the western Gulf is misplaced. Refineries and other important onshore facilities have been welcome in this area but not in many other parts of the country. *Policymakers have also restricted access to much-needed offshore oil and natural gas supplies in the eastern Gulf and off the shores of California and the East Coast. These areas must follow the example of Louisiana and many other states in sharing these energy resources with the rest of the Nation because they are sorely needed.*

Resist tinkering with market forces when the supply/demand balance is tight. Market interference that may initially be politically popular results in market inefficiencies and unnecessary costs. Policymakers must resist turning the clock backward to the failed policies of the past. Experience with price constraints and allocation controls in the 1970s demonstrates the failure of price regulation, which adversely impacted both fuel supply and consumer cost.

Consider expanding the refining tax incentive provision in the Energy Act. Reducing the depreciation period for refining investments from 10 to 7 or 5 years would remove a current disincentive for refining investment. Changes could allow expensing under the current language to take place as the investment is made rather than when the equipment is actually placed in service, or the percentage expensed could be increased as per the original legislation introduced by Senator Hatch.

Review and streamline permitting procedures for new refinery construction and refinery capacity additions. Seek ways to encourage state authorities to recognize the national interest in more U.S. domestic capacity.

---

*The information referred to has been retained in Committee files and can be accessed at *http://www.npradc.org/news/testimony/pdf/7-7-04Attachment-4.pdf*

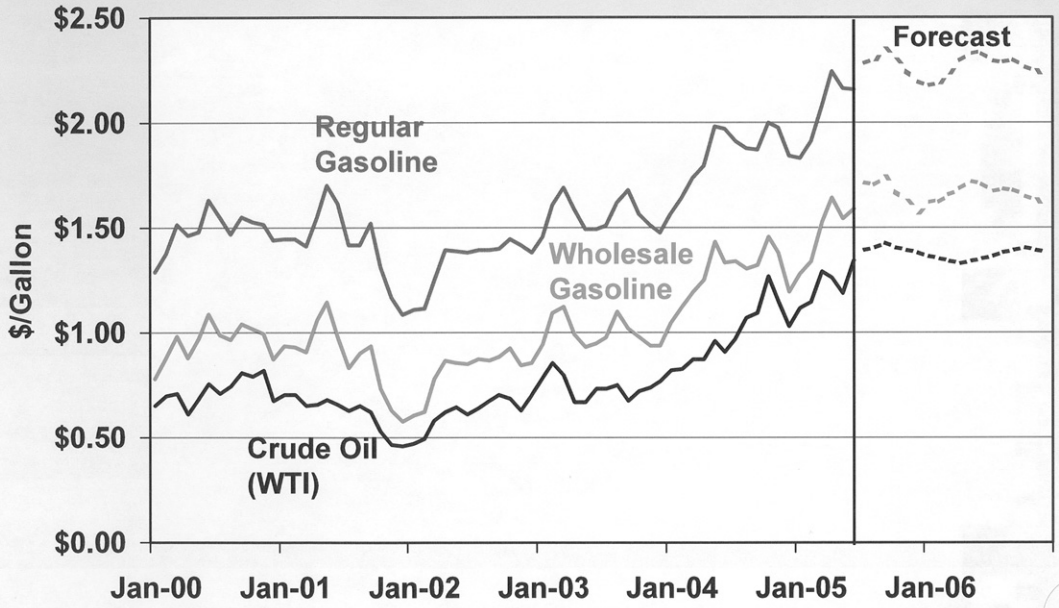
Keep a close eye on several upcoming regulatory programs that could have significant impacts on gasoline and diesel supply. They are:

- Implementation of the new 8-hour ozone NAAQS standard. The current implementation schedule determined by EPA has established ozone attainment deadlines for parts of the country that will be impossible to meet. EPA has to date not made changes that would provide realistic attainment dates for the areas. The result is that areas will be required to place sweeping new controls on both stationary and mobile sources, in a vain effort to attain the unattainable. The new lower-sulfur gasoline and ULSD diesel programs will provide significant reductions to emissions within these areas once implemented. But they will not come soon enough to be considered unless the current unrealistic schedule is revised. If not, the result will be additional fuel and stationary source controls which will have an adverse impact on fuel supply and could actually reduce U.S. refining capacity. This issue needs immediate attention.
- Design and implementation of the credit trading program for the ethanol mandate (RFS) contained in the recent Energy Act. This mechanism is vital to increase the chance that this program can be implemented next year without additional gasoline supply disruption. Additional resources are needed within EPA to accomplish this key task.
- Implementation of the ultra-low sulfur diesel highway diesel regulation. The refining industry has made large investments to meet the severe reductions in diesel sulfur that take effect next June. We remain concerned about the distribution system's ability to deliver this material at the required 15 ppm level at retail. If not resolved, these problems could affect America's critical diesel supply. Industry is working with EPA on this issue, but time left to solve this problem is growing short.
- Phase II of the MSAT (mobile source air toxics) rule for gasoline. Many refiners are concerned that this new regulation, which we expect next year, will be overly stringent and impact gasoline supply. We are working with EPA to help develop a rule that protects the environment and avoids a reduction in gasoline supply.

NPRA's members are dedicated to working cooperatively with government, at all levels, to resolve the current emergency conditions that result from Hurricane Katrina. But we feel obliged to remind policymakers that action must also be taken to improve energy policy in order to increase supply and strengthen the Nation's refining infrastructure. We look forward to answering the Committee's questions.

Attachment 1

Crude Oil and Gasoline Price Outlook

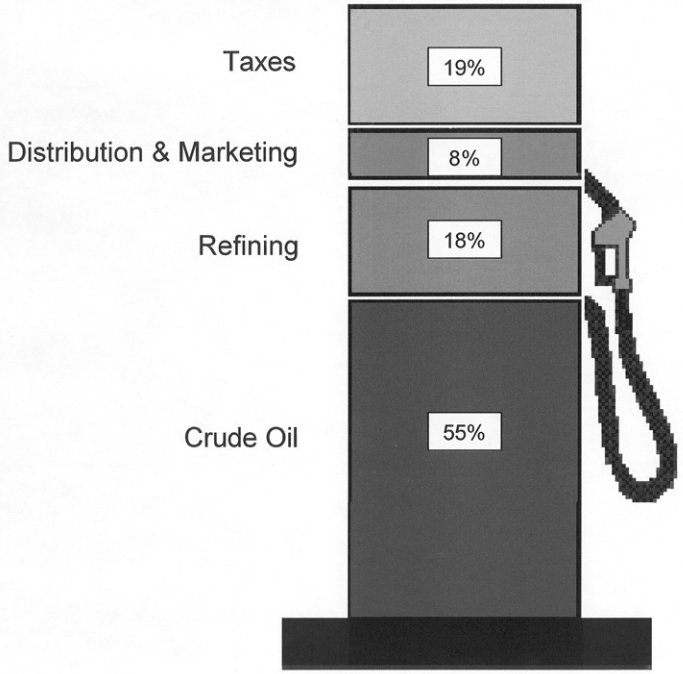


Sources: History: EIA; Projections: Short-Term Energy Outlook, July 2005.

www.eia.doe.gov

Attachment 2

What We Pay for in a Gallon of Regular Gasoline

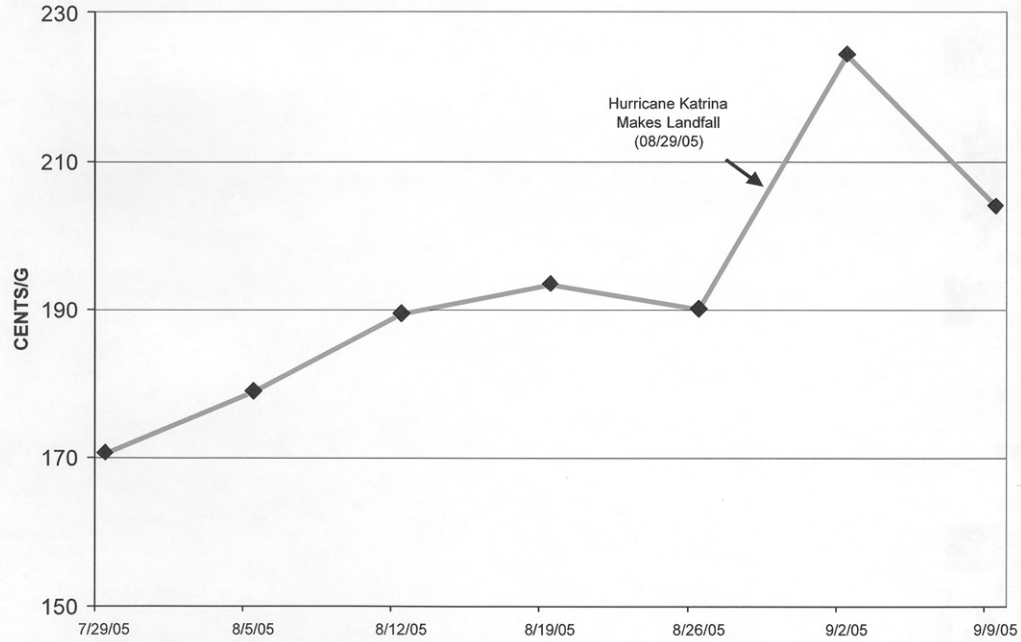


Source: EIA

Attachment 3

New York Mercantile Exchange

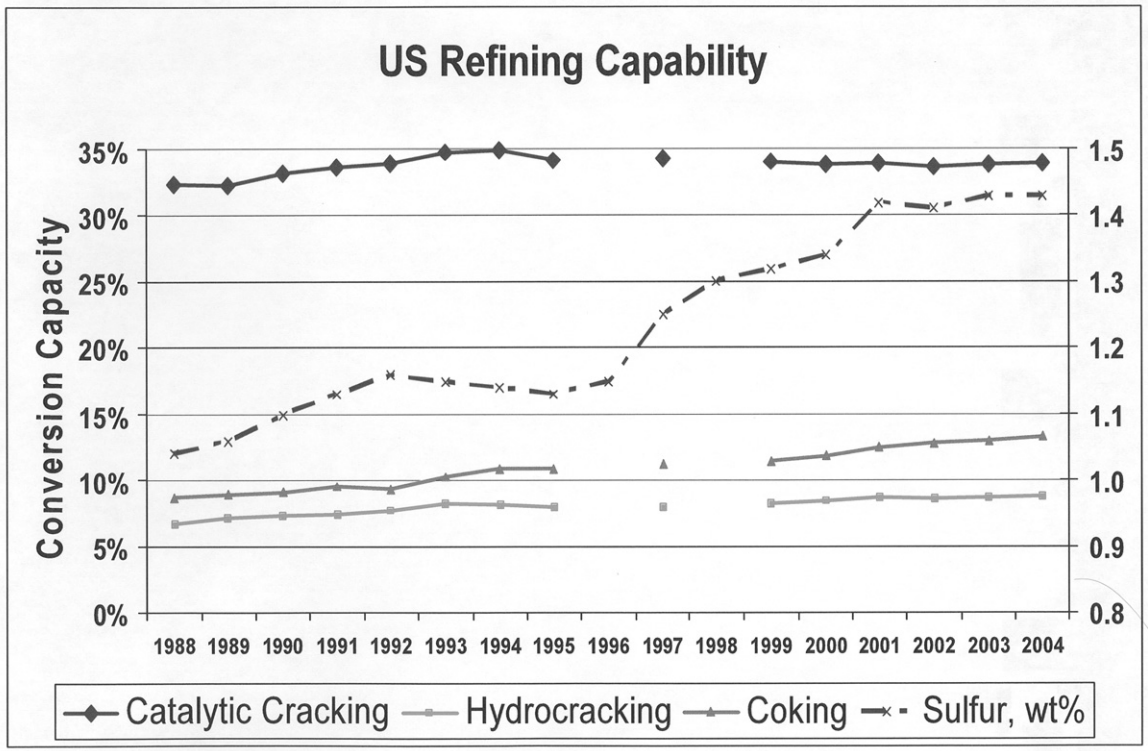
Unleaded Gasoline Weekly Average Settlement Price



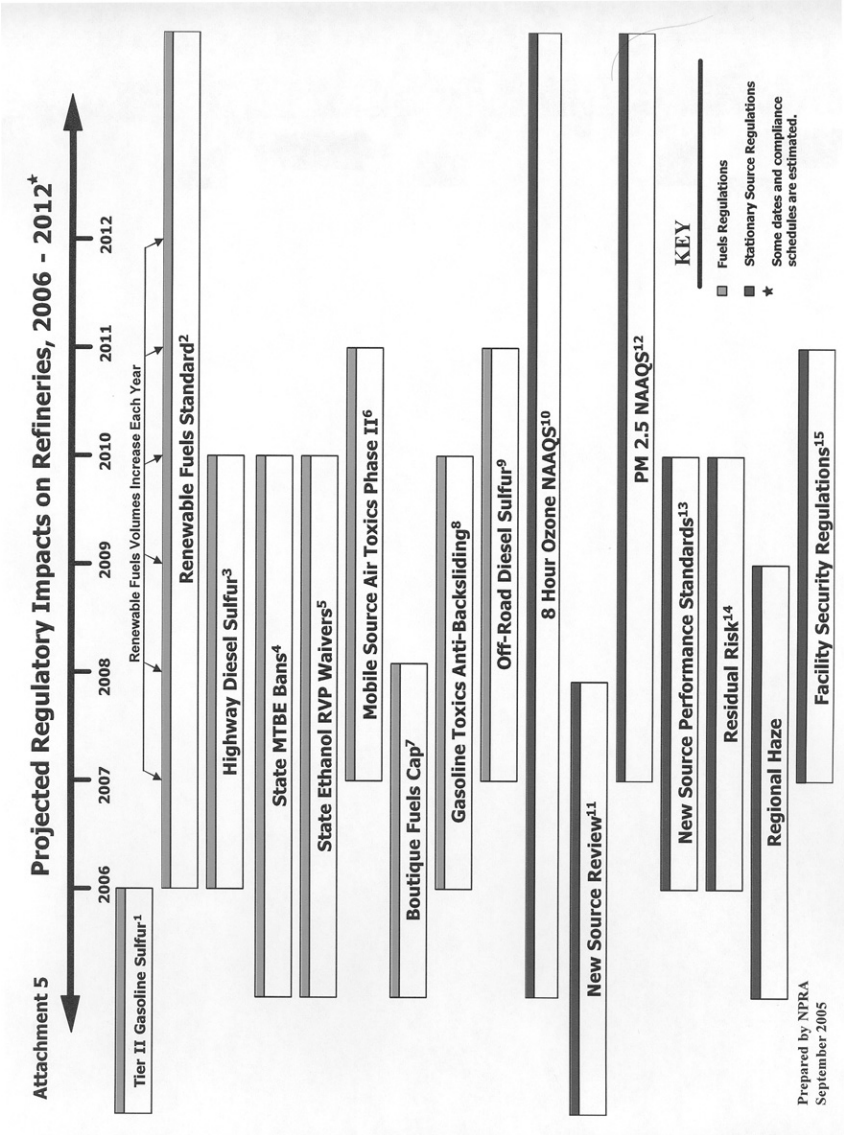
Source: Platts Oilgam News

July 29, 2005 - September 9, 2005

Attachment 4



Source: EIA Petroleum Supply Annual



Notes:

1. Longer compliance time for refineries in Alaska and Rocky Mountain states as well as small refineries covered by the Small Business Regulatory Enforcement and Flexibility Act (SBREFA). Additional compliance time is available for these refineries if they produce ultra-low sulfur highway diesel beginning in 2006.

2. The Energy Policy Act of 2005, includes a renewable fuels standard (RFS) which mandates the use of 4 billion gallons of renewable fuels starting in 2006. The mandate increases to 7.5 billion gallons in 2012. EPA must promulgate regulations by August 2006.

3. Longer compliance time for small refiners covered by SBREFA.

4. Approximately twenty-five states currently have MTBE bans in place and others may pass similar bans in the future.

5. The Energy Policy Act of 2005 allows state governors to petition EPA to eliminate the one pound RVP waiver for summer gasoline blended with ethanol.

6. Phase II Mobile Source Air Toxics Rule to be proposed in February, 2006. Final rule expected in 2007.

7. The Energy Policy Act of 2005, caps the number of motor fuels available for use in State Implementation Plans at the same level as those already in use as of September 1, 2004. EPA must publish a list of approved fuels by state and PADD by November, 2005.

8. Under the Energy Policy Act of 2005, EPA must promulgate a rule to implement RFG anti-backsliding adjustments that will maintain emissions at 2001 and 2002 levels.

9. The first phase of the off-road diesel sulfur program is effective in 2007, and the second phase is effective in 2011.

10. Ozone non-attainment designations made April 2004. State Implementation Plans (SIPs) are due by June 2007. Compliance, depending upon classification, required between 2007 and 2021. EPA promulgated a Phase 1 implementation rule in April 2004, but has not yet promulgated a Phase 2 rule.

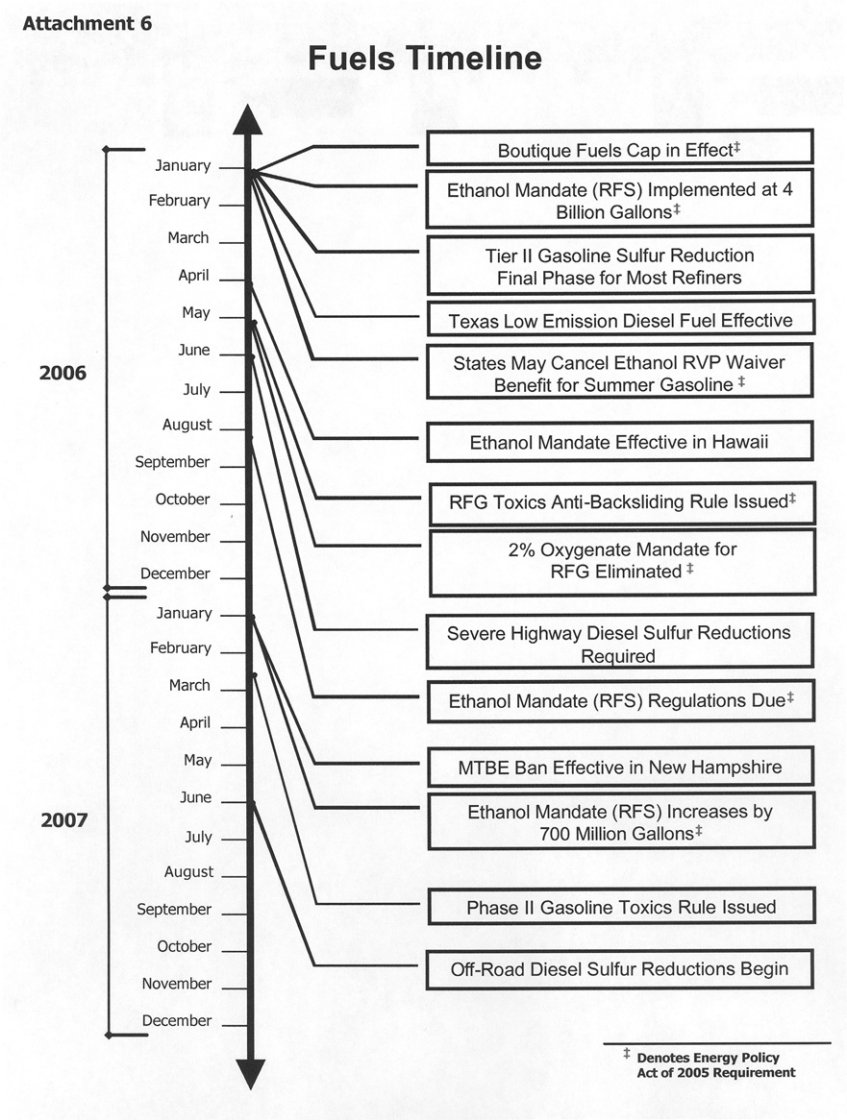
11. New Source Review reform (RMRR) is subject to litigation. Refiners face uncertainty in meeting regulatory requirements. The NSR program was upheld in part by the courts however, part of the rule was remanded to EPA. Refiners support the reforms. EPA is continuing enforcement actions under the old rules.

12. EPA set a new $PM_{2.5}$ NAAQS in 1997, and designated nonattainment areas in December 2004, but has not yet promulgated implementation standards. EPA is currently conducting a five-year review of the standard.

13. EPA has entered into a consent decree with environmental organizations to review, and possibly revise, the New Source Performance Standards for petroleum refineries.

14. Proposed rule expected mid 2006.

15. The Senate and the Administration support new authority for DHS to regulate chemical security which will impact refiners. Many facilities currently meet Coast Guard regulations under MTSA.



The CHAIRMAN. Thank you very much. Do you have copies of those charts in your statement we'll print in the record?

Mr. SLAUGHTER. Yes, sir.

The CHAIRMAN. Thank you.

Mr. Slocum?

STATEMENT OF TYSON SLOCUM, RESEARCH DIRECTOR, PUBLIC CITIZEN's ENERGY PROGRAM

Mr. SLOCUM. Yes, Mr. Chairman, thank you very much. Members of the Committee, thank you very much for having me here today.

I am Tyson Slocum. I'm Research Director of the Consumer Advocacy Group, Public Citizen. We represent 160,000 dues-paying members across the United States, and many of our members are also your constituents, I am sure. And as—you don't need me to remind you that many of your constituents are very upset at rising energy prices, particularly gasoline prices. And with good reason. While, obviously, supply-and-demand is playing a role here, there is a lot more than just supply-and-demand that is leading to these higher energy prices. And we, at Public Citizen, along with other government investigations, have conclusively shown that there are uncompetitive practices, within the U.S. oil industry, that are directly causing these higher gasoline prices, and Public Citizen reminds Congress that it is their duty and obligation to protect consumers by stopping this price-gouging and restoring competition to our energy markets.

There have been some radical changes within the oil industry in just the last few years that are a direct result of recent mergers and acquisitions in the industry. In fact, the U.S. Government Accountability Office recently documented that there were over 2,600 mergers within the U.S. petroleum industry since the 1990s. And Public Citizen has shown that those recent mergers, particularly in the U.S. refining sector, have directly led to huge consolidation of control over refining capacity, which then leads to uncompetitive markets, which, of course, leads to higher gasoline prices.

In 1993, the largest five owners of U.S. oil refineries controlled 34.5 percent of refining capacity. In 1993, the largest ten controlled 55.6 percent of refining capacity. Now, fast-forward 10 years to 2004, after a number of large mergers, and those numbers radically change. The largest five today control 56.3 percent of refining capacity. That means the largest five oil refiners today control more capacity than the largest ten did a decade ago, and the largest ten today control 83 percent of refining capacity. Those numbers clearly show extreme consolidation in the downstream market, which makes it much easier to engage in uncompetitive practices, which leads to higher gasoline prices.

And the proof is in the numbers. According to EIA data, refining margins have been skyrocketing for U.S. oil refiners. In 1999, the average profit margin for U.S. oil refiners was 22.8 cents a gallon for refined gasoline. By 2004, that had jumped 80 percent, to 40.8 cents. So, it's no question that the huge profits by the largest five oil refiners in the United States, since 2001, have been $228 billion. ExxonMobile alone leads the pack with profits of $89 billion over that time period. And taking a look at Exxon's own books, which are on view in their annual 10(k) reports filed with the Securities and Exchange Commission, shows clearly that their profit margins for their U.S. operations is what's driving their global profit margins. Exxon's average return on capital employed, for their total company worldwide, was 23.8 percent. But when you isolate their U.S. refining industry, it's 28.6 percent. So, their rate-

of-return on their capital employed for their U.S. refining operations is much larger than their global profit margins, clearly a sign that consolidated markets are great for a company's bottom line, but terrible for consumers at the pump.

The U.S. Government Accountability Office has echoed a lot of Public Citizen's conclusions. In May 2004, the GAO concluded, without a doubt, that recent mergers have directly led to higher gasoline prices. And the Federal Trade Commission concluded, in March 2001, that U.S. oil companies were intentionally withholding supplies from the market in order to drive prices up. And, as we heard from Senator Wyden a few minutes ago, the FTC claims that it does not have power to go after unilateral withholding. And so, we ask that Congress take action on that respect.

And the last issue area here is the energy-trading markets. These are sorely under-regulated. Congress, in 2000, passed the Commodity Futures Modernization Act, which, among other things, greatly expanded the ability of energy traders to engage their business in so-called OTC markets, over-the-counter derivatives exchanges.

I have a quote here from Dow Jones quoting one of these energy traders, who said, quote, on September 2, "There are energy traders who made so much money this week, after Hurricane Katrina, that they won't have to punch another ticket for the rest of the year," end quote.

Energy traders are price-gouging consumers. They are holding Americans hostage. We need to re-regulate these exchanges. Congress needs to mandate immediate investigations into uncompetitive practices, so that consumers will be protected from this price-gouging.

Thank you very much.

[The prepared statement of Mr. Slocum follows:]

PREPARED STATEMENT OF TYSON SLOCUM, RESEARCH DIRECTOR, PUBLIC CITIZEN'S ENERGY PROGRAM

Thank you, Mr. Chairman and members of the Committee on Commerce, Science, and Transportation for the opportunity to testify on the issue of gasoline prices. My name is Tyson Slocum, and I am Research Director of Public Citizen's Energy Program. Public Citizen is a 34-year old public interest organization with over 160,000 members nationwide. We represent consumer interests through research, public education, and grassroots organizing.

I last testified before the U.S. Congress on how lax regulations over the natural gas industry were leading to high prices, and have also testified before the Congress on how recent mergers in the domestic oil refining industry have consolidated control over gasoline, making it easier for a handful of companies to price-gouge consumers.

This price-gouging has not only been officially documented, but it is also evident in the record profits enjoyed by large oil companies. Since 2001, the five largest oil refining companies operating in America—ExxonMobil, Valero, ConocoPhillips, Shell, and BP—have recorded $228 *billion* in profits. While of course America's tremendous appetite for gasoline plays a role, uncompetitive practices by oil corporations are a cause—and not OPEC or environmental laws—of high gasoline prices around the country.

Sixty-two percent of the oil consumed in America is used as fuel for cars and trucks. Ten percent is for residential home heating oil, with the remainder largely for various industrial and agricultural processes (only 2 percent is to fuel electric

power).[1] Gasoline prices in the U.S. average $2.96/gallon, up 60 percent from 1 year ago.[2] Some states are addressing these higher prices by suspending taxes on gasoline. Public Citizen does not support such a move, as it not only fails to address the underlying market problems causing higher prices, but reduces revenues that states need to help finance solutions such as mass transit.

Oil and gasoline prices were rising long before Hurricane Katrina wreaked havoc. U.S. gasoline prices jumped 14 percent from July 25 to Aug. 22. Indeed, profits for U.S. oil refiners have been at record highs. In 1999, U.S. oil refiners made 22.8 cents for every gallon of gasoline refined from crude oil. By 2004, they were making 40.8 cents for every gallon of gasoline refined, a 79 percent jump.[3]

Faced with these facts, Congress and the White House instead recently passed energy legislation that does nothing to address any of the fundamental problems plaguing America's energy policies—after all, if it did, why are we having this hearing today? As a whole, the Senate voted to approve H.R. 6, the "comprehensive" energy bill, by a vote of 74 to 26,[4] even though the only "comprehensive" aspect of the legislation is the $6 billion in subsidies to big oil companies.[5] The only possible explanation for why Congress would bestow these subsidies on oil companies are the $52 million in campaign contributions by the oil industry, with 80 percent of that total going to Republicans.[6]

Remember, environmental regulations are not restricting oil drilling in the United States. An Interior Department study concludes that Federal leasing restrictions—in the form of wilderness designations and other leasing restrictions—completely block drilling of only 15.5 percent of the oil in the five major U.S. production basins on 104 million acres stretching from Montana to New Mexico. While only 15.5 percent is totally off-limits, 57 percent of America's oil reserves on Federal land are fully available for drilling, with the remaining 27.5 percent featuring partial limitations on drilling.[7] This report contradicts industry claims that environmental laws are squelching natural gas production.

Congress can restore accountability to oil and gas markets and protect consumers by supporting Public Citizen's 5-point reform plan:

- Implement a windfall profits tax or enact temporary price caps.
- Launch an immediate investigation, including the use of subpoena, into uncompetitive practices by oil companies.
- Reevaluate recent mergers, particularly in the refining sector.
- Re-regulate energy trading exchanges to restore transparency.
- Improve fuel economy standards to reduce demand.

Recent Mergers Create Uncompetitive Markets

Over 2,600 mergers have been approved in the U.S. petroleum industry since the 1990s. In just the last few years, mergers between giant oil companies—such as Exxon and Mobil, Chevron and Texaco, Conoco and Phillips—have resulted in just a few companies controlling a significant amount of America's gasoline, squelching competition. A number of independent refineries have been closed, some due to uncompetitive actions by larger oil companies, further restricting capacity. As a result, consumers are paying more at the pump *than they would if they had access to competitive markets* and five oil companies are reaping some of the largest profits in history.

Although the U.S. is the third largest oil producing nation in the world, we consume 25 percent of the world's oil every day, forcing us to import oil. We are also

---

[1] *Adjusted Sales of Distillate Fuel Oil by Energy Use in the United States, 1999–2003, www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/current/pdf/table 13.pdf.*

[2] *www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/mogas_home_page.html.*

[3] *Refiner Sales Prices and Refiner Margins for Selected Petroleum Products,* 1988–2004, *www.eia.doe.gov/emeu/aer/pdf/pages/sec5_53.pdf.*

[4] *www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=109&session=1&vote=00213.*

[5] *www.citizen.org/cmep/energy_enviro_nuclear/electricity/energybill/2005/articles.cfm?ID=13980.*

[6] *www.opensecrets.org/industries/indus.asp?Ind=E01.*

[7] *Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and Reserves and the Extent and Nature of Restrictions or Impediments to Their Development,* BLM/WO/GI–03/002+3100, January 2003, *www.doi.gov/news/030116a.htm; www.blm.gov/nhp/spotlight/epca/EPCA_fact_sheet_draft06.htm.*

the third largest oil producing nation in the world, providing us with 42 percent of our daily oil and gasoline needs.[8]

Middle Eastern OPEC nations supply only 14 percent of America's oil and gas. Other OPEC nations—Indonesia, Nigeria, Venezuela—supply 13 percent, and non-OPEC nations—such as Canada, Mexico, Norway, and England—provide 31 percent of our oil and gas needs.[9]

So it isn't so much an OPEC oil cartel, but rather a corporate cartel that should concern policymakers. Consider that the top five oil companies also produce 14 percent of the world's oil. Combined, these five companies produce 10 million barrels of oil a day—more than Saudi Arabia's 9 million barrels of oil a day.

The consolidation of downstream assets—particularly refineries—also plays a big role in determining the price of a gallon of gas. Recent mergers have resulted in dangerously concentrated levels of ownership over U.S. oil refining.

In 1993, the five largest U.S. oil refining companies controlled 34.5 percent of domestic oil refinery capacity; the top ten companies controlled 55.6 percent. By 2004, the top 5—ConocoPhillips, Valero, ExxonMobil, Shell and BP—controlled 56.3 percent and the top ten refiners controlled 83 percent. As a result of all of these recent mergers, the largest 5 oil refiners today control more capacity than the largest 10 did a decade ago. This dramatic increase in the control of just the top five companies makes it easier for oil companies to manipulate gasoline by intentionally withholding supplies in order to drive up prices. Because most of the largest companies are also vertically integrated, they enjoy significant market share in oil drilling and retail sales.

The proof is in the numbers. Profit margins for U.S. oil refiners have been at record highs. In 1999, U.S. oil refiners made 22.8 cents for every gallon of gasoline refined from crude oil. By 2004, they were making 40.8 cents for every gallon of gasoline refined, a 79 percent jump. It is no coincidence that oil corporation profits—including refining—are enjoying record highs.

Consumer advocates like Public Citizen aren't the only ones saying this. A May 2004 U.S. Government Accountability Office report[10] agreed with Public Citizen that recent mergers in the oil industry have directly led to higher prices. It is important to note, however, that this GAO report severely *underestimates* the impact mergers have on prices because their price analysis *stops* in 2000—long before the mergers that created ChevronTexaco, ConocoPhillips, and Valero-Ultramar/Diamond Shamrock-Premcor.

And in March 2001, the U.S. Federal Trade Commission concluded in its *Midwest Gasoline Price Investigation*:[11]

> The completed [FTC] investigation uncovered no evidence of collusion or any other antitrust violation. In fact, the varying responses of industry participants to the [gasoline] price spike suggests that the firms were engaged in individual, not coordinated, conduct. Prices rose both because of factors beyond the industry's immediate control and because of conscious (but independent) choices by industry participants . . . each industry participant acted unilaterally and followed individual profit-maximization strategies . . . It is not the purpose of this report—with the benefit of hindsight—to criticize the choices made by the industry participants. Nonetheless, a significant part of the supply reduction was caused by the investment decisions of three firms . . . One firm increased its summer-grade RFG [reformulated gasoline] production substantially and, as a result, had excess supplies of RFG available and had additional capacity to produce more RFG at the time of the price spike. This firm did sell off some inventoried RFG, but it limited its response because selling extra supply would have pushed down prices and thereby reduced the profitability of its existing RFG sales. *An executive of this company made clear that he would rather sell less gasoline and earn a higher margin on each gallon sold than sell more gasoline and earn a lower margin. Another employee of this firm raised concerns about oversupplying the market and thereby reducing the high market prices. A decision to limit supply does not violate the antitrust la ws, absent some agreement among firms. Firms that withheld or delayed shipping additional supply*

---

[8] U.S. *Petroleum Balance, 2004, www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/table_01.pdf.*

[9] *Net Imports of Crude Oil and Petroleum Products in the United States by Country, 2004, www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/table_29.pdf.*

[10] *Effects of Mergers and Market Concentration in the U.S. Petroleum Industry,* GAO–04–96, *www.gao.gov/new.items/d0496.pdf.*

[11] *www.ftc.gov/os/2001/03/mwgasrpt.htm.*

in the face of a price spike did not violate the antitrust laws. In each instance, the firms chose strategies they thought would maximize their profits.

Although Federal investigators found ample evidence of oil companies intentionally withholding supplies from the market in the Summer of 2000, the government has not taken any action to prevent recurrence.

A Congressional investigation uncovered internal memos written by major oil companies operating in the U.S. discussing their successful strategies to maximize profits by forcing independent refineries out of business, resulting in tighter refinery capacity. From 1995–2002, 97 percent of the more than 920,000 barrels of oil per day of capacity that has been shut down were owned by smaller, independent refiners. Were this capacity to be in operation today, refiners could use it to better meet today's reformulated gasoline blend needs.

An internal Mobil document helps explain why independent refineries had such a tough time. The Mobil document highlights the connection between an independent refiner producing cleaner burning California Air Resources Board (CARB) gasoline, the lower price of gasoline that would result from the refinery being in operation, and the need to prevent the independent refiner from operating:

> If Powerine re-starts and gets the small refiner exemption, I believe the CARB market premium will be impacted. Could be as much as 2–3 cpg (cents per gallon) . . . The re-start of Powerine, which results in 20–25 TBD (thousand barrels per day) of gasoline supply . . . could . . . effectively set the CARB premium a couple of cpg lower . . . Needless to say, we would all like to see Powerine stay down. Full court press is warranted in this case.[12]

FTC Not Adequately Protecting Consumers

At the same time that the FTC concludes that refining markets are uncompetitive, the agency consistently allows refining capacity to be controlled by fewer hands, allowing companies to keep most of their refining assets when they merge, as a recent overview of FTC-approved mergers demonstrates.

The major condition demanded by the FTC for approval of the August 2002 ConocoPhillips merger, was that the company had to sell two of its refineries—representing less than 4 percent of its domestic refining capacity. Phillips was required only to sell a Utah refinery, and Conoco had to sell a Colorado refinery. But even with this forced sale, ConocoPhillips remains by far the largest domestic refiner, controlling refineries with capacity of 2.2 million barrels of oil per day—or 13 percent of America's entire capacity.

The major condition the FTC set when approving the October 2001 ChevronTexaco merger, was that Texaco had to sell its shares in two of its joint refining and marketing enterprises (Equilon and Motiva). Prior to the merger, Texaco had a 44 percent stake in Equilon, with Shell owning the rest; Texaco owned 31 percent of Motiva, with the national oil company of Saudi Arabia (Saudi Aramco) also owning 31 percent, and Royal Dutch Shell owning the remaining 38 percent. The FTC allowed Shell to purchase 100 percent of Equilon, and Shell and Saudi Aramco bought out Texaco's share of Motiva, leaving Motiva a 50–50 venture between Shell and Saudi Aramco.

Prior to the merger, Texaco's share of Equilon and Motiva refinery capacity equaled more than 500,000 barrels of oil per day—which was simply scooped up by another member of the elite top five companies, Shell. Had the FTC forced Texaco to sell its share to a smaller, independent company, the stranglehold by the Nation's largest oil companies could have been weakened.

As a condition of the 1999 merger creating ExxonMobil, Exxon had to sell some of its gas retail stations in the Northeast U.S. and a single oil refinery in California. Valero Energy, the Nation's fifth largest owner of oil refineries, purchased these assets. So, just as with the ChevronTexaco merger, the inadequacy of the forced divestiture mandated by the FTC was compounded by the fact that the assets were simply transferred to another large oil company, ensuring that the consolidation of the largest companies remained high.

The sale of the Golden Eagle refinery was ordered by the FTC as a condition of Valero's purchase of Ultramar Diamond Shamrock in 2001. Just as with ExxonMobil and ChevronTexaco, Valero sold the refinery, along with 70 retail gas stations, to another large company, Tesoro. But while the FTC forced Valero to sell one of its four California refineries, the agency allowed the company to purchase Orion Refining's only refinery in July 2003, and then, just last month, approved Valero's purchase of the U.S. oil refinery company Premcor. This acquisition of Orion's Lou-

[12] *http://wyden.senate.gov/leg_issues/issue/special.html.*

isiana refinery and Premcor defeats the original intent of the FTC's order for Valero to divest one of its California refineries.

Over-the-Counter Energy Disclosure Is Underregulated

Contracts representing hundreds of millions of barrels of oil are traded every day on the London and New York trading exchanges. An increasing share of this trading, however, has been moving off regulated exchanges such as the New York Mercantile Exchange (NYMEX), and into unregulated Over-the-Counter (OTC) exchanges. The Bank of International Settlements estimates that in 2004, the global OTC market has grown to over $248 *trillion.* Growth in global OTC derivatives markets has averaged 31.6 percent since 1990.[13] Traders operating on exchanges like NYMEX are required to disclose significant detail of their trades to Federal regulators. But traders in OTC exchanges are not required to disclose such information allowing companies like Goldman Sachs, Morgan Stanley and hedge funds to escape Federal oversight and more easily engage in manipulation strategies.

A recent Congressional investigation concluded that "crude oil prices are affected by trading not only on regulated exchanges like the NYMEX, but also on unregulated OTC markets that have become major trading centers for energy contracts and derivatives. The lack of information on prices and large positions in OTC markets makes it difficult in many instances, if not impossible in practice, to determine whether traders have manipulated crude oil prices."[14]

Public Citizen has supported efforts to re-regulate energy trading by subjecting OTC markets to tougher oversight. But the latest such effort, an amendment to the energy bill, was rejected by the Senate by a vote of 55–44 in June 2003.[15]

The Commodity Futures Trading Commission has a troublesome streak of "revolving door" appointments and hiring which may further hamper the ability of the agency to effectively regulate the energy trading industry. In August 2004, CFTC Chairman James Newsome left the Commission to accept a $1 million yearly salary as President of NYMEX, the world's largest energy futures marketplace. Just weeks later, Scott Parsons, the CFTC's Chief Operating Officer, resigned to become Executive Vice President for Government Affairs at the Managed Funds Association, a hedge-fund industry group that figures prominently in energy derivatives markets. Such prominent defections hampers the CFTC's ability to protect consumers.

Raise Fuel Economy Standards To Lower Our Oil Consumption

Due to increasing numbers of gas-guzzling SUVs on America's roads and the absence of meaningful increases in government-set fuel economy standards, America's fuel economy standards are lower today than a decade ago.

The Environmental Protection Agency found that the average fuel economy of 2005 vehicles is 21 miles per gallon (mpg), compared to 22.1 mpg in 1988—a 5 percent decline.[16] This drop is attributable to the fact that fuel economy standards haven't been meaningfully increased since the 1980s. And sales of fuel inefficient SUVs and pickups have exploded: in 1987, 28 percent of new vehicles sold were light trucks, compared to 50 percent in 2005.

Billions of gallons of oil could be saved if significant fuel economy increases were mandated. Improving fuel economy standards for passenger vehicles from 27.5 to 40 mpg, and for light trucks (including SUVs and vans) from 22.2[17] to 27.5 mpg by 2015 (for a combined fleet average of 34 miles per gallon), would reduce our gasoline consumption by one-third. But the U.S. Senate soundly rejected such a move on June 23, 2005 by a vote of 67 to 28 (5 abstentions).[18]

Dramatic reductions in consumption will not only reduce strain on America's refinery output, but also on Americans' pocketbooks. Comparing two Americans with identical driving habits, one driving an SUV and one a regular passenger car, reveals that the person driving the passenger car saves $510 a year due to the superior fuel economy of passenger cars compared to light trucks.

---

[13] *www.financialpolicy.org/fpfspb25.htm.*

[14] *U.S. Strategic Petroleum Reserve: Recent Policy Has Increased Costs to Consumers But Not Overall U.S. Energy Security, www.access.gpo.gov/congress/senate/senate12cp108.html.*

[15] *www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=108&session=1&vote=00218*

[16] *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2005,* EPA420–R–05–001, July 2005, *www.epa.gov/otaq/cert/mpg/fetrends/420r05001.pdf.*

[17] On March 31, 2003, the U.S. Department of Transportation issued new light truck fuel economy standards, increasing the standard from 20.7 to 21.0 mpg for Model Year (MY) 2005, to 21.6 mpg for MY 2006, and to 22.2 mpg for MY 2007.

[18] *www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=109&session=1&vote=00157.*

The CHAIRMAN. Thank you, Mr. Slocum.

Now, next is Guy Caruso, from Energy Information Administration. Nice to see you again, Mr. Caruso.

STATEMENT OF GUY CARUSO, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. CARUSO. Thank you very much, Mr. Chairman. It's a pleasure to be here to present the Energy Information Administration's views of the energy developments in the aftermath of Katrina.

Of course, we don't know what's going to happen with Hurricane Rita, but it certainly adds another element of uncertainty to the outlook that I'm about to present.

Even before Katrina, crude oil and petroleum-product prices were setting records. On August 26, the near-month price of crude on the New York Mercantile Exchange closed at over $66, which was more than 50 percent higher than a year earlier. And on August 29, both gasoline and diesel prices were already at about $2.60 per gallon, substantially higher than one year ago. Oil prices worldwide have been rising since 2002, due, in large part, to robust global oil-demand growth, which has used up most of the world's productive capacity for crude oil.

As we sit here today, with the shut-in of the Gulf of Mexico production, the world is operating at virtually 100 percent of productive capacity for crude oil. Refineries also have been running at increasingly high levels of utilization, not only in the United States, but elsewhere, as demand for gasoline and diesel fuel, along with unexpected refinery outages, have caused tightness in both gasoline and diesel fuel markets.

Hurricane Katrina wrought incredible devastation to the central Gulf Coast, particularly in terms of human suffering, but also in economic impacts that have spread well beyond the stricken area. At its peak impact, Katrina had shut down over 25 percent of U.S. crude oil production, almost 20 percent of natural gas production, and 20 percent of imports into the various ports, as well as 10 percent of domestic refinery production. Currently, over 900,000 barrels a day remain shut-in, in the Gulf of Mexico. The four refineries that remain out, and are likely to be out for several months, produce almost 900,000 barrels a day of refined products and about 4 percent of total U.S. gasoline.

In the immediate aftermath of Hurricane Katrina, with the extent of actual damage still unknown, crude oil prices briefly reached over $70 per barrel. Since then, they have fluctuated between $63 and $68, and are currently exhibiting extreme volatility over the uncertainty with respect to Hurricane Rita.

Crude oil prices have come back down a bit because of the better position with respect to inventories—making available Strategic Petroleum Reserve oil and the International Energy Agency's decisions. However, the most significant impact has been on gasoline prices, largely because of the wide spread between the crude oil price and gasoline prices. They reached a peak of $3.07 per gallon, as of Labor Day, but have come down, most recently, to—our most recent survey—to $2.78. This was largely because the main impact of Katrina was on refined product, the system of refineries and dis-

tribution through the Colonial and Plantation Pipelines, as well as the shut down of the Capline, which serves Midwest refineries.

Before Katrina, inventories of gasoline were already very tight, and they have become even tighter as a result of Katrina. Although EIA does not investigate or enforce issues such have been mentioned as being under the responsibility of the FTC or others, we do look at how prices do get passed through to consumers, and have done so over a number of years. And clearly there is a lag effect when there's a spike in crude oil, and particularly in refined product prices. Clearly what we've seen in Katrina exceeds the typical development in market pass-through. However, it's clear that whenever there is a crude oil or product price increase, it does get lagged—there is a lag between the time of the spot wholesale price increase and when it reaches the retailer.

Now, in this case, it—an early look at the data from post-Katrina is that there was both a sharper rise and a sharper fall in retail prices compared to previous situations. So, I think it's largely because of the sheer magnitude of the increase we had at one point—a $1.40 per gallon increase in spot prices for gasoline within just several days—that we've never seen before. So, partly it's the sheer magnitude of the pass-through, as well as the other factors, such as the lag effect, as I mentioned.

Second, independent marketers, who typically have some of the lowest prices in the retail markets, probably were affected a bit more than the branded stations. And that has certainly been seen in many states.

Clearly, the near-term outlook will depend very much on how quickly the refineries come back and our infrastructure recovers. But, even with that recovery, we expect relatively high prices for gasoline and heating oil as we look out into the winter months.

I'd be happy to provide more detail, either through the *Short-Term Energy Outlook,* which we publish every month, or in the Q&A session.

Mr. Chairman, thank you very much, again, for this opportunity.

[The prepared statement of Mr. Caruso follows:]

PREPARED STATEMENT OF GUY CARUSO, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. Chairman and members of the Committee:

I appreciate the opportunity to appear before you today to discuss recent developments in energy markets and the impacts of Hurricane Katrina on gasoline prices.

The Energy Information Administration (EIA) is the independent statistical and analytical agency in the Department of Energy. We do not promote, formulate, or take positions on policy issues, and our views should not be construed as representing those of the Department of Energy or the Administration.

Before I begin I want to note that the outlook for oil markets presented in this testimony does not include any assumption about the potential for significant disruption to energy markets caused by Hurricane Rita.

Even before Hurricane Katrina struck, crude oil and petroleum product prices were setting records. On August 26, the near-month price of crude oil on the New York Mercantile Exchange closed at over $66 per barrel, which was $23 per barrel, or more than 50 percent, higher than a year earlier. On August 29, as the hurricane made landfall, average gasoline prices stood at $2.61 per gallon, 74 cents higher than 1 year earlier, and diesel prices were $2.59, or 72 cents higher. Oil prices worldwide had been rising steadily since 2002, due in large part to growth in global demand, which has used up much of the world's surplus production capacity. Refineries have been running at increasingly high levels of utilization in many parts of the world, including the United States. High production of distillate fuels, and high-

er-than-average refinery outages this Summer, added to tightness in gasoline markets.

Hurricane Katrina wrought incredible devastation on the central Gulf Coast, most importantly in terms of human suffering, but also in economic impacts that have spread well beyond the stricken area. At its peak impact, Katrina shut down over 25 percent of U.S. crude oil production, 20 percent of crude imports, and 10 percent of domestic refinery capacity. Many of these facilities have since restarted, but about 877,000 barrels per day of crude oil production are offline as of September 20 (an increase of about 40,000 barrels since the previous day, as a result of preparations for Hurricane Rita), along with four major refineries with a total distillation capacity of 880,000 barrels per day. At recent historical yields, these four refineries produce approximately 350,000 barrels per day of gasoline, accounting for about 4 percent of total U.S. gasoline production of 8.5 million barrels per day.

In the immediate aftermath of Hurricane Katrina, with the extent of actual damage still largely unknown, crude oil prices rose briefly over $70 per barrel, up more than $4 in less than 48 hours, but in less than a week had fallen below their pre-storm levels. The impact on crude oil prices was undoubtedly lessened by the relatively robust inventory levels before the storm, and by quick assurance that refiners unable to obtain adequate crude oil supplies would be able to borrow by way of time exchanges from the Strategic Petroleum Reserve, even before the coordinated release of stocks by the United States and other members of the International Energy Agency was announced on Friday, September 2.

The more significant price impact, however, was on finished petroleum products, especially gasoline. Spot prices (the level at which large volumes are sold by refiners, importers, and traders) for gasoline rose as much as $1.40 per gallon, east of the Rockies, within 3 days. The sudden increase in product prices, far exceeding the rise in crude oil prices, represented an increase in the so-called "crack spread," defined as the difference between a petroleum product price and the underlying price of crude oil.

EIA survey data showed that the national average retail price for regular gasoline price rose 46 cents in a week to $3.07 per gallon as of Labor Day. While prices rose throughout the country, the East Coast experienced the largest price increase.

The seemingly disproportionate change in finished product prices reflects the severity and expected persistence of Hurricane Katrina's impact on refining operations in the Gulf. Additionally, the shutdown of the Capline, a major crude oil pipeline from Louisiana to the Midwest, reduced crude supplies to refineries there, causing several to temporarily reduce operations. Finally, the temporary closure of the Colonial and Plantation product pipelines virtually halted distribution of products from the Gulf Coast to the lower East Coast, as far north as Baltimore, in the aftermath of Katrina. In the first week following the storm, rumors abounded that supplies would run out, particularly for gasoline, which nearly became a self-fulfilling prophecy as thousands of drivers rushed to top off their tanks. Gasoline inventories, which were already at their seasonal low point before the storm, dropped another 4 million barrels in the next week, with the Southeast, due to its dependence on the refineries and pipelines most affected, showing the largest decline. As of September 9, total gasoline inventories were 192.0 million barrels (data for last week will be released today, September 21). It should be recognized that supplies of all petroleum products will likely remain tight in the coming weeks, and possibly months, although increased imports may make up some of the overall product shortfall.

While recent movements in crack spreads were heavily influenced by the effects of Hurricane Katrina, crack spreads were trending upwards well before the storm struck. As U.S. refineries have operated increasingly close to full capacity and product demand continues to rise, the balance of demand must increasingly be made up from imports. This, in turn, requires a sufficient price differential between the United States and other world markets to attract the needed imports. Although this does not increase the *cost* of refining products in the United States, it does tend to increase the *market value* of finished petroleum products relative to crude oil.

Wholesale petroleum product prices, like those of crude oil, have fallen back from their peak levels. Similarly, the U.S. average retail gasoline price has dropped—by 28 cents per gallon in the past 2 weeks—and, as of Monday, September 19, was about 18 cents higher than its pre-hurricane level.

The speed and amount of gasoline price increases following Hurricane Katrina, particularly when compared to the slower decline over the past few weeks, have suggested to some that price-gouging or other unacceptable behavior might be taking place in gasoline markets. While EIA's mission does not include investigation or enforcement functions, we have long studied the manner in which price changes are passed from wholesale to retail markets for gasoline and diesel fuel and have found

that there are, under normal conditions, very consistent pass-through patterns, which vary somewhat regionally and between products. The key concept is that of a "distributed lag," in which a change in spot prices in a given week is passed through to retail markets over the next several weeks, with the largest portion in the first week, and progressively smaller amounts over the following weeks. Because of this phenomenon, when there is a short-lived spike in spot prices, retail prices in the next week will typically reflect only part of the spike, while those in the next few succeeding weeks will continue to reflect part of the initial spot increase, while also beginning to reflect the subsequent decrease. Thus, even if the speed of pass-through from spot to retail is exactly the same in the upward and downward directions, the retail price path will appear asymmetrical.

If we look at the actual pattern of prices seen to date following Hurricane Katrina, we find that retail gasoline prices both rose *and* fell somewhat more quickly than suggested by the typical gasoline price pass-through pattern described above, and peaked at a higher level. While we have not reached any conclusions about the reason for this (and we are unlikely to ever know the answer with any certainty), there are a few aspects of the situation following Hurricane Katrina that may explain this pattern. One is that under typical market conditions (as reflected in our modeling from historical data), the spot price increase seen in a given week seldom exceeds 10 cents per gallon, whereas average spot prices following Katrina rose by nearly 95 cents in 5 calendar days (only 3 trading days). While marketers might delay somewhat in passing on a single-digit increase, thus absorbing some of the impact by reducing their profit margins, an increase, such as that seen after the storm, goes well beyond profits and would require marketers to raise retail prices by virtually the full amount of their wholesale increase merely to avoid sizable losses. Second, independent marketers, who often represent some of the lowest retail prices in the marketplace, were likely to have been disproportionately affected by the supply shortfall, since they typically do not have as much security of supply as branded marketers. The removal or lessening of this downward pull on retail prices could have had some impact on the speed of price changes, both upward and downward, following Hurricane Katrina.

The changes in crude oil and gasoline prices since Hurricane Katrina are reflected in the change in the relative shares of the various components of retail gasoline prices. In the month of July, crude oil made up about 55 percent of the U.S. average price of a gallon of regular gasoline, while refining costs and profits represented about 18 percent, distribution and marketing 8 percent, and taxes 19 percent. As of September 19, those percentages were approximately: crude oil, 52 percent; refining, 24 percent; distribution and marketing, 8 percent; and taxes, 16 percent. Of the current price composition, only the distribution and marketing component is unusual. Due to the lag in price pass-through, this component is larger as prices are falling, but once prices stabilize, will likely return to a more typical share.

The near-term outlook for oil markets will depend on a number of factors, including the timing and pace of the recovery of the petroleum infrastructure and operations in the Gulf. The rate at which refinery capacity affected by Katrina can be brought back on-line is the major factor affecting petroleum product markets. Although full damage assessments for the four refineries remaining shut down have not yet been possible, early estimates indicate that several of them may be down for months.

Even if the energy system is fully or near fully restored by December, prices for all petroleum products are likely to remain elevated. On September 7, we released our monthly *Short-Term Energy Outlook.* For this *Outlook,* we considered three cases based on the speed of recovery of the energy system from the effects of Hurricane Katrina—Slow, Medium, and Fast Recovery Cases. The Fast Recovery Case assumes a very favorable set of circumstances for returning operations to normal, while the Slow Recovery Case assumes that significant impacts on oil and natural gas production and delivery continue at least into November. In all cases, normal operations are achieved or nearly achieved by December.

The *Outlook* assumes that the loans and releases of crude oil and products from U.S. and other government stocks will help to offset price increases due to Katrina. The WTI crude oil price averaged $65 per barrel in August. In the Medium Recovery Case, we estimate that the WTI will average nearly $70 per barrel for September, and about $65 per barrel for the third quarter of 2005, which is about $20 above the year-ago level and $5 higher than in the previous *Outlook.* We estimate that quarterly average prices will remain above $62 per barrel through 2006.

The national average price of unleaded regular gasoline was $2.49 per gallon in August, with prices generally rising throughout the month well before Katrina impacted refining and production activities—right before Katrina hit, the national average price for regular gasoline was $2.61. Projected gasoline prices in the near-

term are very sensitive to assumptions regarding the pace of recovery from refinery outages caused by Katrina. In the Medium Recovery Case in our new *Outlook,* the September average price for unleaded regular is $2.96 per gallon, with prices roughly 20 cents per gallon lower or higher in the Fast and Slow Recovery Cases. Prices are generally expected to decrease in the fourth quarter, with the monthly national average in the Medium Recovery Case falling to $2.71 per gallon in October, $2.56 in November, and $2.47 in December. The third-quarter average price is $0.69 per gallon higher than in the third quarter of 2004. The band of projections for the alternative recovery cases narrows over time. Looking ahead to 2006, the projected average price is $2.40 per gallon.

This concludes my statement, Mr. Chairman, and I will be happy to answer your questions.

The CHAIRMAN. We find that energy outlook very helpful, so we appreciate that.

Mr. CARUSO. Thank you.

The CHAIRMAN. Mr. Kosh?

STATEMENT OF RONALD W. KOSH, VICE PRESIDENT, PUBLIC POLICY AND GOVERNMENT AFFAIRS, AMERICAN AUTOMOBILE ASSOCIATION (AAA) MID-ATLANTIC

Mr. KOSH. Thank you, Mr. Chairman, Senator Inouye, Senator Lautenberg, Senator Pryor. Good afternoon. I'm Ronald Kosh, Vice President of Public and Government Affairs at AAA Mid-Atlantic, part of the AAA Federation of Auto Clubs. Thank you for the opportunity to address the critical issues of gas prices.

Before addressing my club's local experience in our five-state service area, I'd like to speak on behalf of our national AAA Federation, with over 48 million members across the country.

AAA has several recommendations we think would ease this and future gas crises. These recommendations include that oil companies ensure their pricing yields the type of reasonable profit they need, and that their stockholders deserve, but not an excessive amount. Federal authorities need to relax requirements for blended fuels and release crude oil from the Strategic Petroleum Reserve, which we applaud that they have. Those need to be continued. Local and state authorities must be especially vigilant with regard to any retail pricing abuses that have occurred. And motorists must reduce consumption by using the most fuel-efficient cars, avoiding wasted trips, maintaining their vehicles, and carpooling, when possible. All of us must avoid the impulse to hoard gas or constantly top off our tanks. Even in the best of times, with the refinery capacity strained as it is, there is seldom enough fuel in the system to fill every car and truck vehicle to the top of their tank. And the media must carefully and responsibly cover the situation. Over-reporting random shortages or an incidental supply interruption, provoke panic buying and hoarding, and that only makes the situation worse.

Doing all of these things will not serve our problem in the short-term, but it'll help mitigate it.

Taking a longer view, Congress needs to ensure adequate domestic refinery capacity, and require EPA to modify its mile-per-gallon testing procedures to reflect real-world driving conditions, so motorists have a more accurate reading of the fuel mileage that their vehicles will achieve on today's roads. And we must address the Federal gasoline standards that currently result in a patchwork of

multiple blends that puts additional strains on our already inadequate domestic refining capacity.

Now I'd like to turn to my own club's regional experience. AAA Mid-Atlantic serves 3.6 million members from northern New Jersey to southern Virginia. We serve Maryland, New Jersey, Pennsylvania, Delaware, Virginia, and the District of Columbia.

Through AAA's *Daily Fuel Gauge Report,* AAA has been tracking fuel prices on a daily basis since 1974. In the weeks following Hurricane Katrina, gas prices in our service area, in the entire Mid-Atlantic region, and specifically in the District and in the states that I've mentioned, especially Delaware, New Jersey, and Maryland, have been some of the very highest in the country, with industry explanations woefully inadequate.

Concerns about gouging were raised when retail prices climbed, almost hourly. They were especially heightened in Virginia on the Labor Day weekend. That Friday afternoon, locally, a Shell station in Centreville, started charging $6 a gallon for gas. Virginia officials are investigating that.

Here in the District of Columbia, gas prices have continuously been among the highest in the Nation. In Maryland, next door, prices recently rose, as late as Friday, to the second-highest in the Nation. And they've been similarly high in Delaware and in New Jersey. And in each of these jurisdictions, we've heard industry explanations that don't measure up. And, in some cases, they're almost comically contradictory.

At a hearing before the Maryland House Committee on Economic Matters in that State's General Assembly, an industry representative told legislators that the reason Maryland had some of the highest prices in the Nation was because of its location on the pipeline, and it was heavily dependent on that pipeline. Well, the state hadn't moved since prior to the incident. They also said that gas was more expensive in Maryland because it had no refineries and received little, if any, fuel by ship.

The following day, in Wilmington, the *Delaware News Journal* quoted oil company officials there as saying the reason local gas prices were near highest in the Nation was because Delaware, a state with its own refineries, was served mostly by tankers and barges and didn't get any of its fuel from pipelines.

Then in Maryland, after a meeting with the Governor, oil company representatives assured reporters that the price was demand-driven. That happened almost simultaneously with the Department of Energy reporting that demand was down.

It is those kind of non-answers and contradictory comments that cause your constituents alarm and the public to believe that a smokescreen is the real answer. All the while, the industry is reporting record profits. The reaction is that a natural disaster is merely an excuse. We hope that's not the case. But, absent viable and believable explanations yet to be proffered, it might be the case, and, if that's so, it's unconscionable.

We recognize that gasoline is a commodity product and that it's market-driven. Does it really cost substantially more, though, to get gas to the Mid-Atlantic region? And do motorists here use more gas, have a higher demand than motorists elsewhere? Our demand,

as the largest travel agency in the Mid-Atlantic region, suggests otherwise, and we don't believe that answer buys any credibility.

Could Maryland, with the second-highest prices in the Nation at the time, possibly have a demand that exceeds that of California, Pennsylvania, or Ohio? I don't think so. Yet this region has persistently, during this crisis, had some of the most expensive gas in the Nation, while, in fact, Delaware, Pennsylvania, and New Jersey are in a region with a particularly high concentration of its own refineries.

Last week, when gas prices fell below $3 a gallon in 30 states, Washington, D.C., Maryland, Virginia, Delaware, Pennsylvania, and New Jersey posted gas at the $3 mark and above. And, while there are multiple local refineries—for example, New Jersey has many of its own, and it also has some of the lowest gas taxes in the country, another component of pricing that has been overlooked.

While we recognize the potential for some unscrupulous types to try to take advantage of crisis situations, our view is that such practices are certainly unwarranted, unconscionable, and should not be tolerated. In the wake of such episodes, we warned motorists to report any incidents of price-gouging, and we advised consumers to shop with their steering wheel. Moreover, we've been urging lawmakers at all levels to address such complaints, and do so with dispatch. We've also urged investigations and are working with individuals in the various states we serve and their state's attorneys general offices.

We're going to continue our efforts to assist those officials in their quest for an accurate answer, why our region has been the highest in the Nation, and why, with often lower gas prices, they're still higher than their neighbors.

We thank you for beginning the investigation into gas prices. We believe that scrutiny by this Committee, by Congress, and by state legislatures will be part of the solution. We also believe that taking advantage of motorists in a time of national emergencies should be illegal, and applaud your efforts to address it.

Thank you for the opportunity, and I'll—as I see the red light's on, you can enter my full remarks in the record.

[The prepared statement of Mr. Kosh follows:]

PREPARED STATEMENT OF RONALD W. KOSH, VICE PRESIDENT, PUBLIC AND GOVERNMENT AFFAIRS, AMERICAN AUTOMOBILE ASSOCIATION (AAA) MID-ATLANTIC

Mr. Chairman, members of the Committee:

Good afternoon, I'm Ronald W. Kosh, Vice President for Public and Government Affairs at AAA Mid-Atlantic, part of the AAA federation of auto clubs. Thank you for the opportunity to address the critical issue of gas prices. Almost nothing hits home harder with AAA members than gas prices—especially the extremely high gas prices we're seeing now. But before addressing my club's experience in our territory, I want to speak on behalf of our AAA federation with over 48 million members.

Our federation has several recommendations that we think would ease this and future gas crises. Those recommendations include:

- *Oil companies* must ensure that their pricing yields what they need and deserve, but not more.
- *Federal authorities* needed to relax requirements for blended fuels and release crude oil from the Strategic Petroleum Reserve. We applaud that they have.

- *Local authorities* must be vigilant with regard to any retail pricing abuses which may occur. Also, they must be prepared to institute fuel purchase management programs if the need arises.
- *Motorists* must reduce consumption by using their most fuel-efficient car, avoiding unnecessary trips, maintaining their vehicle, driving "gently" and car-pooling whenever possible.

  We should also avoid the impulse to hoard gas or constantly top off tanks. Even in the best of times there is not enough fuel in the system to fill every car and truck to the top of their fuel gauge.
- The *media* must carefully cover the situation. Over-reporting a limited number of shortages may provoke panic buying or hoarding, and that will only make the situation worse.

Doing all of these things will not solve our short-term problems, but can help mitigate their impact. Taking a longer view, Congress needs to require EPA to modify its MPG testing procedures to accurately reflect real-world driving conditions, so motorists can have a more accurate reading of the fuel mileage their vehicle will achieve on today's roads. And, we must address the Federal standard for clean gasoline that currently results in a patchwork of fuel blends that puts additional strains on our already strained refining capacity.

The AAA Mid-Atlantic Experience

Now, I would like to turn to my own club's experience. AAA Mid-Atlantic serves 3.6 million members in Delaware, Maryland, New Jersey, Pennsylvania, Virginia and the District of Columbia. Through AAA's *Daily Fuel Gauge Report* our club has tracked fuel prices daily since 1974.

In the weeks following Hurricane Katrina, gasoline prices in our territory—specifically, in D.C., Delaware and Maryland have been some of the very highest in the Nation, with industry explanations woefully inadequate. Absent a satisfactory explanation, motorists are left with few answers outside of excess profit-taking.

Concerns about price-gouging were raised and heightened in Virginia on Labor Day weekend. That Friday afternoon, a Shell station in Centreville, started charging nearly $6 for a gallon of gas. Virginia officials are now investigating that gas station.

In the District of Columbia, gas prices for many days have been the most expensive in the Nation. In Maryland, prices recently rose to second highest in the nation, and in Delaware they were as high as third in the Nation. In each of these jurisdictions, we have heard the industry's explanations and they don't measure up, and in some instances appear contradictory.

- At a hearing before the Maryland House Committee on Economic Matters, an industry representative told legislators that the reason Maryland had some of the highest prices in the Nation was because of its location on the pipeline. They also said that gas was more expensive in Maryland because it has no refineries and got very little petroleum in by ship or barge and was so heavily dependent on the pipeline.
- In Wilmington, the *Delaware News Journal* quoted oil company officials as saying the reason that Delaware's gas prices were near the highest in the Nation was because the state had refineries and was served mostly by tankers/barges and did not get its petroleum from the pipeline.
- In Maryland, after a meeting with the Governor, oil company representatives assured reporters that the prices were demand-driven.

It is these kinds of non-answers and contradictory comments that cause us concern, and cause us to believe that they may be a smoke screen for the real answer: the industry is making huge profits on the backs of motorists in these states, using a national disaster in the Gulf as an excuse. We hope that is not the case, but absent viable explanations yet to be proffered by the industry; we are left with this troubling possibility. If true, it is unconscionable and should be illegal.

Does it cost the companies any more to get gas to the mid-Atlantic region? No. Do motorists here use more gas—*i.e.,* have a higher demand than motorists elsewhere? No. Could Maryland with the second highest prices in the Nation at the time possibly have a demand that exceeds that of California, Pennsylvania, Ohio? Of course not. Yet this region has persistently, during this crisis, had some of the most expensive gas in the Nation.

Last week when gasoline prices fell below $3.00 per gallon in 30 states, Washington, D.C., Maryland, Virginia, Delaware, Pennsylvania, and New Jersey posted gas at the three-dollar mark and above.

AAA Mid-Atlantic recognizes the potential for some unscrupulous owners and vendors to try to take advantage of crisis situations to make a bigger profit. In our view, such practices should be illegal, and are certainly unwarranted, and unconscionable. They should not be tolerated.

In the wake of such episodes, we warned motorists to watch for and report any incidents of price-gouging. We also advised consumers to avoid those gasoline stations by shopping with their steering wheel.

Moreover, we have urged state and local officials in our territory to investigate such complaints. We have also urged investigations in and are working with officials in D.C., Delaware, Maryland, and Virginia, including, legislators and the state's Attorneys General offices.

AAA Mid-Atlantic is actively monitoring the situation in our region and will continue its efforts to assist officials there in their quest for the truth about why gas, particularly in D.C., Maryland, and Delaware has been the highest or near highest in the nation, when their neighbors, who draw their gas, often from the same sources, are much lower.

We thank you for investigating gas prices, because we believe scrutiny—by Congress, by state legislators and state's attorneys general will be part of the solution. We also believe that taking advantage of motorists with outrageous profit making in a time of national emergencies should be illegal and applaud your efforts to make it a crime.

Thank you for the opportunity to testify before you today.

The CHAIRMAN. Well, thank you very much. What shall we say—we don't have as many people—shall we say 6 minutes apiece, to start with? I don't know who's coming in. All right?

Mr. Slaughter, what's your answer to Mr. Kosh? Why is the Mid-Atlantic singled out? Do they have different salary levels? Do they have different transportation problems? Why should the Mid-Atlantic region have a different price structure?

Mr. SLAUGHTER. I really don't know why they would have a different price structure, Senator. I live here, as well, and purchase gasoline in the area. The—you know, Maryland does not have refineries. There are refineries in New Jersey, which Mr. Kosh mentioned. It is more or less near the end of the Colonial Pipeline system, but, you know, the fact of the matter is, Senator, that the decisions that are made at the retail level in the gasoline service stations are made by independent businessmen and businesswomen. There are about 168,000 service stations in the United States, and only about 10 percent of them are owned and operated by refining companies. The rest are—basically, product is sold for resale by independent businesspeople who make their own decisions. And, you know, I think we've seen, since the—since Katrina—and certainly it has been stated today—there is pervasive attention being given to pricing of gasoline all over the United States. There are gouging hotlines that have been set up. I have been testifying now at three hearings, at which this has been a major concern of Members of Congress who are questioning. The FTC, this morning, explained their price-monitoring project in 360 American cities that was set up before Katrina and has been continuing. So, you know, I think there's going to be a great deal of scrutiny given to this practice. We believe that the market pricing system we have has been dealing with a very difficult supply situation caused by Katrina. It had a major impact on the energy infrastructure of the country. Five percent of our refining capacity is not yet back up. A significant amount, 60 percent, of our crude production capacity in the Gulf is still not functioning. So, there still are major outages that are occurring. And—again, as Mr. Caruso referred to, the magnitude of what has happened to the system; but if there are

anomalies, there are people who are looking at every allegation of inappropriate pricing, and there's every reason to believe that that will continue. And, indeed, the recent energy bill has a requirement, as was mentioned today, for the FTC to look at allegations such as these.

The CHAIRMAN. Thank you.

Mr. Kosh, if it's any consolation to you, I go back and forth to Alaska quite a bit. The price in the District of Columbia is pretty high, but it's always higher in Anchorage, and we produce the oil. So, you know——

Mr. KOSH. Well, you should be back there yesterday, Mr. Senator. In Alaska's average data, it was $2.80. So, it was actually pretty favorable pricing.

The CHAIRMAN. It's coming down, good. I'm going home tomorrow.

[Laughter.]

The CHAIRMAN. Mr. Slocum, this morning we had testimony that indicated that the price in Europe is very high, probably—it exceeds $7 a gallon, and that the net result of that is smaller cars, greater gas mileage and greater conservation. I like low prices, too, but should we look at price as being a disincentive to increasing demand?

Mr. SLOCUM. Sure, but I'm not sure that the ends justify the means. Europe has much higher gasoline prices because their level of taxation on gasoline products is——

The CHAIRMAN. Well, that's a disincentive.

Mr. SLOCUM.—significantly higher.

The CHAIRMAN. That's a disincentive.

Mr. SLOCUM. And I think that there's no question that one key to sustained economic growth in the United States throughout the 20th century was sustained levels of very reasonably-priced fuel and other energy products. It has been a key to continued U.S. economic development. And Public Citizen is—we are a consumer advocacy group. We understand that there are some benefits to higher prices, but not when it comes at the expense of consumers, particularly middle- and lower-income consumers, who are going to be hit the hardest. And when you combine rising gasoline prices with the upcoming crisis in natural gas for this Winter, you're going to have millions of Americans who literally are going to be making decisions this Winter whether they're going to buy food, whether they're going to pay their rent or their mortgage, or whether they're going to pay their utility bill. Congress needs to understand that there is going to be a major financial crisis this winter, when you combine rising gasoline and other energy prices and natural gas prices. It is going to be an epidemic. And until we start dealing with it by examining uncompetitive practices in the industry, I think that we are setting ourselves up for a serious economic shock.

The CHAIRMAN. Has Public Citizen supported increasing oil supplies, such as drilling offshore or exploring for oil in my state?

Mr. SLOCUM. Well, considering that the United States is already the third-largest producer of crude oil in the world, I'm not so sure that increasing crude oil production is going to get us out of this jam.

The CHAIRMAN. I don't think——

Mr. SLOCUM. I would much——

The CHAIRMAN.—I don't think your figure is accurate.

Mr. SLOCUM. Well, the—my figures come from the Energy Information Administration.

The CHAIRMAN. Is that right, Mr. Caruso? We're the third-largest producer of crude in the world?

Mr. CARUSO. That's accurate. They are Saudi Arabia, Russia, and the United States, in that order. Yes, sir.

Mr. SLOCUM. The problem is, is that we are, far and away, the largest consumer of oil. We use 25 percent of the world's oil every day. So, until you deal with demand, which—rising prices, sure, that's going to——

The CHAIRMAN. You didn't answer my question. Did you support additional supplies, or not?

Mr. SLOCUM. No, I did not support it, because I don't think that increasing supplies of crude is the long-term answer, Mr. Chairman.

The CHAIRMAN. I see.

Mr. Kosh, what would you suggest we do about the Mid-Atlantic? This is my last question.

Mr. KOSH. Well, as of—the numbers I mentioned earlier were as of the end of last Friday—as of yesterday, they dropped somewhat, although—and now the Pacific Coast is the highest price—highest region in the country.

One of the things that we have—we've asked for—and—is to provide additional capacity—and, in fact, if you watched the markets last week, the exchanges, they were talking about the prospect of glut, come October. Now, Rita has changed that, as of this week. The prices have been ratcheting around, and they've taken a sudden spike upwards.

One of the things that we have been watching, too, was the spread between the wholesale price and the retail price. Once the entire situation unfolded, that spread widened. It widened. Not only did the wholesale price dramatically increase, there also seemed to be a significant spread at the retail level, as well. And our—we have not been able to see what the justification for that was, either.

The CHAIRMAN. Senator Inouye?

STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

Senator INOUYE. Thank you.

We've been told, all day long, that the supply is insufficient, the demand is constant. And then others would say that that's the situation because we don't have enough refineries. And I note that, in 1981, there were 324 refineries; 2002, there were 153. And yet your profit margin, Mr. Slaughter, according to the record, is the highest ever in your history. Why is the number down? Why aren't——

Mr. SLAUGHTER. The number——

Senator INOUYE.—why aren't they building more refineries?

Mr. SLAUGHTER. There are about 149 refineries now, Senator Inouye. There has been considerable investment in refining over

the last 20 years. For example, between 1985 and 1995, a million barrels was added.

Senator INOUYE. Is your profit margin too low to justify building other refineries?

Mr. SLAUGHTER. Yes—well, sir that was the case, for a significant period. Before 2003, 2004, and 2005, the return-on-investment in the refining industry was 5 percent or lower, which, basically, was a very, very low return-on-investment. And the industry was also saddled with extremely large investment requirements for environmental programs, which were good programs, but it was not a part of the industry that you went into to make a significant amount of money, or, really, any money at all, in several years. The exploration and production part of the business, for instance, had much higher returns than refining.

Nevertheless, refiners did invest money in the plants at those times, and did make slight increases in capacity. As I said, we added a million barrels of capacity in that 10 years, even under bad profit conditions. That's the equivalent, sir, of adding several large refineries in the U.S., except this capacity was added at existing sites.

We think—we hope that, with the better returns that you've mentioned in the last couple of years, that there will be increased refining investment this year and in the years to come, because people will see better returns coming from that investment than we've seen in the last 15 years before.

Senator INOUYE. Is the profit margin sufficient now?

Mr. SLAUGHTER. Well, judging from the anecdotal evidence we have, where people are announcing increases in refining capacity at existing facilities in the United States—and there are rumors that additional capacity increases will be announced—it looks as if it's getting to be that way, yes, sir, that we're out of that 10-year period in which there was insufficient return to justify investment. But investors are still going to have to ask themselves whether—these are long-lived assets—whether the 10 years to come are going to be more like the bad 10 years or more like the last two. But I think the answer is that more will say there are going to be more years like the last two, and, therefore, there will be more investment and refining.

The CHAIRMAN. Would you let me interrupt just a minute?

Senator INOUYE. Sure.

The CHAIRMAN. Could you give us a summary of the recommendations you've made in all those reports?

Mr. SLAUGHTER. Yes, I'd be glad to.

The CHAIRMAN. Thank you.

Senator INOUYE. Mr. Kosh, you've described the price hikes as unconscionable and unacceptable. You have also issued a press released, on September 9, in which you suggested, from reports you received from dealers, that big companies were dictating price hikes. Are you suggesting that there has been price-gouging?

Mr. KOSH. Well, I think the word "gouging" means different things to different people. There have been incidents that we've been aware of, as recently as over the weekend, reported in the *Philadelphia Inquirer,* for example, where there were dealers who had distribution contracts with certain producers that actually cov-

ered their—those producers' brands up and were buying off the wholesale market, un-branded product and selling it there, because they were being charged a price that didn't allow them to meet those other prices that were in the market and make a sufficient margin. There were not—it appears, as I mentioned, based on my earlier comment, between that spread at the retail—wholesale/retail, but there are also all sorts of indications, even before Rita became a member of the current scene, we were starting to see allocations, that some of the producing companies were imposing allocations upon their distributors.

So, I think it bears scrutiny at all levels, Senator.

Senator INOUYE. Beyond scrutiny, what do you suggest?

Mr. KOSH. Well, I made some recommendations earlier, and I'd be happy to provide those, in a written standpoint.

Senator INOUYE. Are you suggesting that what has transpired may constitute illegal action?

Mr. KOSH. Well, I think we heard earlier as to—the debate as to what is illegal under current antitrust and those, whether there are sufficient laws there. I think that's where the—I think, for your body, and the Members of the House on the other side, to determine that.

Senator INOUYE. Would you suggest that it constitutes conspiracy or collusion?

Mr. KOSH. Well, we're not going that far. We don't have any information to suggest that's the case.

Senator INOUYE. Mr. Caruso, now, with Rita, what sort of gas price am I going to be paying?

Mr. CARUSO. Well, that's very difficult to say, of course, without knowing where Rita will make landfall. But, clearly, the parts of Texas, where Rita now is headed, actually have larger refinery capacity than those refineries that Katrina affected. So, there's—again, this is pure speculation—there's a risk that we could have a substantial impact on additional refineries. So, again, depending on where it makes landfall, it certainly could impact gasoline supplies. And, as several people have mentioned already, we're already in an extremely tight situation, so we clearly cannot afford any further disruption in gasoline production capability.

Senator INOUYE. What percentage of the refinery capacity was affected by Katrina?

Mr. CARUSO. Initially, about two million barrels a day, which is about—a little more than 10 percent. Now, there are four refineries still out of service, and they constitute about 900,000 barrels a day, which is about 5 percent of the total refining capacity. And they make about 4 percent of our gasoline production in this country, those four refineries.

Senator INOUYE. And that production, do you believe, constitutes a justifiable reason for these price hikes?

Mr. CARUSO. Well, there's—it's far more complicated than just those four refineries. There were two major product pipelines—Colonial and Plantation—which serve much of the Southeast and much of Mid-Atlantic, including Maryland and D.C., so that the highest price impacts were—you could almost map it out—they were along those two pipelines. There may have been specific instances, which Mr. Kosh refers to, which I'm not familiar with. We

collect data on a regional basis, as we do for most states. But most of the largest impact took place along those two pipelines, but, because we have a national market for wholesale and retail gasoline, gasoline prices spread quickly. Even states that had no effect from Colonial, or Plantation, suffered from the economic cost of the rising market. In fact, there were rises in the price of gasoline on a global market. So, that's part of the answer—it's not the whole answer—as to the question why can you be in an unaffected area and still have very high price increases, because of the fungibility of the product. The specific instances, I couldn't comment on, because I don't have enough information about that.

I think another point is that Mr. Slocum mentioned how we benefited from many decades of low energy prices in this country, and it clearly had a lot to do with the very strong economic growth, even in the 1990s. But the downside that has been mentioned by Mr. Slaughter, among others, was the lack of investment in infrastructure. And it has really put us in the position we're in now, where a terrible event like Katrina devastated an infrastructure that was already being operated so close to full capacity that it didn't take a lot. And when you get a catastrophe, the—as the economists would say—the low price elasticity of gasoline, in particular, means small changes in supply or demand can make huge changes in price.

Thank you.

Senator INOUYE. I thank you very much.

I notice my time is up. I'll wait for my second——

The CHAIRMAN. Yes.

Mr. Slaughter, how much refining capacity is in the Galveston area?

Mr. SLAUGHTER. Well, there's—about 25 percent of U.S. refining capacity is in Texas Gulf of Mexico. And in the Houston area itself, you have about 10 percent. Significant facilities, I mean, including, you know, Baytown, which is the largest refinery in the United States, is in that area. There are a number of refineries in Corpus Christi and Galveston.

The CHAIRMAN. Thank you.

Mr. SLAUGHTER. The good news is that much of the area, though, is not below sea level. I mean, that may be a plus in this area.

The CHAIRMAN. The bad news, it's a Category 4.

Mr. SLAUGHTER. Yes, sir.

The CHAIRMAN. Senator Lautenberg?

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Thanks, Mr. Chairman.

Mr. Slaughter, you deny that there is likely to be, or could be, any price-gouging in the industry, and you don't see it that way. Could you give me a definition of "price-gouging"? What constitutes price-gouging, as you see it?

Mr. SLAUGHTER. I think you've raised a very good question, Senator Lautenberg, because it's difficult to define. There is obviously, you know, some kind of extreme aberrant pricing behavior that's unjustified by any market forces. And, oftentimes, people——

Senator LAUTENBERG. How would you define it?

Mr. SLAUGHTER. People—I'm sorry?

Senator LAUTENBERG. How would you—I mean, I hear—can it be described in price terms? Can it be described in the cost of—for energy included in the average family budget? What is—most of us think of oil as a—fuel as a commodity. Most commodities wind up being regulated if they're determined to be necessary for life—quality of life. I mean, we see it with the electricity in States that typically have controls on the pricing. And I'm not advocating, I'm just curious about—I can tell you this, that when I talk to constituents or people I know who are ordinary working folk, and they say they're being gouged. Now, to them it's a price gouge if it consumes a significantly larger part of their income than it used to. And I just wondered what the industry—because if you deny that it's being done, then there must be a definition of what "gouging" constitutes.

Mr. SLAUGHTER. The difficulty, Senator, is that it means different things to different people. And the problem is that if you tried to regulate it, you can end up with price—what are essentially price controls. You deem what is an acceptable return or an acceptable price and what is not, and we're back into the price-control situation that we were in, in the 1970s, for gasoline and diesel, crude oil, and also for natural gas—which didn't work very well.

So, the problem is, a lot of this is in the eye of the beholder, and it's difficult to define.

Senator LAUTENBERG. Well, now, since we represent beholders here, it's a——

[Laughter.]

Senator LAUTENBERG.—we have to, kind of, find out what the people who represent the industry think. And it—price-gouging can be conspiratorial, it can be caused by the price of crude, can be—there are lots of ways that you can get inordinate increases in the cost of the commodity, and it doesn't necessarily constitute an illegal or an inappropriate act. And I'm just wondering at what point the industry thinks that—is it a profit margin? I used to run a very successful company before I came here, when I was able to make a living, and the—our company had—our company had the——

The CHAIRMAN. Our sympathy.

Senator LAUTENBERG. Sympathy? I know. Thank you, Senator Stevens. I knew you would understand. The——

The CHAIRMAN. Just barely making a living.

[Laughter.]

Senator LAUTENBERG. We had a 13 percent return on revenues, after tax and—pretty good-sized company, now 40,000 employees. What constitutes a good profit margin? You know, because we hear things like, "Well, return on investment." But you don't have to have a huge return in order to make a ton of money if the market's controlled, controlled by whatever factors. And it mystifies me, honestly, to try to understand how it happened that gasoline, fuel oil, the expectation for heating oil prices, have jumped as they have when suddenly someone said, "Hey, you know what? We didn't have enough refining capacity before, and it has gotten worse by Katrina and other uncontrollable events." But—you're talking about, now, the industry building more refining capacity—but don't

these things take a long time to plan, design, build? How long—what's the cycle?

Mr. SLAUGHTER. They do. You—it would depend on how much capacity you're adding at an existing site. If you were going to build a whole new refinery, which hasn't been done in 30 years, you're talking about at least, you know, something close to 10 years. You can add capacity in 3 or 4 years, but it does take awhile to do even that, Senator. And, you know, if you look at some of the estimates, I mean, most of the price of these products are driven by the price of crude oil. And EIA is basically stating that they expect high crude oil prices at least through the next year, if not beyond. And——

Senator LAUTENBERG. But you did say, earlier, that you're in the process—the industry's in the process of expanding capacity.

Mr. SLAUGHTER. Yes, sir.

Senator LAUTENBERG. So, therefore, somebody thought about it a couple of years ago, if it's in the process of expanding it, and that wasn't related to the current price of the—of crude.

Mr. SLAUGHTER. Most of these capacity additions have been announced recently, and are still in the process of being announced. The problem was, 2 years ago, of course, you had only maybe one year of relatively decent returns and 15 years of very poor returns, so it has taken a while for people to think that this may be sustainable for at least a while, that we're going to see better returns than 5 percent. But it does take time to bring it online.

Senator LAUTENBERG. Before I run out of time, as the Chairman knows, that red doesn't mean stop on our highways, it just means speed up, so I'll try to speed up.

Mr. Kosh, I speak to you as a constituent of yours. I'm one of the 48 million. I don't know whether you noticed my account or not. But the fact is that we are now victimized by our—let me use the word—strong word—and say "profligate" use of gasoline, fuel oil, et cetera. Has it ever occurred—and these are not suggestions, and I don't mean to slant them that way, but it's a question—has it ever occurred to the AAA that maybe you ought to start saying, "Hey, buy more efficient vehicles. Conserve. Sacrifice"? By the way, I can tell you this, I haven't heard it from the President now, or previously, when things were obviously tightening. It's not a political thing to me. I haven't—so, I just wonder whether—you're a public-service organization, realistically, and I just wonder whether you've thought it wise to say, "You know what? We ought to stop buying inefficient equipment—cars, trucks." I see, General Motors is now getting very excited, and they're advertising, about hybrids. And is there any suggestion that we ought to conserve a little bit?

Mr. KOSH. Senator Lautenberg, as a traffic-safety advocate, I'll also be mindful of the red there.

We, indeed, have been—we've been addressing that with our membership since 1974, since the oil crisis there, the need for conservation, the need for more fuel-efficient vehicles. I mentioned earlier, in my prepared remarks, about the need for EPA to give us a little better—better, and more realistic, fuel-efficiency reportings of what those vehicles are so our members, and motorists in general, have an accurate estimate of what they're using. We have had campaigns, and an ongoing one—and next month is our annual Car

Care Month to get people to tune up their vehicles. All of our publications constantly remind folks——

Senator LAUTENBERG. I'm talking about——

Mr. KOSH.—to need to do that for conservation and to be——

Senator LAUTENBERG. Well——

Mr. KOSH.—and be more fuel efficient and more fuel conscious.

Senator LAUTENBERG. Yes, I'm talking about any campaign that would limit—and, again, not being proposed by me, just a question—has there been—anybody seen any campaigns to say to the public-at-large, "Buy more efficient cars"?

Mr. KOSH. Oh, I think that's——

Senator LAUTENBERG. General Motors or whoever it is, the foreign cars that are sold, "Make them more efficient. Help us conserve our way out of"——

Mr. KOSH. Well, I think there has been a considerable amount of effort in that regard. And, in fact, I think the market reflects that. The manufacturers are having a hard time keeping up with the demand for the bi-fuel vehicles, the Prius and those other vehicles, and they are responding accordingly. And I think you're seeing that, and people are actually—we've been telling the people, in recent months, to——

Senator LAUTENBERG. To have sales on SUVs stopped?

Mr. KOSH. Pardon?

Senator LAUTENBERG. Have sales on SUVs stopped?

Mr. KOSH. I think they've dramatically changed. Certainly, in recent months.

Senator LAUTENBERG. Mr. Chairman, I promise to wrap up in just a couple of seconds.

Mr. Caruso, I wanted to ask you a question. Do you think that OPEC's behavior, and their compact, has caused us to spend—to pay more for fuel?

Mr. CARUSO. Oh, I think——

Senator LAUTENBERG. Or production——

Mr. CARUSO. Without question. OPEC's policy has——

Senator LAUTENBERG. Yes, without question.

Mr. CARUSO.—has been to constrain production, collude.

Senator LAUTENBERG. Yes.

Mr. CARUSO. I mean, they certainly would be under the FTC definition of collusion and price-fixing there.

Senator LAUTENBERG. Right. I agree. And I'm proposing a piece of legislation for the WTO, asking the President of the United States to request, from the WTO, that members of OPEC be excluded from the benefits of WTO. Because, under the WTO covenants, agreements, they are not supposed to inhibit trade in any way. And, well, Saudi Arabia would now like to join WTO, and one of these other major producers. I think that if we got to them, and they said, "Look, you can't join together like that, fix prices, and be part of a non-tariff or reduced-customs duties for products that you sell." Think that would be a good idea?

Mr. CARUSO. Well, I think it's certainly worth trying.

Senator LAUTENBERG. Yes.

I'm sorry. You know what happens, Mr. Chairman? Sometimes we say things that are so interesting, it's just hard to stop. But, thank you very much.

The CHAIRMAN. Senator Pryor?

STATEMENT OF HON. MARK PRYOR,
U.S. SENATOR FROM ARKANSAS

Senator PRYOR. Thank you, Mr. Chairman.

Let me ask Mr. Slaughter, if I may—and, by the way, thank all of you for being here; this is very helpful—Mr. Slaughter, we talked a little bit about refining capacity?

Mr. SLAUGHTER. Yes, sir.

Senator PRYOR. As you, I'm sure are aware, there is a conspiracy theory going around about the oil companies and their refineries. And the conspiracy theory is that the reason the oil companies have less capacity today is because, if they do, that means there's less product that could be refined; therefore, prices are higher per gallon; therefore, profits are more. Do you have any comment on that?

Mr. SLAUGHTER. Yes, I do, Senator Pryor. The industry has been steadily investing in U.S. refining over the last 25 years. As I mentioned previously, they increased U.S. capacity by about a million barrels a day, between 1985 and 1995. We have had capacity additions over recent years. The difficulty has been that the demand growth in the United States has exceeded the additions in refining capacity, so every year we've become a bit more dependent on imports.

The industry is also investing $20 billion this decade just in environmental programs, but it is investing that money. The fact of the matter is that, you know, there's limited money for investment in any particular enterprise, and a lot of the money over the years, particularly when there was low return in this business, has gone into environmentally-mandated investments that didn't always yield additional capacity. But it was very expensive.

Senator PRYOR. All right. Well, let me follow up on that, if I may, because you talk about capacity and profitability, and we've all read, in papers and—et cetera, that the oil industry is more profitable today than it—maybe it has ever been. Now, I want to ask you about that in 1 second, but first let me mention, I have the AAA's news release—the AAA Mid-Atlantic region's news release about this—news release about Exxon. You probably saw that. They did that on 9/9/05.

Let me ask this. I want to—not to pick on Exxon, but since they're the subject of this release, let me ask you this question. When Exxon drills in the Gulf, right—the Gulf of Mexico—I assume they own that drilling unit, that derrick out there—they own that, in the Gulf?

Mr. SLAUGHTER. Probably, yes.

Senator PRYOR. And then they ship that in, let's just say, to Louisiana to be refined at one of their refineries, right? So, they own that refinery, as well.

Mr. SLAUGHTER. They have several refineries in that area.

Senator PRYOR. Right. I'm just using them as a hypothetical—again, not to pick on them, not to be too particular about the facts. But when Exxon pumps that out of the ocean floor, I—do they assign a cost to that? I mean, do they know how much that's costing them per barrel, or per gallon, to pump out of the ocean floor?

Mr. SLAUGHTER. To produce it?

Senator PRYOR. Yes.

Mr. SLAUGHTER. Well, basically, you know, like most commodities, you know, in the marketplace, the market price doesn't really depend on the cost of production, although the cost of production is significant for offshore oil, of the kind you're mentioning.

Senator PRYOR. No, I understand that. But they—somehow, they know how much it costs them to get that oil——

Mr. SLAUGHTER. Yes, sir.

Senator PRYOR.—out of the Earth, and get it transported to their refinery in Louisiana. And then, it is refined in Louisiana, at one of their refineries, which they own. Let's just stay with that hypothetical. And then it's put into a pipeline. Now, who owns that pipeline?

Mr. SLAUGHTER. Pipeline is probably a common-carrier pipeline——

Senator PRYOR. OK.

Mr. SLAUGHTER.—that comes out of the Gulf area. It would probably be Plantation or Colonial.

Senator PRYOR. OK.

Mr. SLAUGHTER. There are various ownerships of that——

Senator PRYOR. Right.

Mr. SLAUGHTER.—small percentages, essentially, of different companies.

Senator PRYOR. OK. So, in other words, Exxon may own a percentage of that, but a lot of other companies own a percentage.

Mr. SLAUGHTER. That's correct. That would be no more than, like 5 percent, if, indeed, they own any at all. And I don't——

Senator PRYOR. Yes.

Mr. SLAUGHTER.—know for sure.

Senator PRYOR. And, again, I'm not holding you to that. I understand we're talking about a hypothetical here. But, nonetheless, assume, if they did own some of that, they would be profiting off the pipeline, probably to a pretty small degree, but, nonetheless, I'm sure they would charge something that would——

Mr. SLAUGHTER. The——

Senator PRYOR.—profit.

Mr. SLAUGHTER.—pipeline rates are regulated, and they don't depend on the price of the—that you're actually getting for the commodity. It's just——

Senator PRYOR. Right.

Mr. SLAUGHTER.—a pass-through. Yes.

Senator PRYOR. Right. And so, then—let's say that that's—one of these pipelines ends up, say, in the Baltimore area. I don't know exactly where their big storage tanks are here, but let's just say there. And that is refined gasoline. And, if put into a truck, let's say it's going to go to an Exxon station, who owns that storage facility, say, outside of Baltimore? Is that an Exxon facility, or is that an independent? What is that?

Mr. SLAUGHTER. Well, what often happens is, you'd have a—you'd have a rack facility that—at which there might be a number of companies that would load trucks out-of-the-rack at the terminus of a pipeline.

Senator PRYOR. Yes.

Mr. SLAUGHTER. Now, if you had a refinery there, which you don't in that particular instance, the refinery owner might own the rack.

Senator PRYOR. Right. But what I'm saying is, who, then, hauls it from that storage facility to the local Exxon station?

Mr. SLAUGHTER. Well, there are three different ways, really, that gasoline would be distributed from a terminal like that. It could be sold wholesale to a jobber, who's a distributor, who might take large amounts of gasoline and have his own stations. It could, basically, be put in a tank truck that's at Exxon. But it could be distributed to an independent service-station dealer, who would take title to the gasoline in his driveway. Or it could go—and this is not often the case—to a company-operated station that—so, it's an internal transfer there.

Senator PRYOR. Right. And the reason I'm asking all this is because I'm trying to determine the various cost factors that go into the price of a gallon of gasoline, and it—as we just ran through several steps, there are a lot of middlemen, or there's lot of potential little profit centers there for different companies or different people. Is that correct?

Mr. SLAUGHTER. There are different people who are involved in the handling of the product, yes.

Senator PRYOR. Right. And the reason—it would be reasonable to assume that they all make a little profit for handling the product.

Mr. SLAUGHTER. There are different amounts. The largest price factor, though, still, Senator, is going to be the price of crude, which is going to be 50 to 60 percent of the cost of production.

Senator PRYOR. I was going to ask about that. I have this——

Mr. SLAUGHTER. Yes, sir.

Senator PRYOR.—little chart from NPRA. And, as I understand it, these numbers might fluctuate a little bit, but, right there, you—in crude oil, it says 55 percent. So, what you're saying is, for a gallon of gasoline, about 55 percent of that is the cost of the oil itself, right?

Mr. SLAUGHTER. Yes, sir.

Senator PRYOR. And then you have taxes, you have——

Mr. SLAUGHTER. Of 20 percent.

Senator PRYOR. Yes—you have distribution and marketing, you have refining. Those costs are all built into that. But one question I have is, when gasoline is, say, $1.25 a gallon, versus about $3 a gallon, it doesn't cost any more to market the gasoline, or distribute it. I wouldn't think it would cost any more to refine it. And I wouldn't think the taxes would be any more, because that's usually on a per-gallon basis, not on a sales-tax type basis, a percentage of the cost. So, it seems to me that all these numbers fluctuate. It depends on how high the price of the gasoline is. Is that true, or not?

Mr. SLAUGHTER. The—you know, a major factor is going to be the replacement cost of the gasoline, Senator Pryor. For instance, a—someone like Exxon who is manufacturing gasoline, if an event like Hurricane Katrina happens, and has the impact on the futures market that that event had, the prospective cost of all replacement crude and products is going to go up. And if—just like the service-station dealer also has to think about buying the next cargo of gas-

oline, rather than just looking at what his—what he happens to have on hand has cost him. Because if he doesn't look forward by using the futures market, or other indicators, as to what his replacement cost is going to be, he's going to be perpetually borrowing money to buy his next cargo, and it's going to be a very difficult situation for him.

Same would be true of a refiner/manufacturer that—when Katrina hit, no one knew when they were going to be able to get crude supplies again, no one knew when they were going to be able to provide products to their customers again, and they would look at the futures market as to what the futures market was saying about, "Well, this is what, you know, the best estimates are of where prices are headed in the future." And you've, basically, also got to calibrate that into your thinking, as well as the production costs that you've alluded to on the EIA sheet.

Under normal conditions, you know, EIA does a map, like you've pointed out, about once a month, and the numbers change a little bit, but not very much. But an event like Hurricane Katrina, which is, you know, a direct hit on the infrastructure, is going to affect futures prices, and everyone's calculations of what they're going to have to do to stay in business and have product over the next few days and weeks.

Senator PRYOR. Well, I would like to ask you about future prices, but I'm out of time. But, Mr. Caruso, you were, kind of, shaking your head at this chart. Do you want to add anything to that? I'll turn it back over to the Chairman.

Mr. CARUSO. It's a pretty minor point, but there are some costs that are *ad valorem* percentages.

Senator PRYOR. Right.

Mr. CARUSO. For example, credit-card companies charge a percentage of the transaction, so a retail dealer who's selling $1.50 gasoline may pay Visa 3 percent, if you were to use your Visa. So, 3 percent of a buck–50 is four and a half cents. If you're charging $3, you have to pay Visa 9 cents. So, that's four and a half cents that the dealer would have to—the retail dealer would have to achieve in order just to cover that additional cost.

In the situation that we're talking about here, it may not be a lot, but for an individual retailer, four and a half cents could be quite a bit.

Senator PRYOR. But—and I'll turn it over to the Chairman right here—but, as I understand it, you do agree that if the underlying cost of the fuel is going up, that doesn't necessarily mean the refining costs, the marketing costs, the taxes—they're not necessarily going up, right?

Mr. CARUSO. Not on a strict cost basis, Senator Pryor.

Senator PRYOR. Thank you.

The CHAIRMAN. I think we ought to make it very plain that we all dislike this concept of gouging the public unreasonably, particularly after a State of Emergency, a disaster such as this. The question is how to define that and who should really police it. Currently, the states have—14 states have price-gouging laws. The Federal Government has never had one. And the question really presented to us by these bills is whether we should have one.

Would any of you believe—let's go through the four of you. Our colleagues went over about 5 minutes, but I think Senator Inouye and I will split this time. And my question is this: do you think it's possible to frame a law which would meet the demands of the public for some control over price-gouging, as it's understood by John Q. Citizen, which is, I think, that someone's trying to make more money out of a disaster than is warranted by the cost of his product that he's trying to sell? Is that a reasonable discussion—a way to pose it?

Mr. Slaughter, what do you think?

Mr. SLAUGHTER. Well, I think, given the oversight that has already been described to you by—that FTC has over the marketplace and everything already, they're looking at market conditions and transactions nationwide. There are a number of state statutes. The difficulty in framing the statute is that you can end up with something that is back-door regulation of gasoline prices. And I think you have to weigh the risks, versus the positives. And I would tread, frankly, very carefully there, in terms of a Federal statute, given everything that FTC, GAO, and others are already doing to police the market.

The CHAIRMAN. The alternative is a price cap. President Nixon put one on once, you remember?

Mr. SLAUGHTER. 1971. I was here, sir.

The CHAIRMAN. Yes, I was here, too. We were both here. But that didn't work.

Mr. SLAUGHTER. No, sir.

The CHAIRMAN. Now, which alternative is advisable, from the point of view of the industry? Neither?

Mr. SLAUGHTER. Well, if you looked at something in extreme circumstances in emergencies, and you could frame gouging, it would be preferable to price caps, because, as you know, it took 10 years to work out of that system and get back to market pricing, in the national interest. And we'd be very concerned about imposition of price caps.

The CHAIRMAN. Mr. Slocum?

Mr. SLOCUM. Well, I mean, first of all, I think it's abundantly clear that price-gouging is going on. One thing that the Committee could do is call in the trader who was quoted in his Dow Jones article, boasting that there are so many energy traders making so much money off of the hurricane, that they made so much money in one week that they didn't have to work the rest of the year.

The CHAIRMAN. Well, now you're talking about energy traders, rather than people who are selling gasoline.

Mr. SLOCUM. Well, right, yes. There are two different components to my testimony. One was dealing with energy traders, and the second is dealing with the vertically integrated oil companies. And I think that there is evidence of price-gouging going on in both industries.

I think the first thing to do is call in Addison-Armstrong——

The CHAIRMAN. The second one is subject to control by the FTC. The first one is SEC.

Mr. SLOCUM.—or the Commodity Futures Trading Commission.

The CHAIRMAN. I see.

Mr. SLOCUM. But Congress also has jurisdiction, because Congress rolled back some of those regulations. And so, more than half of the energy trading that's going on today is in under-regulated exchanges—so-called over-the-counter derivatives markets. And there's a lot written about this in the trade——

The CHAIRMAN. You're saying that the speculators are the ones that are gouging.

Mr. SLOCUM. I'm saying that the speculators are gouging, and I'm saying that the vertically integrated oil companies are also engaging in uncompetitive practices that results in price-gouging. There are——

The CHAIRMAN. Mr. Caruso?

Mr. SLOCUM.—two different industries where it's occurring, Senator.

The CHAIRMAN. Mr. Caruso?

Mr. CARUSO. Well, as you know, EIA is not in the policy game, but maybe I can take off that hat and——

The CHAIRMAN. You've been here several times. We——

Mr. CARUSO. I'll give you my——

The CHAIRMAN.—we really value your opinion, not——

Mr. CARUSO.—I can give you my opinion.

The CHAIRMAN. We're just looking for advice.

Mr. CARUSO. My opinion, as an economist, is, anything we can do to avoid price controls, that would be the road to go on. With respect to—I think there are a lot of authorities that the FTC, and SEC, and others have already. For something like the issue that we're dealing with, you know, the tough-to-define price-gouging, it seems to me the closer you get to the actual retail level or wholesale level, the better you are. And, to me, that means the states. The states' authorities should be really where I would focus on.

The CHAIRMAN. Mr. Kosh?

Mr. KOSH. Well, I think the last thing we want to do is return to what we experienced in the early 1970s, with price controls. That would be the—that would be the most distasteful.

The other thing is, whether or not those 14 states that have price-gouging statutes, are they actually doing what they're intended to do? If they are, there may be room for that at the Federal level. Again, our preference would be to probably keep it at the State level. But I think it warrants exploration at this—at the national level if the states aren't doing what they should be.

The CHAIRMAN. I think I should state, for the record, that I was told, by the national entities that distribute gasoline, that the prices that they're charging in the disaster area in Louisiana, Mississippi, and Alabama were pre-disaster prices. They had frozen the prices down there for people consuming gasoline in the disaster area. Is that your understanding, Mr. Slaughter?

Mr. SLAUGHTER. That is happening some places, sir. Also, you know, even the wholesalers, the refiner/sellers have frozen prices in some of that area, and many of them are selling product well below spot price. So, it varies by individual company and individual retailer.

The CHAIRMAN. Well, they do deserve some credit for that.

Senator Inouye?

Senator INOUYE. Thank you.

Mr. Slocum, I've read your testimony very carefully. And you speak of these mergers, and the control that they have over refineries, and then you say, and I quote, "This dramatic increase in the control of just the top five companies makes it easier for oil companies to manipulate gasoline by intentionally withholding supplies in order to drive up prices."

By that statement, are you suggesting conspiracy, collusion, antitrust?

Mr. SLOCUM. Senator, the basis for what I wrote there comes directly from a March 2001 investigation by the United States Federal Trade Commission. They did a major investigation into what then were considered price spikes in the Midwest gasoline market. The Federal Trade Commission found conclusive evidence of intentional withholding on the part of U.S. oil companies for the sole purpose of creating shortages in order to drive the price of gasoline up. And I quote in my testimony the key passages from that Federal Trade Commission investigation, which says, in part, "An executive of one company made clear that he'd rather sell less gasoline and earn a higher margin on each gallon sold than sell more gasoline and earn a lower margin." Now, economists refer to this as, you know, "economic withholding." But I think what regular people on the street would call that is "price-gouging." It's an uncompetitive practice, plain and simple.

If you have the ability to intentionally withhold a product from the marketplace, that means you know that there is no other competitor in the region that can offer a competing product to sell. That is clear evidence to Public Citizen of uncompetitive markets. That's not what made America the greatest country on Earth.

What we need to do is to enforce more competitive markets by reassessing the wisdom of all these recent mergers, by having immediate investigations, including the power of subpoena, so we can get internal company memos that describe if there was any collusion that went on with this intentional withholding. And if this intentional withholding was going on in 2000 and 2001, imagine what's going on after the mergers of ChevronTexaco, the mergers of Conoco and Phillips, the mergers between Valero and Ultramar Diamond Shamrock, and then Orion Refining and Premcor. There has been merger after merger after merger that has been approved—like the Government Accountability Office says, 2,600 mergers that the Federal Government has approved, that has reduced competition, and it has allowed price-gouging. Those are the facts.

Senator INOUYE. What did the FTC do as a result of this investigation?

Mr. SLOCUM. The FTC did nothing, because they found no evidence of collusion; and, therefore, they said there was no evidence of violation of antitrust law. And, as Senator Wyden testified earlier, that shows a clear loophole in Federal law, that it would make sense to empower the FTC to take action where it currently cannot, and that is, if an entity is unilaterally withholding or otherwise engaging in anticompetitive behavior, the FTC should have full powers to act and take punitive action against those entities.

Senator INOUYE. Mr. Slaughter, I see your hand's up there.

Mr. SLAUGHTER. Sorry, Senator, but I want to just say something about the FTC. The FTC looked at the exact same Midwestern price situation under Chairman Pitofsky in 2001. They published a report on it. They looked at the exact same situation that has just been discussed. They said, "There were—this is—there were many causes for the extraordinary price spike in Midwest markets last Summer," stated Chairman Pitofsky. "Importantly, there is no evidence that the price increases were a result of conspiracy or any other antitrust violation. Indeed, most of the causes were beyond the immediate control of the oil companies." And that's Chairman Pitofsky, of the Federal Trade Commission, who looked at the exact same situation that has just been discussed.

And the FTC put out a major compendium of all its actions in reviewing mergers in 2004, that looked back at all the major industry mergers between 1995 and 2004. They detailed the fact that they looked at all of them in great detail; where they saw any competitive problems, they required divestments of different parts of the companies in order to make sure there was no problem with competition. And I'd commend that material, as well as this study by the FTC on the 2001 Midwest situation, to the Committee.

Senator INOUYE. Mr. Slaughter, in response to Senator Lautenberg's question on price-gouging, your response was, in essence, "The problem is very complex, there are many facets to it," and your response now. Am I to assume that you're telling us that there's no such thing as price-gouging?

Mr. SLAUGHTER. No, sir, I'm not. There, obviously, is some kind of extreme behavior that might take place in the—in an emergency situation that probably will not last very long, because the emergency situation won't last very long. But it's so offensive that, certainly, people who purchase——

Senator INOUYE. How would you——

Mr. SLAUGHTER.—gasoline have great problems with it.

Senator INOUYE. What would you constitute as "so offensive"?

Mr. SLAUGHTER. Well, if—for instance, just, again, taking—all we have is anecdotal evidence, because the agencies that look at pricing are still looking at it, and there hasn't been any kind of report. We have anecdotes. But people have been talking about $6 and $7 gasoline prices. That seems clearly out of order. Now, we have seen prices go up into the $3, but that's in lots of parts of the country, and it seems to show the shutdown of the system that occurred with Katrina. Where you have these spot retail prices that are $6–$7, if that's, indeed, true, that is something that I think you could say that looks like there's a problem there that people ought to look into. But when people are just saying, "Well, gee, things have gone up into the $3," but they've done that everywhere, it doesn't seem to be the same problem.

Senator INOUYE. Mr. Slocum?

Mr. SLOCUM. Well, I—and, like I said, I think it's very clear that we have evidence of anticompetitive practices, that prices are higher than they would be if we had adequately competitive markets, and that—yes?

Senator INOUYE. Yes, I have one more question. I notice my time is up. You have indicated in your testimony that 15 percent of Fed-

eral lands are off limits to drilling, 57 percent are wide open. Are you suggesting that we should be drilling in that 57 percent?

Mr. SLOCUM. No, Mr. Senator, I am not. I was merely pointing out the results of a Department of the Interior survey of the role of environmental regulations in restricting, or not restricting, access to oil and natural gas drilling. And in that study, it said, as you pointed out, that 57 percent of Federal lands are currently open to Federal drilling. And I'm not making any comments in support or against—of drilling in those areas, but just that very often you hear from the industry, whether it was Ken Lay's Enron or oil companies today, that environmentalists and environmental protections are the root of the problem. And I think that that Department of the Interior study conclusively shows that the vast majority of Federal lands are open and accessible to oil drilling. And so, environmental laws and other sensible laws are not to blame.

Senator INOUYE. I would gather that you've studied the situation in Europe. How would you compare environmental laws in the United States and European environmental laws?

Mr. SLOCUM. Unfortunately, Mr. Senator, I have not—I would not consider myself a student of European environmental laws. And so, I don't really know. I know that there are only a few European countries that actually produce oil—namely, Norway and the U.K., and in the North Sea. And so, as a whole, you know, most of Europe does not have access to the kind of energy resources that the United States has.

Senator INOUYE. Thank you very much.

The CHAIRMAN. Senator Pryor?

Senator PRYOR. Thank you, Mr.——

The CHAIRMAN. We are committed to get to that other briefing. As a matter of fact, the Senate is now in session so we'll all be there, but we want to yield to you for what——

Senator PRYOR. Thank you. I'll try to do this in about 2 or 3 minutes, if I can, so I'll try to ask my questions fast, and hopefully you all can come up with some fast answers.

Mr. Slocum, Public Citizen has drafted a five-point reform plan that, it says, can restore accountability to oil and gas markets, and provide consumer protection. One of the points is to re-regulate energy trading exchanges to restore transparency. Will you elaborate on regulating over-the-counter crude oil and gasoline futures markets?

Mr. SLOCUM. Yes, sir, Senator. In the year 2000, the U.S. Congress passed the Commodity Futures Modernization Act, which, among other things, deregulated energy trading exchanges by expanding the definition of what was allowable to be engaged on over-the-counter derivatives markets. Over-the-counter derivatives markets essentially started out as exchanges between two entities to make agreements or contracts to trade products.

Senator PRYOR. Right.

Mr. SLOCUM. Data by various government entities indicate that now, after the passage of this law, more than half of energy trading in the United States is on these over-the-counter derivatives markets. What that means is, less information is being reported to Federal regulators at the Commodity Futures Trading Commission. In

Public Citizen's view, the less scrutiny that markets have, the greater ability of market participants to game the system occurs.

Senator PRYOR. OK. Now, let me stop you there.

Mr. SLOCUM. Yes, sir.

Senator PRYOR. Is Public Citizen saying that some of these record profits from the oil companies—are some of these profits attributed to their participation in an over-the-counter futures market?

Mr. SLOCUM. No. I think that they are two separate things. The data indicate that the biggest participants in these over-the-counter exchanges are financial institutions—mainly hedge funds——

Senator PRYOR. Right.

Mr. SLOCUM.—which I know that the new Chairman of the Securities and Exchange Commission has supported some tighter regulation over those financial instruments. And I think that tougher scrutiny of their actions on these over-the-counter exchanges are required, as well.

Senator PRYOR. OK. Now, someone mentioned, earlier, the Strategic Petroleum Reserve. Was that you, Mr. Slaughter, in your—you did? And my question for you all—maybe you answered this when I was out of the room; I had to step out for a minute—but my question for you is: if we were to open the Strategic Petroleum Reserve, what impact would that have on gas prices? I mean, what's the net effect for the general public?

Mr. SLAUGHTER. Well, I'll just mention that it—that, you know, it's supposed to only be used in the event of an emergency, and it's not supposed to be used for price-related reasons. Obviously, when it was opened, after Katrina, it did have a considerable effect in smoothing out the marketplace, and reassuring people that crude would be available, and that was appropriate usage, although things have come back to the point where all of the amount proffered was not used. But it did significantly calm the situation and let refiners know that crude would be available, and let our customers think that the products would be available.

Senator PRYOR. So, does it lower prices or stabilize the market, or both?

Mr. SLAUGHTER. It is—it depends—basically, when it has been used, it has, more or less, stabilized the marketplace. It sometimes has an impact on prices. I mean, when it was used with the case with Hurricane Ivan, there were people who needed the crude. You didn't have a Katrina-like situation there. With Katrina, it did both have an impact on prices, and also stabilized the market.

Senator PRYOR. Mr. Chairman, I know we all need to get to that hearing, so I'll end for now, and I may——

The CHAIRMAN. Mr. Caruso looked like he wanted to answer that question.

Senator PRYOR. Oh.

Mr. CARUSO. No, I——

The CHAIRMAN. No?

Mr. CARUSO. I thought it had a rather significant effect on prices, because of the price at which the releases were made. So, it did—in theory, would have an impact on the price. When it's coming out

in the 30s and the market's at 66, there ought to be a pass-through on that price.

The CHAIRMAN. Well, we're not going to close this hearing. We're going to review the material that has been given to us. There are some other requests from other Senators to be involved. And I think we have to continue this.

I just think we ought to serve notice, though, that the extent of the price increase right after Katrina was outlandish and has brought some of us to the point where we think we may have to pursue some of these suggestions. I do believe that we have to have greater action on the part of the states that have these price-gouging laws. We haven't been able to examine what they did. My next hope is that we'll be able to call some of them in and ask them, did they use those laws? And, if not, why not?

Thank you all very much.

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

A P P E N D I X

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TED STEVENS TO ODD-EVEN BUSTNES

Executive Summary

The more demand grows at the rapid rates, we have experienced in recent years, the more prices will remain high. This increase in price will occur because producers can *sustain* these high prices by not adding more capacity than necessary to just meet market demand. The price increase does *not* arise because producers need these prices to provide new supplies into the market. Therefore, we cannot, and should not, expect oil producers to alleviate prices over the long run. Instead, we must turn to demand.

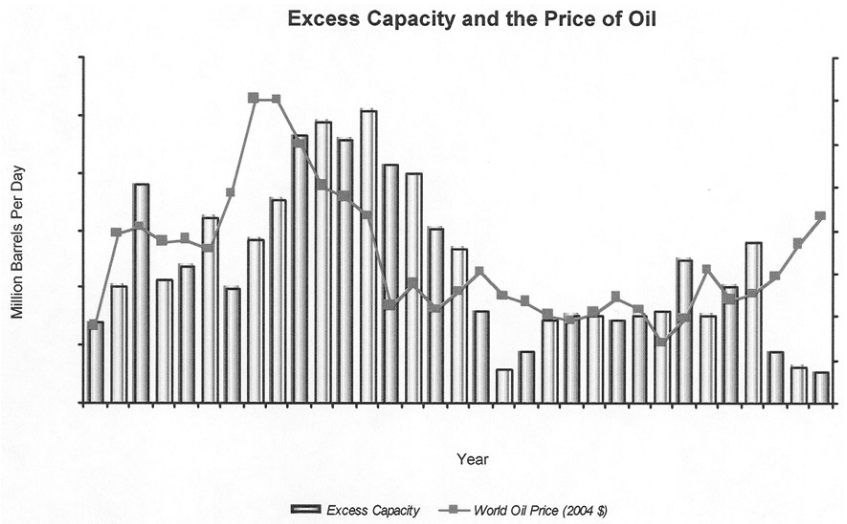
The degree of demand response to higher oil prices will largely determine the ultimate disposition of the oil markets and prices, far more than increases in supply. There is considerable system inertia at a global level, due to the time required to turn over the transportation capital stock. However, the actions of the U.S., China, and India will determine whether global demand for oil stabilizes and then falls, or whether the demand for oil continues to rise unabated. As Pogo said, "we have met the enemy, and it is us."

As our study, *Winning the Oil End Game* showed, the U.S. has the ability to reduce its demand for oil by more than 50 percent of projected use from efficiency alone, and up to 75 percent if the biofuels substitution potential is fully tapped. The technologies needed for this transition exist today and consumers want them. Thus, the role of government is to create the set of conditions that support investment by the private sector and accelerate adoption of these technologies.

Question 1. There is a great deal of uncertainty involved in the global oil supply. There have recently been a number of questions raised about the point of "Peak oil" production, or the optimal level of global excavation per day. Currently, the world consumes roughly 84 million barrels a day, and that number continues to rise. At what price must oil production continue in order to meet the growing demand in the next 5, 10, 20 years?

Answer. The price of crude oil is based on three factors: supply/demand fundamentals, perceived risks, and technical trading. From a fundamentals perspective, two factors matter the most: (1) the amount of excess capacity in the global oil system, and (2) the required returns from the oil fields that are producing on the margin.

Historical analysis reveals that crude oil prices are closely related to *the amount of global excess oil production capacity.* When excess global capacity is low, crude prices and associated volatility increase, as shown in the following figure:

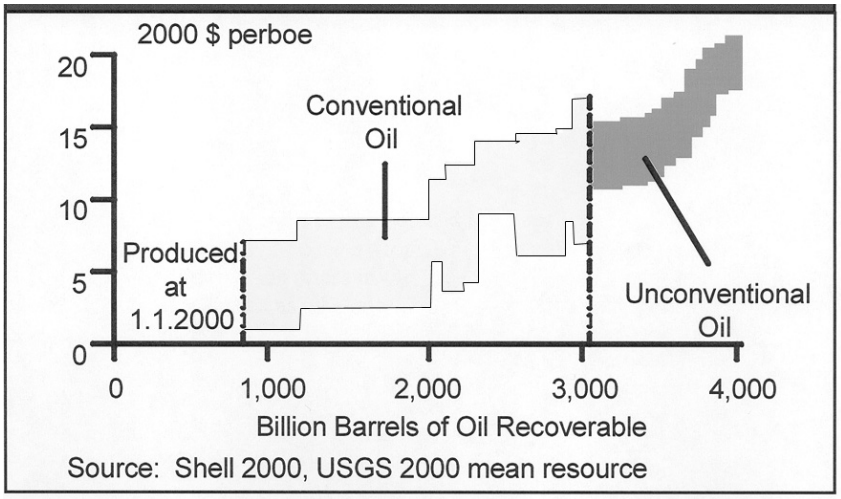


Source: IEA (capacity), BP (prices)

Excess capacity can be low for three reasons. First, producers withdraw capacity, as in the 1970s oil shocks (which have increased perceived risk adding the rise in prices). Second, excess capacity can decrease due to wars or political disruption, as in the 1991 Gulf War (which typically creates spikes if the events are of short duration). Finally, an increase in demand can outstrip increases in supply (the current situation). In sum, for a given level of real and perceived political risk, it is the relative level of excess capacity that is the critical and fundamental variable that determines crude oil market psychology, and therefore price levels.

The next fundamentals question is the price required to provide *adequate return on capital from the marginal field.* This represents the oil price floor for a given level of demand. As disclosed by international oil companies (see chart immediately below), the prices required for a producer to bring on new supplies of conventional oil are remarkably low. For the reserves owned by the international oil companies, as long as prices are above $15/bbl, it is profitable to exploit these oil fields (*i.e.,* oil companies would earn adequate return on capital). For reserves owned by OPEC, the marginal cost of production for new fields is as low as $5/bbl. The economic purpose of the OPEC cartel is to withdraw these low-cost supplies from the market, in order to make the market price be set by the higher cost oil fields.

The marginal cost of meeting increasing demand is rising, as reserves of conventional oil supplies decline. Enhanced oil recovery represents that next block of accessible oil reserves, and typically requires prices in the $20–$25/bbl range. The more exotic unconventional sources, such as oil shales and oil sands require prices in the $40/bbl range to be economically exploited, as is evident from the following chart:



There are several important implications from these facts: First, the price needed by oil producers to induce them to meet demand is very low compared to the market price we are currently experiencing. Second, the current prices are more than adequate for both conventional and unconventional oil to be brought on line. Third, we are not running out of oil per se, but we are running out of conventional oil. The proven reserves of conventional and unconventional sources can last at least 40–60 years, depending on demand.

However, the majority of the lower cost conventional oil sources are increasingly concentrated in the Gulf and FSU, posing a security problem for the U.S. The U.S. can no longer drill its way out of the problem as we did back in the days when Texas crude was the dominant source of oil. Today, the U.S. uses 26 percent of global supply, but produces only 9 percent and owns only 2–3 percent of known reserves. The appendix provides a more complete overview of the U.S. oil problem.

Question 1a. Why then are prices so high?

Answer. The answer lies in cartel behavior. The oil producers recognize that excess capacity lowers the price down to the price floors required for adequate return on capital. The brief period of very low oil prices during the 1997–1998 Asian Economic crisis demonstrated the impact of excess capacity on prices, and threatened the survival of the Petro-states. Thus, greater cartel discipline was imposed on production, and increases in production are designed to keep pace with demand, while keeping excess capacity at relatively low levels (<1–2Mbbl/day).

Since man-made and natural disruptions to oil supply routinely eliminate ~600,000 bbls/day, the net available excess supply is low enough to create market scarcity for the commodity, raising prices. The ongoing conflict in Iraq, the threat of terrorism, weather related disruptions, and the normal disruptions from the unstable oil producing countries all create a risk-premium for the commodity that can raise the price from $5–$7/bbl. Once any commodity prices trend, technical traders enter that commodity market, raising prices even further. The impact of technical trading may be adding from $8–$10/bbl to the current market prices.

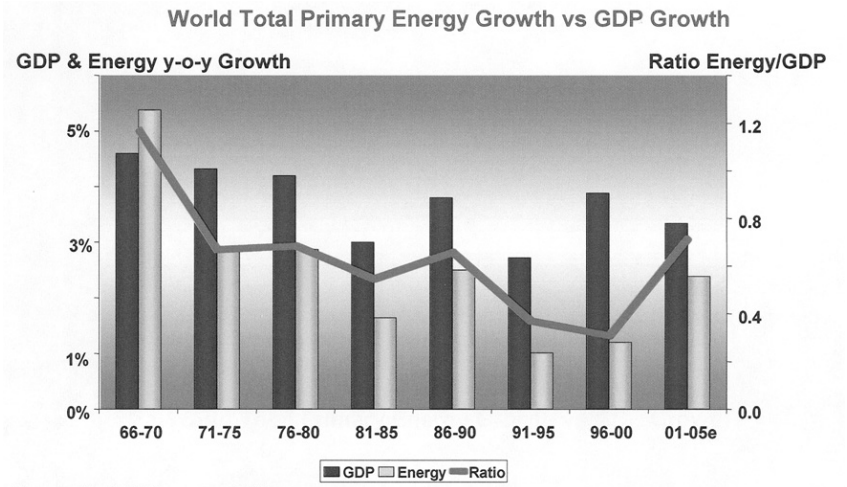
Thus, the more demand grows at the rapid rates we have experience in recent years, the more prices will remain high. This increased price will occur not because producers need these prices to provide new supplies into the market, but rather because the producers are able to *sustain* these prices by not adding more capacity than necessary to just meet market demand.

Therefore, we cannot expect oil producers to alleviate prices over the long run. Instead, we must turn to demand.

Question 1b. How much will demand increase?

Answer. The increase in oil demand depends on three factors: economic growth, business and consumer technology choices, and government policies. Until very recently, the world has been largely de-linking its energy demand from GDP growth, thereby reducing energy intensity (energy use/GDP). This trend has just changed, as the recent rapid demand-growth from China re-coupled this ratio. The sobering reality is that instead of 0.4 percent energy growth to realize a 1 percent increase

in GDP, the global ratio has risen to 0.8 percent—*worse than we were before the 1970's Oil Crisis.* The historical trend can be seen in the following chart, where the (red) line and right-hand scale shows the ratio of global energy growth to global GDP growth (the bars are simply the raw growth data):



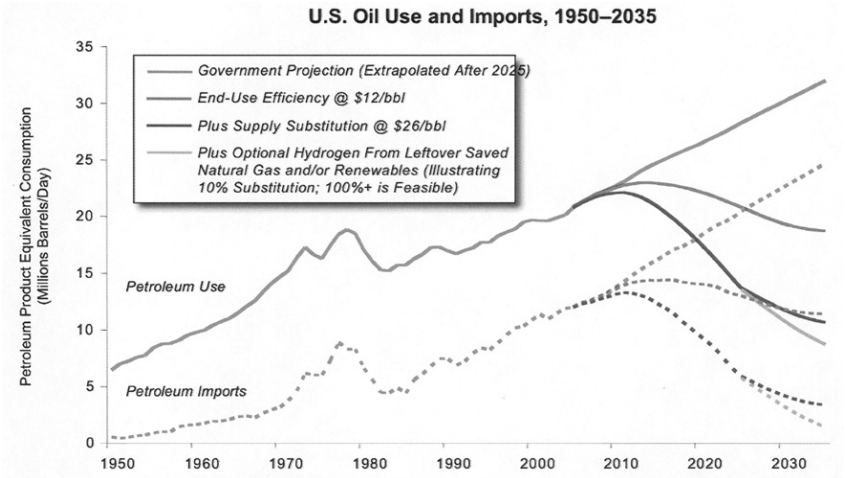
Source: Shell Oil Company, 2005

Demand for oil was 77 Mbbl/d in 2001 and reach 84 Mbbl/d in 2005. If we remain on current course, the IEA projects oil demand to rise to an extraordinary 121 Mbbl/d in 20 years. Fifty-eight percent of the incremental demand for oil is caused by the United States, China, India, and emerging Asia. By 2025, U.S. demand is projected to grow by 8.7 Mbbl/d, while China's demand will grow by 7.8 Mbbl/d. The demand for oil in Europe and Japan is projected to be relatively flat and even declining.

The degree of demand-response to higher prices will largely determine the ultimate disposition of the oil markets and prices, far more than increases in supply. There is considerable system inertia at a global level due to the time required to turn over the transportation capital stock, but the actions of the U.S., China, and India will determine whether global demand for oil stabilizes and then falls, or whether demand continues to rise unabated. As Pogo said, "We have met the enemy, and it is us."

As our study, *Winning the Oil End Game*[1] showed, the U.S. has the ability to reduce its demand by more than 50 percent of projected use from efficiency alone, and up to 75 percent if the biofuels substitution potential is fully tapped. This is summarized, with proper capital stock turnover accounting, in the following chart:

[1] Lovins, A. B., Datta, E. K., Bustnes, O.-E, Koomey, J. G., and Glasgow, N. G., *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security*, 2004. At *www.oilengame.com* and *www.amazon.com.*



Source: Lovins, AB, Datta, EK, Bustnes, O-E, Koomey, JG, and Glasgow, NG, Winning the Oil Endgame: Innovation for Profits, Jobs, and Security, *2004, p. 102.*

This transition could occur within as little as 10 years from inception. Our models, which have been calibrated and vetted with DOE, predict that U.S. demand could be lower than current demand within 10 years, and then decline significantly thereafter. The demand-inertia due to the existing capital stock creates the time delay. The technologies required to produce the demand-shift already exist and could be easily commercialized.

However, despite the surge in consumer interest in hybrids due to high gasoline prices, there is still a need for government action.

Why don't consumers "act rationally" to invest in efficiency and alternatives? Aside from facing a highly volatile price of fuel, the short answer is that *market failures prevent the investments from occurring.* To accelerate the transition away from oil, it is possible, and necessary, to deploy a portfolio of policy that firmly fixes the current market failures.

The four key market failures that prevent the billions of decisions made by millions of marketplace participants—manufacturers and consumers—from rationally allocating capital investment to oil efficiency are:

i. A mismatch between individual consumers' high implicit discount rates (often upwards of 60 percent p.a. real) and the much lower real rates of society as a whole (OMB recommends 3.2 percent p.a. for Federal energy savings). This leads to grossly suboptimal individual investment decisions in efficiency;

ii. Limited information conveniently available to busy buyers and manufacturers about their choices in using oil far more efficiently constitute an information-failure for both parties on just how much end-use efficiency is available and at what real cost;

iii. The gap between pump prices and total societal costs for oil constitute a price signal failure, as petroleum-based fuel prices faced by the individual consumer at the pump are below the true cost, society in fact pays for these fuels; and

iv. The cultural and organizational challenges for big organizations such as the Big 3 automakers to deal with the onslaught of disruptive technologies for radical fuel efficiency (as illustrated by their now being years behind Japanese rivals in effiency-doubling hybrid-electric propulsion) constitute a failure to organize and reorganize large entities.

A policy portfolio that immediately fixes the four key market failures and enables the U.S. to solve its oil problem *should also accelerate the pace of bringing alternative fuels to the marketplace.*

Fixing the four critical market failures will optimize innovation and its rate of adoption among users, and will also optimize the rate of capital stock turnover. To fix the failures, only a modest policy portfolio would be required. This portfolio

should also be market-oriented without taxes, innovation-driven without mandates, and doable administratively, even at the State level. Whether implemented at the state or Federal levels, this policy portfolio[2] should also be consistent over time, especially with regards to stimulating adoption of continuously improving technology.

At the Federal level, a simple and highly effective policy portfolio would fix the market failures via the following instruments:

a. Fix the discount, rate, and information failures by embedding efficiency information in purchase-prices for cars and light trucks, and do so via *size-and revenue-neutral feebates.* This instrument combines fees on inefficient models with rebates on efficient ones. These are calculated separately within each size class, so one isn't penalized for choosing an SUV, but rewarded for choosing a *efficient* SUV and charged a fee for choosing an *inefficient* one. The revenue-neutral structure means that each year the fees pay for the rebates. Such feebates broaden the price spread within each size class, in such a way that private buyers will consider the entire lifecycle fuel savings of their vehicle choice, not just the first 2–3 years, yielding a societally efficient decision. Feebates speeds innovation in efficiency since it applies a constant incentive for continuous adoption of efficiency and a disincentive for inefficiency, without reducing customer choice. Feebates will also increase automakers' profits.

b. Create a new million-a-year car market for efficient vehicles by *leasing efficient new cars to low-income customers and scrapping inefficient clunkers,* thus providing affordable personal mobility—the last frontier of welfare reform. Low-income families lack affordable mobility, so creatively financing super-efficient and reliable new cars would expand low-income employment, and create a profitable new million-car-a-year market for advanced-technology vehicles sold, or leased, to customers who previously weren't credit-worthy enough to buy new vehicles. This mechanism would work well within the current private-sector automobile financing structure.

c. Ensure *"energy-smart" military and government procurement* of the hundreds of thousands of civilian vehicles purchased each year, thus speeding innovation and reducing automaker risks.

d. Share R&D risk between military and civilian sectors by asking the *Department of Defense to accelerate advanced materials and their manufacturing development* to meet its own objectives of a light, agile, and fuel-efficient force structure to protect troops and fuel supply lines, and to save billions (ultimately tens of billions) of dollars per year in avoided fuel logistics costs, to enhance force protection, and to free multiple divisions of people who now haul and protect fuel, thus permitting major tail-to-tooth realignments.

e. *End the perverse incentive* in the lower 48 states (all but OR and CA) where gas and electric distribution utilities are rewarded for selling more energy and penalized for cutting customers' bills.

f. If the government is to support domestic industries, then it should promote innovation-friendly policies like *temporary Federal loan guarantees* (structured to cost the Treasury nothing), to help automakers retool and retrain, and help airlines to buy efficient airplanes while scrapping inefficient ones.

g. Finally, similar support should be made for investment in *domestic carbohydrate energy infrastructure* that migrates the main feedstock from hydrocarbons to carbohydrates. Our study also recommends a $1-billion DARPA "fly-off" to accelerate, by roughly a decade, learning about which of the competing cellulosic ethanol conversion process most merit rapid scale-up by private investors.

Question 1c. What demonstrable effects do you believe the imposition of a 27-mile-per-gallon CAFE standard will have?

Answer. The demonstrable effect would be marginal. Compared to doing nothing, the small effect from imposing a 27 mile per gallon CAFE standard would result from marginally reducing demand for, and therefore the price of, petroleum fuels and crude oil. The effect on demand will initially be small and would gradually accumulate as the effect percolates into the capital stock via the natural turnover cycle.

Based on a quick estimate made in the time available to write up these answers, the reduction in demand *in the first year of full impact* would be between about 0.09

[2] *Ibid.*, p. 191–215 plus technical appendices on *www.oilendgame.com* has all details of the complete policy portfolio. This portfolio is summarized here.

and about 0.14 million barrels per day, or between 0.4 percent and 0.7 percent of current U.S. oil consumption.

After this change *works its way through the entire capital stock once,* roughly 12–18 years from now, the savings would be between 1 and 2 million barrels of crude a day, compared to doing nothing between now and 2020. Compared to doing nothing and compared to a forecasted 2020 oil use of about 24 million barrels per day,[3] this measure will, depending on how it is implemented, eliminate between 4 percent and 8 percent of U.S. forecasted oil use in 2020.

All numbers, derivations, and assumptions are laid out in the simple table on page 162. The impact on the near- and mid-term price of oil would likely be moderate in terms of direct impact on the fundamental supply-and-demand balance, as 100,000 barrels in the first full year would make but a modest difference. However, the main, and more important impact will probably come from the signal that this sends to the market. This signaling effect could be immediate. Given today's tight market, the psychological effect of any sign that the U.S. is starting to address the root causes of its high oil consumption could significantly soften prices and reduce speculative fervor.

From our deep knowledge of automobile costs, we would expect this measure to have a minimal impact on automobile prices. We also expect that most of the benefits would go to the consumer in the form of fuel bill savings.

Review of Relevant Facts: How CAFE Works, Vehicle Sales Numbers, and Vehicle Life[4]

For *cars,* the Corporate Average Fuel Economy (CAFE) standards set mileage standards at 27.5 mpg in 1990. "Cars" are the so-called Class 1 vehicles, having a Gross Vehicle Weight Rating (GVWR) of up to 6,000 lbs.

It is of some importance to note that setting the standard for all vehicles at the same level of 27 mpg, which is what the question implies, would represent a *decrease* in efficiency of cars by 0.5 mpg—a move in the wrong direction. While it is unclear whether the question was misstated, we have assumed no change in car efficiency in any of these answers.

For *light trucks,* CAFE set 20.7 mpg as the standard in 1996. Light trucks are vehicles of GVWR between 6,001 and 8,500 lbs, also known as Class 2a. The light truck mileage standard was increased in 2003 to 21.0 for Model Year (MY) 2005 light trucks, 21.6 mpg for MY 2006, and to 22.2 mpg for MY 2007.

The CAFE standards currently do not place fuel economy standards on *heavier light trucks* of GVWR between 8,501 and 10,000 lbs, also known as Class 2b vehicles.[5]

It is worth noting that these fuel economy standards are not "real world and on-road" but instead are idealized and in the lab, and are in fact about 15 percent higher than actually achieved on the road. On-the-road fuel economies for the three classes have been assumed to correspond to those recently computed, *i.e.,* 24.7, 18.2, and 15.7 mpg, respectively (all from Heavenrich). Also noteworthy is that EPA has announced an intention to reduce this *test* vs. *actual* gap by some unknown amount.

The best approximate sales estimates for model year (MY) 2005 cars is about 8.6 million and for light trucks (Class 2a) about 8.5 million. The best estimate for Class 2b light trucks is for MY 2001, and is 0.93 million.

Vehicle duration, or vehicle life, varies somewhat depending on the type of vehicle class, but based on data from Oak Ridge National Labs a rough average figure of 13 years is appropriate as a point estimate.

With average mpg for each main vehicle class, the number of vehicles sold in each class in a year, and with the average life of all cars, we have made the following very rough estimates of the impact to U.S. oil use.

Estimates of Impact of 27 mpg Fuel Economy Standard

The estimates of fuel savings have a range, because the answer depends on how the policy measure is applied.

The savings will be lower if the 27 mpg measure is applied just as an in-lab requirement and if the measure is applied to light trucks only (Class 2b) and such that these merely "catch up" to cars, and thus continuing to exclude Class 2b vehicles from CAFE regulations. A 27 mpg standard applied in this way and only to ve-

---

[3] *http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html,* Table 2.

[4] Much of the data for this section based on Heavenrich, Robert M., *"Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2005,"* EPA, June 2005, found at: *http://www.epa.gov/otaq/cert/mpg/fetrends/420r05001.pdf.*

[5] *http://www-cta.ornl.gov/cta/Publications/Class2bReport.pdf,* p. 27.

hicles below 8,500 lbs is labeled *"Weak 27 MPG"* in the summary table below, and would:

(i) Slightly worsen the fuel economy standard for cars from 27.5 to 27.0 mpg (assumed to be negligible in table below and excluded from results);

(ii) Increase the fuel economy standard for light trucks from 22.2 to 27.0 mpg; and

(iii) Do nothing to Class 2b trucks.

FIRST YEAR OF FULL IMPACT	class	mpg	sales	mi / y	bn gal/y	life y	total bn gal over assumed life	m bbl/d	savings m bbl/d	percent of total oil use
Today	Class 1	24.7	8,616,000	12,000	4.19	1	4.19	0.27		(current)
	Class 2a	18.2	8,534,000	12,000	5.63	1	5.63	0.37		(20 m bbl/d)
	Class 2b	15.652	931,000	12,000	0.71	1	0.71	0.05		
							Cohort use	*0.63*	-	-
"Weak 27 MPG"	Class 1	24.7	8,616,000	12,000	4.19	1	4.19	0.27		
	Class 2a	24.7	8,534,000	12,000	4.15	1	4.15	0.27		
	Class 2b	15.652	931,000	12,000	0.71	1	0.71	0.05		
							Cohort use	*0.54*	**0.09**	**0.44%**
"Strong 27 MPG"	Class 1	27	8,616,000	12,000	3.83	1	3.83	0.25		
	Class 2a	27	8,534,000	12,000	3.79	1	3.79	0.25		
	Class 2b	27	931,000	12,000	0.41	1	0.41	0.03		
							Cohort use	*0.48*	**0.15**	**0.74%**
12—18 YEARS ON (AFTER FLEET TURNS OVER ONCE)	class	mpg	sales	mi / y	bn gal/y	life y	total bn gal over assumed life	m bbl/d	savings m bbl/d	percent of total oil use
Today	Class 1	24.7	8,616,000	12,000	4.19	13	54.42	3.55		(2020)
	Class 2a	18.2	8,534,000	12,000	5.63	13	73.15	4.77		24.23
	Class 2b	15.652	931,000	12,000	0.71	13	9.28	0.61		m bbl / d
							Total Use	*8.18*	-	-
"Weak 27 MPG"	Class 1	24.7	8,616,000	12,000	4.19	13	54.42	3.55		
	Class 2a	24.7	8,534,000	12,000	4.15	13	53.90	3.52		
	Class 2b	15.652	931,000	12,000	0.71	13	9.28	0.61		
							Total Use	*7.03*	**1.15**	**4.7%**
"Strong 27 MPG"	Class 1	27	8,616,000	12,000	3.83	13	49.78	3.25		
	Class 2a	27	8,534,000	12,000	3.79	13	49.31	3.22		
	Class 2b	27	931,000	12,000	0.41	13	5.38	0.35		
							Total Use	*6.24*	**1.93**	**8.0%**

The savings will be higher if it is applied to all vehicles below 10,000 lbs and if applied as an on-the-road MPG requirement (*i.e.,* not as a lab-based requirement). Applying the 27 mpg standard in this way to all vehicles below 10,000 lbs is labeled *"Strong 27 MPG"* in the table above.

As shown in the table, the reduction in demand *in the first year of full impact* would be between about 0.09 and about 0.14 million barrels per day, or between 0.4 percent and 0.7 percent of current U.S. oil consumption.

After this change *works its way through the entire capital stock once,* roughly 12–18 years after the year when the measure takes full effect, the savings would be between 1 and 2 million barrels of crude a day, compared to doing nothing between now and 2020. Compared to doing nothing and compared to a forecasted 2020 oil use of about 24 million barrels per day,[6] this measure will, depending on how it is implemented, eliminate between 4 percent and 8 percent of U.S. forecasted oil use in 2020.

The estimates as well as key assumptions are summarized in the above table.

Appendix—The U.S. Oil Problem, Why a Focus on "Peak Oil" Misses the Mark, and How To Fix the Current Capital Inefficiency

The U.S. Oil Problem

It is worth re-iterating the U.S. oil problem. First, the U.S. has exploited its domestic oil endowment more and longer than any other nation, and now has more mature provinces, further along in the depletion cycle, than other suppliers. On the margin, a barrel therefore generally costs more to extract at home than to import. Second, the U.S. now uses 26 percent of global oil, but produces only 9 percent and owns only 2–3 percent of known reserves, so it is not possible to drill our way out of this problem. Third, since oil is a fungible commodity on a global scale, the U.S. oil problem is not just about how to eliminate imports.[7]

[6] *http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html.* Table 2.

[7] President Bush's Energy Policy, like his father's, correctly states that the problem is oil use, not oil imports.

The U.S. oil problem correctly stated is therefore "How can the U.S. entirely eliminate her use of conventional oil?"

As described, two key, viable, and more economical alternatives offer the solution:

1. Efficient use of oil: across all sectors, half the forecast 2025 U.S. use of oil can be saved by redoubled end-use efficiency costing an average of $12/bbl (2000 $).

2. New energy carriers that are or will be cheaper than oil; specifically, advanced biofuels and substituting saved-natural-gas.

As our study *Winning the Oil Endgame* found, both options are robustly competitive on the margin with $26/bbl crude oil (EIA's January 2004 Reference Case benchmark for Refiner's Acquisition Cost, compared on the short-run margin, in 2000 $ levelized at a 5 percent/year real discount rate). In other words, all the oil the U.S. uses now, or is officially projected to use in 2025, can be saved or displaced more cheaply than buying it, even at half today's price, and even if all externalities associated with its use were worth zero (which they are not).

Focus on "Peak Oil" Misses the Mark

Along with important national security dividends and improved productivity from efficient capital allocation, the better fundamental economics identified in our study are the key underpinnings for doing something about the U.S. oil problem by eliminating its use. Collectively, these reasons also explain why the "peak oil" debate *deserves far less attention.*

The fact is that nobody can know who is right about peak oil, because the needed economic-geology data are either unknown or secret, and is typically held closely by sovereign governments, which own ~94 percent of world oil reserves, are not subject to outside audit, and have little reason to truthfully disclose how much oil they have. The peak oil question is therefore best classified as a "known unknown." It is a known phenomenon in the sense that withdrawal of supplies of conventional oil eventually will peak. However, the timing of peak oil is unknown.

As such, the timing of peak oil dictates that the phenomenon is best considered a risk to economic stability and growth, and, therefore an additional reason to act by hedging our bets. The hedge is best created by taking the long view, and via active and consistent demand-side policies that smoothly eliminate the need for oil over the next few decades. The bottom line is that it doesn't matter who's right about peak oil, because we should do the same thing anyhow—save or displace all the oil we use—*just to make money.* If we get off oil earlier than proves necessary, we'll only make more profit sooner.

Absence of Consistent and Significant Demand-Side Policy Will Prolong Capital Misallocation and Deepen an Economic Crisis

The transition away from oil both can, and will, happen eventually, even under *laissez faire*. However, as consumers are feeling today, that course is unnecessarily painful and disruptive, producing gross misallocations of capital and resources, and creating unnecessary inflationary pressures. On the supply-side, because OPEC's cartel inverts normal market behavior by forcing costlier oil to be produced first, *more capital than necessary* is allocated, and in a way over which the U.S. has little control. On the demand-side, *insufficient capital is allocated* due to the four market failures explained in detail above.

This sub-optimal allocation of capital on both sides of the supply-demand spectrum produces a relatively, very wasteful and inefficient set of capital allocation decisions. Moreover, of the two sides, the U.S. has relatively little real control over the global and OPEC-driven supply side, but is clearly in a better position to systematically and consistently exercise influence on the demand side.

Under *laissez faire,* optimal capital allocations to oil savings and substitutions are therefore postponed, resulting in wild scrambles when prices soar, and encouraging hasty, ill-considered policy choices to be repented at leisure.

A consistent and active public policy approach to the demand-side would fix the four market failures described above, and, thereby, ensure that decisions about when, where, and which oil-using capital equipment are bought are rationally made via access to information and the proper and up-front price signals for oil-using capital purchases, thus ensuring societal capital efficiency and therefore also optimal capital productivity.

While recent prices of $60–$70 per barrel of conventional oil could help elicit useful savings and substitutions, an *optimal* price level would cause minimal inflation while maximizing the pace of expansion of demand-side and oil-substituting supply-

side alternatives.[8] While some may argue this would indicate that recent oil prices have been "too high," the explanation is rather that the U.S. capital stock has long experienced an underinvestment in oil efficiency.[9] The policy stagnation that caused improvements in vehicle efficiency to slow to a trickle, and even reverse, during the late 1980s and early 1990s, now impose a heavy burden at the gas pump.

Fixing the market failures will optimize the pace of the demand-side infrastructure transition by accelerating that transition. Unless the failures are fixed, the current pain being felt by consumers is probably a small taste of what is to come. Development and consumer adoption of alternatives to oil *before* prices potentially spike much higher will help mitigate any future pain, inflationary or otherwise.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. TED STEVENS TO JOHN H. SEESEL

Question. The last four years we have observed unprecedented fluctuation of the energy markets. These fluctuations have been exploited and exacerbated by speculators. Federal law stipulates that excessive speculation can create volatility and establishes limits to prevent extreme speculation. The Commodity Futures Exchange Commission is the independent government agency responsible for the oversight of futures trading. Should the CFTC be more aggressive in ensuring that this market is not being exploited by speculators? Do you believe that there should be greater margin requirements for speculators to pay prior to a purchase in the petroleum futures market?

Answer. The Federal Trade Commission has neither the information nor the expertise to determine whether the CFTC's oversight of the futures markets is adequate. Accordingly, I am not in a position to offer an opinion on whether the CFTC should be more aggressive in its efforts to contain speculation or on whether margin requirements should be increased. Because the CFTC has primary jurisdiction in this area, I would respectfully defer to the CFTC's judgment on these issues.[1]

I deeply appreciate your concern about competition and consumers in petroleum markets, Mr. Chairman, and I thank you for this opportunity to respond to your questions. Please let me know whenever the FTC may be of further assistance.

Table 2. Financial Performance of the Major Integrated Oil Companies, 2002–2004
(million of dollars)

Company	Net Income			Revenues		
	2002	2003	2004	2002	2003	2004
Exxon Mobil	$11,220	$21,654	$25,330	$178,909	$213,199	$298,027
BP	6,922	10,437	16,208	178,721	232,571	294,849
Royal Dutch/Shell	9,577	12,606	18,536	179,431	201,728	265,190
Chevron Texaco	1,189	7,506	13,328	91,685	112,937	155,300
Conoco Phillips	762	4,585	8,129	50,512	90,458	136,900
Marathon	709	1,314	1,261	27,214	36,678	49,907
Amerada Hess	–218	467	977	11,932	14,311	16,733
Occidental	1,240	1,657	2,491	7,338	9,326	11,368
Murphy	97	301	701	3,966	5,275	8,359
Total	*$31,498*	*$60,527*	*$86,961*	*$729,708*	*$916,483*	*$1,236,663*

Source: Oil Daily, Profits Profile Supplement, v. 55, No. 39, February 28, 2005. p. 8, and Financial Data by Company at: www.Hoovers.com.

---

[8] In the 12 months to September 2005 the U.S. saw a Consumer Price Index (CPI) rate rise of 4.7 percent, largely driven by the rise in energy prices, primarily oil but also natural gas. The month of September 2005, saw the biggest increase in the Labor Department's Producer Price Index in 15 years. The PPI, which measures prices at the wholesale level, rose 1.9 percent in September, on high energy and food costs, reflecting a 6.9 percent year-over-year rise that was the sharpest in 15 years. With energy and food removed, "core" PPI rose 0.3 percent, illustrating the significance the recent energy price rise has had (food has been relatively constant). Although 1 month of data does not signify a trend, the gain in inflation raises some concerns that oil and gas prices are stoking broad-based inflationary pressures.

[9] "Underinvested" because, even though the U.S. has doubled its oil productivity since 1975, half the oil it uses is still wasted when compared with today's best efficiency technologies, costing an average of $12 per saved barrel (in 2000 $). Light-vehicle efficiency, for example, has generally been getting worse for over 20 years, and EIA's January 2004 Reference Case, forecast that it would spend the next 20 years getting only 0.5 mpg better than it was in 1987.

[1] As with my oral responses to the Committee's questions at the September 21 hearing, these comments represent my personal views, and not necessarily those of the Federal Trade Commission or of any individual Commissioner.

Table 5. Financial Performance of Independent Oil Companies, 2004
(millions of dollars)

	Net Income		Revenues		Oil Production (000 b/d)		Gas Production (MM cf/d)	
	2004	% Change	2004	% Change	2004	% Change	2004	% Change
Devon	$2,176	25.3	$9,189	25.0	$279	21.3	$2,433	2.8
Unocal	1,208	87.9	8,204	26.0	159	–0.6	1,510	–14.4
Anadarko	1,601	24.4	6,067	18.4	230	–0.4	1,741	–1.2
Burlington	1,527	27.1	5,618	30.3	151	36.0	1,914	0.8
Apache	1,663	49.0	5,333	27.3	242	12.6	1,235	1.5
Kerr-McGee	404	84.5	5,179	23.8	159	5.3	921	21.2
EDG	614	46.5	2,271	30.1	33	22.2	1,036	7.8
XTO	508	76.4	1,948	63.7	30	57.9	835	20.0
Pioneer	313	–23.8	1,847	43.5	69	19.0	685	18.4
Newfield	312	56.0	1,353	33.0	21	23.5	666	9.3
Total	*$10,326*	*37.3*	*$47,009*	*27.4*	*$1,373*	*12.6*	*$12,976*	*3.8*

Source: Oil Daily, Profits Profile Supplement, v. 55, no. 39, February 28, 2005. p. 8.

Table 6. Financial Performance of Independent Refinersand Marketers, 2005
(millions of dollars)

	Net Income		Revenues		Product Sales (000 b/d)	
	2004	% Change	2004	% Change	2004	% Change
Valero	$1,791	187.9	$54,619	43.9	N.A.	N.A.
Sunoco	605	93.9	25,508	41.6	903	19.8
Premcor	478	308.5	15,335	74.2	N.A.	N.A.
Tesoro	328	331.6	12,262	38.6	604	8.4
Ashland	101	197.1	2,177	12.4	1,414	4.4
Frontier	70	2,233.3	2,862	31.8	166	0.0
Total	*$3,737*	*189.8*	*$112.763*	*45.0*	*$3,087*	*9.0*

Source: Oil Daily, Profits Profile Supplement, v. 55, no. 39, February 28, 2005. p. 8.
N.A. = Not available.

SUPPLEMENTARY INFORMATION SUBMITTED BY THE ROCKY MOUNTAIN INSTITUTE

Dear Senator Snowe:

As promised during Rocky Mountain Institute's testimony to your Committee on 21 September 2005, we are pleased to provide a list of measures, each of which would have a significant effect of reducing U.S. demand (and therefore reducing prices) for conventional petroleum products, and to do so over a time frame ranging from overnight, to over the next several weeks and months, and to generally do so with either a stimulative or a neutral effect on the economy. Overall, the measures would add up to between a 5 percent and 9 percent reduction in the U.S. demand for conventional crude oil over the next year or so, and do so with little or no interruption of our way or quality of life. *These immediate measures are listed in the following pages.*

A 5 percent to 9 percent reduction in U.S. crude oil demand may not sound like a lot. However, due to a current tightness in the market that is of historic proportions, this reduction would have a disproportionate effect in stabilizing the market price. This is because a reduction in U.S. demand of 5 percent to 9 percent would be sufficient to bring the global demand level down by some 1.0 to 1.8 million barrels per day, or some 1.2 percent to 2.1 percent of global oil consumption. This quantity is sufficient to give the fundamental global demand and supply oil system enough excess capacity to be able to absorb future price shocks caused by real risks such as terror- or weather-related interruptions, and thereby take a lot of air out of speculation as well. The fundamentals today are simply so tight that such shocks cannot be absorbed without severe price-rises. Excess capacity of some 3.0 to 3.5 million barrels a day is required for a stable fundamental demand and supply balance—in turn providing stable prices—yet only some 1.5 to 2.0 million barrels per day of excess capacity exists today. By removing roughly 1.0 to 1.8 million barrels of daily oil demand from the market, the reduction-measures suggested below, would bring excess capacity back to a level of 2.5 to 3.8 million barrels per day, and would, therefore, bring the currently high oil price levels and price volatility levels back to levels of a few years ago.

As important additional signaling measures, immediate and aggressive pursuit of commercialization of cellulosic ethanol and feedstock-neutral biodiesel would immediately improve the situation, due to its signal to the world market that the U.S. is on course to diversify its mobility fuels. There are many longer-term measures that will take time before the real effect if felt, but whose signals will send strong messages that will also provide an immediate effect and stabilize the market. These are well elaborated on in the Policy section in our September 2004 book titled *Winning the Oil Endgame,* free at *www.oilendgame.com,* and would all work to signal a coherent policy intention that would address the root causes of a "U.S. oil problem" that extends well beyond U.S. borders, since the U.S. consumes 25 percent of global oil output.

We now describe the short-term measures that would together reduce U.S. crude oil demand by between 5 percent and 9 percent, possibly more.

Part I: Immediate Measures To Reduce Consumption

I. Gasoline Only: Eliminate About 4–8 Percent of U.S. Gasoline, or Roughly 2–4 Percent of Crude

Reduce speed limits for all non-Class 8 vehicles to 60 MPH in zones above this limit today on all roads under Federal (and, if possible, state) jurisdiction. Assuming about ½ of U.S. automobile gallons are burnt at speeds of 65 MPH or higher, a speed reduction from 65 to 60 MPH would save between 8 percent to 12 percent of those gallons, or some 4 percent to 6 percent of gasoline fuel usage, or roughly 2 percent to 3 percent of U.S. consumption of crude oil. While we understand that this may not be popular among all constituents, this fuel would be immediately saved (overnight). When mid-term measures kick in, it could be phased out if necessary.

Provide alternative fuel vehicle (AFV), hybrid, and all-electric vehicles access to HOV lanes and preferential parking. At the moment, only AFVs have this right, and EPA would need to change its definition to one based on fuel efficiency or emissions, not on the fuel used, to make the rules embrace hybrids on Federal highways. Some states are already trying to do so but need the EPA rule change.

Give so-called double-tax-credit to state and local nonprofit vehicle buyers, such as public safety agencies, for going to high-efficiency hybrids.

Encourage improved pattern of use by enabling all citizens to deduct their yearly cost of mass transit on IRS Schedule A.

Ensure that "parking cash-out" is approved, and consider requiring it for large employers, as long practiced in S. California. Under this system, employers must give their employees the option of cashing out of the free parking space they otherwise would have been able to claim (alternatively, employers cannot give free employee parking, but must charge fair market value and pay a "commuting allowance" of equal after-tax value to employees choosing to commute). This monetizes competition between all modes of getting to work (or not needing to, *e.g.,* telecommuting); workers who choose any cheaper mode than driving their own car can pocket the difference. Both the Treasury and employers gain net revenue too. This was approved, but we have not had time to check if it were superseded.

Extend the Federal tax credit for AFV, hybrid, and all-electric vehicles to a significantly greater number of vehicles than the current 60,000 per manufacturer.

Fix >8,500-lb loophole in current CAFE standard, so that the heavier light trucks (Class 2b) will have to comply with the MPG standards.

Clarify that NHTSA does have authority to extend to cars its 23 August 2005 proposed decision, to base future CAFE light-truck rules on size, not weight.

II. Diesel Only: Eliminate About 12–18 Percent of Diesel, or Roughly 1–2 Percent of Crude

Reduce heavy truck speed limit to 55 MPH on all roads under Federal (and, if possible, state) jurisdiction. Over a typical heavy truck driving cycle, this would save between 5 percent and 10 percent of heavy truck diesel savings, or roughly 3 percent to 6 percent diesel savings, translating to roughly 0.5 percent to 1.0 percent of crude savings. *Please note that as long as this applied to all Class 8 trucks across the nation, truckers would know that the playing field is level, and would be happy to take the saved fuel money.* The labor costs would go up marginally, but truckers and trucking fleets would prefer to get this through *provided it is applied uniformly across the country*.

Introduce three measures to eliminate between 8 percent, and, possibly more than 12 percent of domestic heavy truck diesel, or some 5 percent to 7 percent of all diesel, and therefore about 1 percent of all U.S. crude oil use, via reduced number of trips and reduced fuel waste from upstream bottlenecking in international shipments (due to the lowest GWVR often occurring in the United States):

- Raise Federal Gross Vehicle Weight Rating (GWVR) to the European norm of 110,000 lbs, while leaving the per-axle weight requirements unchanged. Truckers would simply add one extra axle on trailers to allow rigs to carry more weight without increasing the pressure on the roadways. This should be accompanied by installation of sufficient braking power (optionally using better technologies, possibly disk brakes) so that braking power per pound of GWVR would at minimum remain constant. Since pressure on the road surface remains the same per axle and brake force per pound is easily retained or improved, this measure will not damage roads. Moreover, when combined with lower speed (above), safety would in all circumstances be better. Please note that there is no real reason not to do this; maintaining status quo will perpetuate U.S. lack of competitiveness. Please also carefully note that when combined with the speed-reduction measure, this GVWR measure will more than offset (by many whole-number multiples) any capacity losses to the U.S. stock of trucks. This point is very important.
- Allow double and triple-trailer combinations nationwide (currently allowed in *e.g.,* NY, AZ, UT, and other states). The fuel savings are simple and self-explanatory: one tractor pulling two 48-foot trailers will pull roughly double the load while reducing fuel economy from 6.5 mpg to roughly 5.0 mpg. So this measure means pulling the second load at a "penalty" of only about 1.5 mpg, *versus* today having to pull this second load with an altogether separate tractor at 6.5 mpg.
- Change Federal regulation of tractor and trailer maximum height from 13.5 to 14 ft, and trailer length from 53 to 59 ft (note that some states have already done this) to enable more cargo volume per trip for those loads that are cubed-out.

Some states permit the first two measures already (*e.g.,* Michigan allows 160,000 lbs and triple-trailers). This measure would improve truckers' margins from three key factors: the 8–12 percent direct diesel savings, some 20–35 percent direct capital expenditure savings, and reduced cost by lowering the extremely high driver turnover in the industry. Since additional axles can be rapidly and safely retrofitted to generate an immediate effect, one suggestion would be to introduce a temporary waiver with immediate effect. Truckers will embrace this package so far. But please read on for more initiatives that truckers will embrace if implemented on a Federal level.

Mandate heavy truck manufacturers to install Auxiliary Power Units (APUs) on all *new* Class 8 tractors. This will represent a level playing field between manufacturers and between all customers, and this will eliminate ~8–9 percent of truck diesel fuel (4–5 percent of all diesel). This reduction is because of a reduction in diesel going to idling by ~90 percent, or about 0.5–0.7 percent of U.S. crude oil use when fully implemented, or about 0.03–0.07 percent after the first year. Please note that because this measure would affect new tractors, little to no lead-time is required. The other point to note is that the payback is very favorable, so it is a measure that trucking companies will be happy to take as mandatory if uniformly applied.

Incentivize retrofits on *existing* trucks of APUs via a nationwide tax incentive (like for hybrid cars), for example a tax credit, phased down to reward early adopters, and offset initially higher costs before volumes expands. This will also immediately eliminate the confusion that currently exists between state boundaries.

Require installation of a digital fuel economy display to give real-time efficiency data to operators. This has been shown to result in increased efficiency through on-the-job learning about which driving regime gives high *vs.* low fuel economy.

Require driver's ed for fuel economy by making efficiency training required for obtaining a Class A CDL.

The trailer manufacturing sector today has nothing enforced on it: vendors build a big box that's not at all aerodynamic. This industry should be put under pressure by an independent rating system. This system should reward low-aerodynamic resistance trailers and should penalize high-aerodynamic resistance trailers.

Rapidly mandate efficiency (coefficient-of-rolling-resistance) labeling for truck tires, so truckers can be informed.

Examine the idea of disallowing passing on fuel surcharges among the mega-fleets. Currently, large for-hire mega-fleet purchasers of trucks need not absorb the high costs of fuel, as they simply add fuel surcharges to their customer's bills. If fuel surcharges are disallowed, these important large-scale fleets will immediately turn to the manufacturers and request from them mass-production trucks with significantly lower aerodynamic resistance, since aerodynamic resistance "eats" about ⅔ of all heavy truck diesel.

Improve the EPA methods of regulating emissions from heavy trucks, by eliminating the current compromise between fuel economy and emissions regulations. This is probably too late for 2007, but should be understood and re-examined for the upcoming additional regulatory tightening that is due in 2010. This is a technical area but will be fruitful to discuss in depth with the EPA, as regulatory pathways different from the current one appear to be possible. One possibility is to ask EPA to phase-in NO_x regulations as technologies that don't sacrifice fuel economy come to market (the current Exhaust Gas Recirculation deployed by engine makers will cost truckers about 5 percent fuel economy as of 2007).

We recommend a CBO or GAO study or studies of the low-income affordable-personal-mobility financing options described in detail in our book, *Winning the Oil Endgame*. This is politically a very attractive and private-sector funded mechanism that would also be very attractive to Detroit. It should be politically attractive to show something is being done to relieve, in due course, $3/gal gasoline's heavy burden on low-income Americans.

III. Gasoline and Diesel: Eliminate About 4–6 Percent of Gasoline and Diesel, or About 2–3 Percent of Crude

Procure with immediate effect all Federal road-based civilian vehicles, and state or local vehicles purchased with Federal funds, including those of DOD, such that they are among the 5 percent most efficient vehicles in their sub-class. There are 6 sub-classes of automobiles (Class 1), 6 sub-classes of light trucks (Class 2a), and then there are Class 2b (8,501–10,000 lbs) and Classes 3 through 8 (up to 80,000 lbs GVW).

Proper tire inflation pressure can give up to a 3 percent fuel economy benefit (some 0.4 percent per psi under-inflated). Owners will need strong encouragement that all individuals and, in particular, rental vehicle fleet companies go through their entire set of wheels and ensure that tire pressures are what each tire specifies as maximum pressure.

Exert Federal pressure to improve timing of traffic lights on major streets in cities. The benefits are unequivocally positive, and include improved traffic flow, reduced oil use, and reduced pollution. It would not be hard to implement, and it is surprising that this isn't more widely adopted. While the Federal Government does not control this, it could commission studies of the potential savings from this action at (say) the state level, and experiments at the local level by placing funding for such studies. A few studies and experiments in some big states (California and Texas for example) would catalyze copycat activities in other states. Once the analysis shows the potential benefits and some localities report their results, others will soon follow. The Federal Highway Administration has a lot of expertise in this area. A useful carrot could be some encouragement or incentive, while traffic-light timing is being adjusted, to retrofit the signals themselves with LED models that save energy, have better visibility, and last far longer. The saved maintenance cost can then pay for other costs, such as changing signal timing or introducing smarter on-ramp "metering" lights, that would otherwise burden state and local highway budgets.

Push rapid adoption of both electronic toll taking technologies and "urban box" congestion charges. Based on experience from London, Oslo, and other cities, significant local savings of oil will result from lowered congestion and improved traffic flow. Consider subsidized adoption or withholding Federal funds from states that don't make it a priority. Compatibility should be encouraged between regions, and privacy concerns should be addressed.

Encourage proper engine tuning.

Encourage proper air filter replacement.

All of EPA's gas mileage tips may be good to widely publicize, such as "Driving more efficiently." See EPA sites for more information:

http://www.fueleconomy.gov/feg/maintain.shtml, and
http://www.fueleconomy.gov/feg/drive.shtml

Ask NHTSA to clarify that dealers and vendors of hybrid cars are allowed to give advice on how to drive these cars for maximum fuel efficiency, as lawyers currently argue that this would be illegal since it goes beyond, and adds a gloss to, the EPA-required MPG-label. This is important for hybrids because *Consumer Reports*, *N.Y. Times*, and others use a standard test method that disadvantages hybrids, creating a false public impression that hybrids inherently fall short of their EPA-rated mpg by more than non-hybrids do—yet automakers can't educate testers or customers about how to drive hybrids optimally.

IV. Jet A: Eliminate About 1 Percent of Jet A in First Year, or Roughly 0.1 Percent of Crude

Have FAA mandate idling on one engine only when aircraft is on ground-hold (*i.e.,* sitting on tarmac awaiting take-off).

Introduce loan guarantees (offset by equity warrants so there's no actuarial net cost to the Treasury) for airlines wishing to scrap and replace parked and inefficient with efficient planes such as the new Boeing *787 Dreamliner*. Note condition of scrapping. A minimum proven efficiency gain (*e.g.,* 20 percent) per passenger mile should be a condition. An even better instrument would be to offer loan guarantees whose amount depended on the difference in fuel economy between what is being scrapped and the new aircraft. This would align the incentive with the desired outcome—saved fuel. This would allow airlines to trade-up to more efficient airplanes by either scrapping one of their older planes, or buying one off the market to be scrapped, replacing it with a more efficient plane that meets certain specifications.

Introduce a phased-down tax-credit to airlines that replace heavy interior parts with lightweight materials (*e.g.,* seats, tray tables, etc, all being easily retrofittable). A useful number to know is that for a typical midsize passenger jet, taking out one lb of weight saves 124 lbs of fuel per year.

Part II: Increase in Supply

Require Federal Government procurement agency [GSA] to sign long-term contracts for biofuel blends E85 for up to 30 percent of their fuel requirements. A major issue preventing increased biofuel capacity is the inability to finance plants due to lack of long-term fuel-purchase contracts. Use government procurement to address this bottleneck.

Expand the renewable fuel loan guarantee in Section 1511 of the 2005 Energy Policy Act, to allow for more than 50 projects rather than the current 4.

Encourage automakers to go total-flex. Over half of all Brazil's new cars are now total flex (heading for 85 percent in the next few years). Other countries are introducing this, *e.g.,* Sweden (*www.baff.info*). Total-flex technology, pioneered by GM and VW in Brazil, lets a car burn anything from pure gasoline to pure ethanol. Since no specific fuel or blend is required, and the cars adjust on the fly, there are no captive customers; when you pull up to the pump, you can buy whatever fuel or blend is cheapest that day. This has been the most important reason Brazilian ethanol now competes robustly against gasoline without subsidy. As a result, Brazil has already replaced over one-fourth of its gasoline with sugar-cane ethanol; has recovered its initial ethanol subsidies 50 times over from oil savings; and lands ethanol in New York for $1.10/gallon after paying 100 percent duty.

Propose a DARPA fly-off between 10 competing cellulosic ethanol plants: pay to build each, and protect intellectual property rights while gaining transparency in data.

Senator, should you have any questions about this list, please do not hesitate to get in touch. Thank you.

RMI's Energy & Resources Team: Amory B. Lovins, E. Kyle Datta, Nathan Glasgow, Jon Koomey, and Odd-Even Bustnes.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GEORGE ALLEN TO JIM WELLS

Question 1. Mr. Wells, in your report, you stated that the variety of fuel blends, over 50, in the United States, has contributed to price volatility. In the Energy Policy Act of 2005, we stopped the proliferation of additional fuel blends. How practical would it be to ratchet down the amount of fuel blends to a more reasonable and efficient number? What number would be effective? Would the use of the cleanest fuels increase or decrease short-term and long-term costs?

Answer. Our recent work on special gasoline blends entitled *Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices* (GAO–05–421), did not extend far enough to make specific recommendations about the optimal number of fuel types. Further, to our knowledge, there has not yet been any study comprehensive enough to satisfactorily answer this question. With regard to the short-term and long-term costs of switching to only the cleanest fuels, we reported that these fuels are also the costliest to produce. In addition, not all refineries can produce these fuels without installing costly equipment and processes. Finally, oil company officials told us that switching to these fuels can reduce total refining capacity, because these fuels cannot use some components derived from crude oil that are currently blended into some types of fuel. Therefore, to determine the optimal number of fuels types and

the costs of switching to the cleanest fuels, we would need to do an analysis of the available refining capacity capable of producing these fuels, and also evaluate, among other things, how refining capacity would be affected by switching to fewer fuel types.

Question 2. Two important facts stand out with respect to the Nation's refining capacity: First, 47 percent of the Nation's refining capacity is in the Gulf Coast region. And, second, we have heard of only one new refinery being developed since the mid-1970s—it is in Yuma, Arizona. In your view, what additional steps, both direct and indirect, can Congress take to facilitate the construction of new refinery capacity? In addition, is it possible to secure greater geographic diversity of refineries so that we do not have a repeat of the problems caused by Hurricane Katrina?

Answer. Clearly, the damage caused by Hurricane Katrina has pointed out the concern related to having a refining industry heavily concentrated in a specific geographic area. It is also true that no new refineries have been built since the 1970s, although there has been some increase in refining capacity through additions to existing refineries. GAO has not done any work that would enable us to suggest what steps Congress can take to facilitate construction of new refineries. With regard to securing greater geographic diversity of refineries, while we have not analyzed this question in any of our past work, we can point out two features of the oil industry that may be helpful as Congress considers these issues. First, the heavy concentration of refineries in the Gulf Coast Region is mirrored by a concentration of crude oil supply infrastructure as well as infrastructure for delivering petroleum products from the Gulf to consuming regions. If significant new refining capacity were located elsewhere in the country it may be necessary to also build additional crude oil and petroleum product infrastructure, including pipelines and storage terminals. Second, in the course of our work we have been told many times by industry representatives and other industry experts that state and local permitting requirements and other constraints are discouraging new refinery and other infrastructure development. If Congress believes that adding new refining and related infrastructure to create greater geographic diversification is desirable, then addressing these issues may be justified.

Question 3. How can the refinery permitting process be streamlined to encourage greater capacity at existing sites? Are there current regulations that are duplicative and unnecessary to achieve reasonable environmental goals?

Question 4. Which of these regulations deserve permanent suspension or modification?

Answer to *Questions 3* and *4.* GAO has not analyzed the refinery permitting process in our past work, so we cannot directly answer these questions. We have studied the siting of electric power plants in a report entitled *Restructured Electricity Markets: Three States' Experiences in Adding Generating Capacity* (GAO–02–427). While we do not know if the permitting process for capacity expansions of refining is similar to that of power plant siting, in the aforementioned report, we found that Federal, state, and local jurisdictions were all involved in the power plant approval process and that there was a great deal of variation in the amount of time it took to gain approval to build power plants within states and also across the states. Based on the results of this work, a similar study of the permitting process for refining capacity upgrades may be fruitful.

Question 5. Has the temporary relaxation of Federal fuel requirements, such as sulfur content, helped alleviate the gasoline crisis?

Answer. In our report on special gasoline blends we concluded that the proliferation of these blends has put stress on the supply infrastructure and likely led to higher prices. While we did not analyze specific supply disruptions such as occurred in the aftermath of Hurricane Katrina, we can infer from our work that relaxing Federal fuel requirements in general would lead to fewer complications in supply and probably to reduced industry costs and lower prices at the pump. It is also logical to infer that relaxing these requirements would allow some areas access to gasoline and other fuels that would otherwise not be allowed and therefore would have been unavailable. In this way it is likely that relaxing the Federal fuel requirements did help alleviate gasoline price increases at least in some areas.

Question 6. Has the trend of running our refineries at high levels, like 97 percent, and the failure to build more refineries undermined the effectiveness of the Strategic Petroleum Reserve?

Answer. GAO is currently conducting a review of the Strategic Petroleum Reserve (SPR). In the course of this work we are evaluating the effectiveness of the SPR. We cannot at this point answer the question generally, but we can point out that Hurricane Katrina did damage both to crude oil supply in the Gulf Coast and to refineries and pipelines. In such a situation, the damage to refining capacity may

have reduced the industry's ability to use SPR oil, and, thereby decreased the effectiveness of the SPR. If this is true, then in similar situations in the future, having additional refining capacity could increase the potential to use SPR oil.

Question 7. Over the past 20 years, is it true that demand for refined products has increased by about 30 percent and capacity has only increased about 9 percent?

Answer. According to data compiled by the Energy Information Administration, petroleum consumption in the United States increased by over 50 percent in the twenty years from 1985 through 2004, while domestic refining capacity increased by about 8 percent over the same period. However, because the rate at which capacity was used also increased, the total volume of refined products produced by U.S. refiners rose by almost 30 percent over the same twenty-year period. The difference was made up by imports.

Question 8. Did Europe's dieselization program affect incentives to add refinery capacity? Are there other examples of other country's fuel choice decisions that have affected our markets and refinery capacity?

Answer. We recently testified that as demand for gasoline has grown faster than domestic refining capacity, the United States has imported larger and larger volumes of gasoline and other petroleum products from refiners in Europe, Canada, and other countries. One reason for this increase in imports has been the availability of gasoline from these foreign sources at lower cost than building and operating additional refining capacity in the United States. While we have not studied other countries fuel choice decisions and their potential impact on our markets and refinery capacity, it is reasonable to infer that, if other countries move toward using more diesel and less gasoline, this would lead to greater opportunities for the United States to import those other countries' surplus gasoline.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO J. ROBINSON WEST

Question 1. In testimony before the U.S. Senate Committee on Foreign Relations October 2003, you said that "There is misplaced concern with 'dependence' on foreign oil suppliers . . . 'Energy independence' in the U.S. is a meaningless concept. . . ." Do you believe that the U.S. can and should be dependent on foreign oil?

Answer. It is inevitable that the U.S. is dependent on foreign oil in the sense that oil is a fungible commodity traded in a liquid, transparent, and efficient market. That is why there is a global price for oil. It would be preferable if the U.S. were to import less oil since there would be less impact on foreign exchange and current account balances and the possibility of interruption of supply would be diminished.

Question 2. In testimony before the U.S. Senate Committee on Foreign Relations October 2003, Mr. West called Saudi Arabia the "central bank of oil," saying "The excess capacity that Saudi Arabia maintains at high cost allows the world markets not to panic at every incident, civil war or revolution. Without it, there would be cyclical booms and busts which would destabilize economies and countries. Saudi Arabia is the guarantor of last resort, the Central Bank of the oil market that provides liquidity and reassurance in difficult times." In an interview with Margaret Warner of PBS' NewsHour in 2003, when talking about Iraq you said that "oil always corrupts governments . . . if a government controls oil, large oil resources, they basically don't need the consent of the governed. They have the money. . . . And government becomes not only a political prize, but it becomes a great commercial and financial prize. And this is what's happened in West Africa, in the Caspian, and the Middle East, and Russia, everywhere. Do you consider Saudi Arabia one of these governments that control the oil without full consent of their governed?

Answer. Saudi Arabia is a monarchy and not a democracy. Obviously, it would be better if there were greater participation of the public in government decisions, including the control of oil. That being said, Saudi Arabia under King Abdullah has made some tentative steps in increasing public participation. Also, it is a firmly held view that Saudi Aramco itself is one of the best national oil companies; highly professional and not corrupt.

Question 3. The U.S. uses 26 percent of the world's oil, but owns only 2–3 percent of it. According to *Winning the Oil Endgame,* written by the Rocky Mountain Institute, "after 145 years of exploitation, U.S. reserves are mostly played out" and "the Arctic National Wildlife Refuge (ANWR), the biggest onshore U.S. oil prospect, is estimated by the U.S. Geological Survey to average 3.2 billion barrels—enough to meet today's U.S. oil demand for 6 months starting in a decade." The GAO tells us that supply in the U.S. is dwindling, and that any oil we extract now will be more

difficult to get, because we've essentially picked the low-hanging fruit. How does demand play into our long-term problems with supply?

Answer. As I noted in my testimony, supply solutions by themselves will not be adequate. We must approach demand seriously thru increased efficiency and conservation, particularly in the transportation sector.

Much of our imported oil comes from countries with unstable political situations. Given this restricted supply, many believe the only long-term solution is a demand-side one, *i.e.,* drastically reducing the U.S.' dependence on oil, both foreign and domestic. The Commerce Committee has jurisdiction over a major U.S. policy that could sharply reduce U.S. demand for oil—Corporate Average Fuel Economy (CAFE) standards. Transportation's need for light refined products such as gasoline causes 93 percent of projected growth in oil demand to 2025, according to the Rocky Mountain Institute and the Energy Information Administration.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO JIM WELLS

Question 1. It is our understanding that some over-the-counter futures trading do not fall under the purview of the CFTC. Is this true? What trades are under the purview of CFTC and which are not?

Answer. We have not published any work that would enable us to answer this question directly. However, we are conducting ongoing work that relates to these issues and in the course of this work, we will try to incorporate information that would answer, at least in part, *Question 1.* When this work is released we will ensure that you and your staff receive copies of the report. The broad objectives of our ongoing work include the following questions:

1. To what extent have market studies, including those carried out by the CFTC and the New York Mercantile Exchange, explored possible relationships between the level and volatility in energy futures prices and, (a) general market factors, and (b) the trading activities of hedge funds?

2. How does the Commodity Futures Trading Commission's (CFTC) market surveillance program monitor and detect market abuses in the trading of energy futures?

3. What enforcement actions has CFTC taken against energy traders involving fraudulent, manipulative, and abusive trading practices?

Question 2. According to CRS, five companies (ExxonMobil, BP, Shell, ChevronTexaco, and ConocoPhillips) now represent 81 percent of the market-based revenues for this industry. They have also calculated that net income for these companies grew from $29.7 billion to $81.5 billion between 2002 and 2004, and profits as a percent of revenues for these companies grew from 4.4 percent in 2002, to 6.7 percent in 2003, to 7.1 percent in 2004. This past quarter, the following companies reported the following earning increases: ExxonMobil up 32 percent to $7.64 billion; Shell up 35 percent, to $5.34 billion; BP up 29 percent, to $5.66 billion; ConocoPhillips up 51 percent, to $3.14 billion. Please provide you opinion of the degree to which the large vertically integrated companies control the distribution of gasoline, direct pricing to retail outlets, and limit distribution to dealers not complying with direction from the major companies.

Question 3. Against the background included in *Question 2,* what is the GAO's current assessment of the competitive nature of today's gasoline market, in light of the large profits being reaped by the oil companies, and their apparent lack of investment in growing refining capacity? What measures are used to assess the competitiveness of the refining industry, the retail gasoline industry?

Answer to questions 2 and 3. GAO does not have published work that would enable us to directly answer these questions. However, we do have a recent report, entitled *Energy Markets: Effects of Oil Mergers and Market Concentration in the U.S. Petroleum Industry,* in which we found that mergers in the 1990s contributed to an increase in the market concentration of the petroleum industry. We also found that some of these mergers contributed to increases in gasoline prices, averaging about 1 to 2 cents per gallon. We do not have work that would enable us to comment more generally about the competitiveness of the refining industry. Further, as we testified, the petroleum industry is global in nature and the United States currently imports a large amount of gasoline to supplement domestic refining capacity. Because of its global nature, we believe that a more complete study is needed of the competitiveness of the petroleum industry; the investment climate for building new refining capacity, worldwide; the role and availability of imported gasoline in

meeting U.S. demand; and the implications of these things on gasoline prices in the United States.

Question 4. It has been suggested that the oil futures market is a significant contributor to the recent increase in crude oil prices. While the Commodities Futures Trading Commission is responsible for oversight of the oil futures market, we solicit your opinion as to whether any gaps in oversight authority exist. Specifically, I'd like to understand whether *all* over-the-counter trades are included in regulatory oversight authority.

Question 5. Do you believe the FTC and CFTC have sufficient authority to investigate market manipulation, price-gouging, and price volatility? What if any changes would you recommend Congress adopt?

Answer to questions 5 and 6. *Questions 4* and *5* relate to our aforementioned ongoing work (see our answer to *Question 1*). While that work is at an early stage and we do not at present have any findings to share, we will try to incorporate information into our report that will, at least in part, answer *Questions 5* and *6*.

Question 6. Some independent gas station owners in my state have complained that they are not supplied with as much product as they want at any one time, necessitating more frequent deliveries. Do you know if this a standard market practice? What is the volume capacity of all the gas stations in the country combined? Could having a higher percentage of them filled allow for a cushion during sudden supply shortages?

Answer. In our recent gasoline primer, entitled *Motor Fuels: Understanding the Factors that Influence the Price of Gasoline,* we discuss the role of inventories in determining gasoline prices. We have also reported that, like inventory levels in many other industries, the level of gasoline inventories held by private companies has decreased significantly in recent years. This could have an impact of gasoline prices in the event of unforeseen disruptions as occurred with Hurricane Katrina. Specifically, having more inventories in the aftermath of the hurricane would likely have alleviated some of the shortages that were reported at some gasoline stations and could have mitigated some of the price increases.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO JOHN H. SEESEL

I am pleased to respond to the questions that you have asked following up on the September 21, 2005, hearing on energy pricing before the Committee on Commerce, Science, and Transportation.[1]

In response to your questions, I would like at the outset to identify some common themes, which are discussed more fully in the answers below. First, a requirement that firms disclose certain types of company-specific information might in fact harm competition and consumers, as well as entail significant costs both for industry and for the government. Second, the top five firms identified by the Congressional Research Service do not dominate the petroleum industry as a whole or in any of its stages (such as crude oil production, refining, transportation, or retailing). Third, oil industry profits have not been consistently high and have fluctuated widely over the past three decades, depending on underlying economic conditions. Finally, unlike agencies with mandates to monitor and govern aspects of the pricing and output of regulated industries, the Federal Trade Commission's enforcement authority is limited to offenses against the antitrust and consumer protection laws, and that authority is also circumscribed by applicable judicial decisions. The FTC is not an economic regulatory body.

Question 1. In the spirit of enhanced market transparency, why doesn't the FTC issue regulations requiring full disclosure by refiners and distributors of their wholesale motor fuel pricing policies, where full disclosure is a listing of each component contributing to prices, including the cost of crude oil, refining, marketing, transportation, equipment, overhead, and profit, along with portions of any rebates, incentives, and market enhancement allowances?

Answer. As a general principle, increased transparency is a laudable goal for many markets. The availability of timely, accurate information about the characteristics of a market is an important element of sellers' and buyers' ability to make intelligent supply and consumption decisions. Nevertheless, for a number of reasons,

[1] As with my oral responses to the Committee's questions at that hearing, these answers present my personal views and do not necessarily represent the views of the Federal Trade Commission or of any individual Commissioner.

it is difficult to see how the additional transparency proposed here would significantly help consumers, while there are ways in which they may be worse off.

First, it is not clear that new regulations would offer consumers new information that they can use. Petroleum markets already are more transparent than many other markets. Consumers are acutely aware of prominently posted retail gasoline prices and can far more readily compare the asking prices of competing gasoline retailers than the prices of such goods as new cars or computer equipment.

The proposal's focus on wholesale motor fuel pricing policies suggests that it may be primarily concerned with wholesale buyers, such as jobbers and various outlets that sell gasoline (for example, convenience store chains, supermarkets, and mass merchandisers). These wholesale buyers already rely on many kinds of sophisticated information, such as posted terminal rack prices, NYMEX spot prices for crude oil and refined products, additional petroleum industry information available from such commercial sources as Platts and the Oil Price Information Service, and highly detailed data that the Energy Information Administration (EIA) publishes about every sector of the petroleum industry.

Second, requiring the posting of detailed cost information could actually raise gasoline prices by facilitating collusion. Detailed, firm-specific cost and profit information could facilitate the management of a successful price-fixing cartel, by helping the cartel members to coordinate pricing and supply decisions and to identify firms that cheat on the collusive arrangement. Any government agency placed in charge of compelling industry competitors to disclose this information essentially would assume the role of cartel facilitator.[2]

Third, producing the information and administering the disclosure regulations may impose substantial costs. Depending on how wholesale sales are defined, the number of reporting companies may be sizable.[3] Many cost elements—such as crude oil costs and spot and rack prices—vary daily (if not more often) and would require constant updating. The mandated information would require reporting on wholesale prices at hundreds of terminal racks across the nation, involving thousands of jobbers that buy at the rack and tens of thousands of retailers that are directly supplied on a DTW basis. Very substantial resources might be required to identify with regularity all of the constantly changing contractual terms between refiners and these myriad firms and to report on transportation costs, fixed costs, and profits. It could be very expensive for the firms to produce these additional data and costly for the responsible government agency to oversee the program. Indeed, if such disclosures are to be required, I respectfully suggest that the EIA and other components of the Department of Energy—which already perform a significant amount of petroleum industry data collection and analysis—would be far better positioned than a law enforcement agency such as the FTC to administer this regulatory program.

Question 2. In the August 2004 report on *The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement,* the Federal Trade Commission "alleged that since 1981, 15 large petroleum mergers would have resulted in significant reductions in competition and would have harmed consumers in one or more relevant markets had the mergers proceeded as announced. In 11 cases, the FTC obtained significant divestitures, including the sales of numerous refineries, pipelines, terminals and marketing assets to prevent reductions in competition and harm to consumers." While the FTC placed conditions or requirements such as asset divestiture and/or orders actions precluding the emerging parties from undertaking anticompetitive price increases, the outcome is the current situation where the market

[2] Some economic studies have concluded that the mandated disclosure of firm-specific information on prices and contract terms may have abetted noncompetitive behavior in some circumstances. *See* S. Albaek, P. Møllgaard, and P.B. Overgaard, *Government-Assisted Oligopoly Coordination? A Concrete Case,* 45 J. Indus. Econ. 429 (1997) (publication of firm-specific transaction prices by Danish antitrust authority associated with 15 to 20 percent increases in concrete prices); *see also* S.W. Fuller, F.J. Ruppel, and D.A. Bessler, *Effect of Contract Disclosure on Price: Railroad Grain Contracting in the Plains,* 15:2 Western J. Agric. Econ. 265 (1990) (legislation requiring disclosure of certain contract terms associated with higher rail rates for grain shipments).

[3] For example, according to recent discussions between the staffs of the FTC and the EIA, approximately 170 entities appear to report to the EIA as "prime suppliers" of gasoline. The EIA's prime suppliers are firms that produce or import product (either across state lines or from foreign sources) and sell the product to jobbers, retailers, or end-users within a state. These sales sometimes are referred to as "first sales into state" and represent the first change in title after the product is either produced or brought into a state. These sales either explicitly represent wholesale transactions if they are made at terminal racks or on a dealer tankwagon (DTW) basis, or implicitly represent wholesale transactions in instances of internal company transfers to company-owned-and-operated retail outlets.

place is controlled by few companies. Please provide the specific indicators or measures that FTC uses to analyze how consumers benefit from 80 percent control of the petroleum market by five of the large vertically integrated companies.

Answer. I gather from the staff of the Committee that the 80 percent figure at the end of this question is derived from Tables 2, 5, and 6 in the Congressional Research Service's August 4, 2005 report entitled *Oil Industry Profits: Analysis of Recent Performance.* It appears that the 80 percent figure represents the revenues and/or profits of the top five firms listed in Table 2 divided by the revenues and/or profits of the firms listed in all three tables. These three tables, however, include only a small number of the significant firms in the petroleum industry, and the top five firms in Table 2 represent much less than 80 percent of industry revenues and profits when all of the relevant firms are considered.[4]

The top five firms in Table 2 also control much less than 80 percent of each of the industry's stages (including crude oil exploration and production, refining, transportation, terminaling, wholesale distribution, and retailing). For instance, data published by the EIA show that the top five refiners accounted for 51.5 percent of crude oil distillation capacity in the United States as of January 1, 2005.[5] The 2004 FTC staff report on petroleum mergers shows the generally unconcentrated or moderately concentrated structure of the stages of the industry, including Herfindahl-Hirschman Indices[6]—generally calculated on a national basis[7]—of 297 for crude oil in 2002; 1,225 for crude oil pipelines in 2001; 728 for refineries in 2003 (with moderate levels of concentration in refining on a regional basis); 698 for refined product pipelines in 2001; and, with few exceptions, low to moderate levels of concentration in gasoline marketing (calculated state-by-state).

More important, the FTC can challenge a merger only to the extent that it is likely to substantially lessen competition in one or more carefully delineated relevant markets—a likelihood that it must prove to a court. The courts are unlikely to countenance a merger challenge based on a theory that the overall petroleum industry is allegedly experiencing a long-term trend toward consolidation.

Question 3. According to CRS, five companies (Exxon Mobil, BP, Shell, Chevron Texaco, and Conoco Phillips) now represent 81 percent of the market based revenues for this industry. They have also calculated that net income for these companies grew from $29.7 billion to $81.5 billion between 2002 and 2004, and profits as a percent of revenues for these companies grew from 4.4 percent in 2002, to 6.7 percent in 2003, to 7.1 percent in 2004. This past quarter, the following companies reported the following earning increases: Exxon Mobil up 32 percent to $7.64 billion; Shell up 35 percent, to $5.34 billion; BP up 29 percent, to $5.66 billion; Conoco Phillips up 51 percent, to $3.14 billion. Please explain how these increasing rates of profit compare to other FTC-regulated industries.

Answer. As discussed in Answer 2, the five named firms account for a much smaller share of industry revenues. As to the levels of profits in the petroleum industry, both the 2004 petroleum merger report and the FTC's July 2005 report on *Gasoline Price Increases: The Dynamic of Supply, Demand, and Competition* provide comparisons between profits in the petroleum industry and those in other industries. Most of the data in these two FTC reports came from the EIA's Financial Reporting System (FRS), although some of the data in *Gasoline Price Changes* came directly from individual firms' financial reports. The FRS data show that in 2003—the latest year for which such EIA data are available—the 28 major energy producers currently operating in the United States, had an average return on capital

---

[4] For instance, other large crude oil production firms with which the major integrated companies must compete—such as state-owned firms in Saudi Arabia, Iran, Russia, Mexico, and Venezuela—are not listed in Table 2, and a number of large independent retailers (such as RaceTrac and Sheetz) are not listed in Table 6. Moreover, the ratio erroneously compares the revenues of the largest *integrated* firms—consisting of exploration and production, transportation, refining, and marketing, not to mention such additional sources as solar energy, hydrogen, and food and drink sold at retail outlets—with revenues of selected *non-integrated* refiners and marketers.

[5] EIA, *Petroleum Supply Annual 2004,* Vol. 1, Tables 38 and 40.

[6] The Herfindahl-Hirschman Index (HHI) is a measure of market concentration that is calculated by squaring the market share of each firm in the market and then summing those squares. The Horizontal Merger Guidelines that the FTC and the U.S. Department of Justice apply in analyzing mergers and acquisitions characterize a market with an HHI below 1,000 as "unconcentrated," while a market with an HHI between 1,000 and 1,800 is "moderately concentrated" and one with an HHI over 1,800 is "highly concentrated."

[7] In its analysis of mergers and acquisitions in the petroleum industry, the Commission generally has found relevant geographic markets to have been less than national in scope. *See* FTC Bureau of Economics, *The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement* 15 (2004). Accordingly, the "national" HHIs in this paragraph are simply an effort to estimate concentration in a hypothetical national market.

employed of 12.8 percent, as compared to a 10 percent return on capital employed for the overall Standard & Poor's (S&P) Industrials. Between 1973 and 2003, however, the annual average return on equity for FRS companies was 12.6 percent, while it was 13.1 percent for the S&P Industrials. Average annual rates of return for FRS companies have varied widely over the years, ranging from as low as 1.1 percent to as high as 21.1 percent during the period from 1974 to 2003.

Petroleum firms have realized large earnings in the last year or two. In light of the sharply higher prices in the world market for crude oil during that period,[8] as well as the widely acknowledged tightness of U.S. refining capacity—significantly aggravated by the damage done by Hurricanes Katrina and Rita—economic activity at the crude oil production and refining levels of the industry is generating very large amounts of revenue, and profits (in dollar terms) have risen commensurately. Nonetheless, in spite of the petroleum refining sector's higher margins in the last one to 2 years—due in large part to increases in demand and significantly constrained refining capacity—refining margins are notoriously cyclical and, as noted above, fluctuated dramatically over a 30-year period.

Question 4. Given that five companies now control more than 80 percent of the market, what measures are used to assess the competitiveness of the gasoline industry? Please address the degree to which the large vertically integrated companies control the distribution of gasoline, direct pricing to retail outlets, and limit distribution to dealers not complying with direction from the major companies.

Answer. With respect to the assertion that five companies now control more than 80 percent of the market, I would note that the FTC assesses the competitiveness of any industry by reviewing HHIs, entry barriers, competitive effects, and the competitive landscape as a whole. I would emphasize that the FTC's decades-long program of examining petroleum industry mergers and acquisitions has generated legal challenges to transactions in this industry at lower levels of market concentration than in other industries.

With regard to vertical integration in the industry, the FTC staff's 2004 petroleum mergers report concluded that vertical integration between levels of the industry has in fact decreased somewhat in recent years. Vertical integration between crude oil production and refining has tended to decline for the major oil companies. Several significant refiners—such as Valero, Sunoco, and Tesoro—have no crude oil production. Dependence on internal crude production among some of the major integrated oil companies also has declined, particularly in comparison to the 1970s.[9]

As for integration between refining and marketing, the 6-percent increase in national rack sales between 1994 and 2002—largely at the expense of lessee dealer DTW sales—indicates that, on balance, vertical integration between refining and marketing has not increased on a national basis in recent years (and may have decreased). However, the degree of vertical integration varies regionally, and gasoline marketing on the West Coast has been significantly more integrated than in other parts of the country—a phenomenon that dates back to at least 1994, before the series of large petroleum mergers that began in 1997. On the other hand, nonintegrated retailers, including convenience store chains (*e.g.,* RaceTrac and WaWa) and hypermarketers (*e.g.,* Sam's Club and Kroger), have entered the market in recent years on the West Coast and throughout the rest of the country. For example, according to one estimate, hypermarkets' share of sales in the State of Washington increased from approximately 1.2 percent in 1998 to 13.9 percent by June 2002.[10]

Question 5. It has been suggested that the oil futures market is a significant contributor to the recent increase in crude oil prices. While the Commodities Futures Trading Commission is responsible for oversight of the oil futures market, we solicit your opinion as to whether any gaps in oversight authority exist. Specifically, I'd like to understand if all over-the-counter trades are included in regulatory oversight authority.

Answer. I am not aware of any gap in regulatory oversight by the Commodity Futures Trading Commission. Because the CFTC has primary jurisdiction in this area, however, I would defer to that agency's judgment concerning the breadth of—and any perceived *lacunae* in—that jurisdiction.

I deeply appreciate your concern about competition and consumers in petroleum markets and thank you for this opportunity to respond to your questions. Please let me know whenever the FTC may be of further assistance.

---

[8] Contributions to profits from crude oil production have been the primary driver of total domestic profitability for the FRS firms. *Id.* at 71–72.

[9] *Id.* at 194–95.

[10] *Id.* at 235–36 and Table 9-9. Hypermarkets are large retailers of general merchandise and grocery items, such as grocery supermarkets, mass merchandisers, and club stores.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO ROBERT G. SLAUGHTER

Question 1. Mr. Slaughter, as you know, significant growth in profits, price volatility, and price-gouging are concerns now being expressed about the petroleum market. How would you characterize the transparency of the current petroleum market? Do you believe market competition can be enhanced if refiners and distributors provided full disclosure of their wholesale motor fuel pricing policies, where full disclosure is a listing of each component contributing to motor fuel price, including the cost of crude oil, refining, marketing, transportation, equipment, overhead, and profit, along with portions of any rebates, incentives, and market enhancement allowances?

Answer. Gasoline prices are arguably the most transparent prices in the marketplace. Sharing cost information of the type suggested could be illegal under antitrust law because sharing such information may reduce competition.

Question 2. Gasoline for Washington State is produced regionally primarily from Alaskan crude oil. We understand that crude oil purchases are made in a global marketplace; however, gasoline has increased at a rate in excess of that for crude oil. The EIA and FTC have both testified to Congress that the West Coast market is isolated from the rest of the country. Why is Washington State paying a "risk premium" for gasoline, when we're in an isolated market? Usually being in an isolated market is the reason given for having the highest gas prices in the country, shouldn't it be the opposite now?

Answer. The products in Washington State are priced to compete with either alternative supply or alternative disposition for fuel products. When prices rise on the USGC, product from Washington State can be loaded onto vessels and shipped to that market. The price in Washington rises to reflect its alternative use of moving to the USGC, where the price was rising to indicate a shortage of product. This is analogous to the price of plywood rising in Washington when there is a hurricane in Florida.

Question 3. Why doesn't the oil industry utilize more long-term contracts to reduce price volatility while ensuring a fair return on investment?

Answer. One question would be, what is a "fair return"? It is best to let the market decide what a "fair return" is, otherwise a misallocation of capital could result either increasing costs unnecessarily or resulting in supply shortages.

Question 4. Some independent gas station owners in my state have complained that they are not supplied with as much product as they want at any one time, necessitating more frequent deliveries. Is this a standard market practice? What is the volume capacity of all the gas stations in the country combined? Could having a higher percentage of them filled allow for a cushion during sudden supply shortages?

Answer. Holding extra inventory at the gasoline station generates additional costs to the gasoline station owner—who must pay for inventory that is not generating any income. The cost of carrying that inventory would have to be passed to the market or the owner would go out of business. Over time, and in the face of competition, station owners have optimized their inventory strategies to supply the market while remaining both price competitive and profitable.

A key thought to keep in mind is that $65/bbl crude price is equal to $1.55/gallon (42 gallons per barrel) assuming 100 percent of the crude is converted to gasoline, which it is not. Add to that the U.S. average excise and state taxes of $0.42/gallon results in $1.97/gallon gasoline cost without adding any cost for transporting the crude, refining it, transporting the product and marketing it, let alone sustaining capital costs and a profit. Given the amount of production and refining capacity that is off-line, it is notable that gasoline prices have remained at current market levels.

○