

THE FUTURE OF RENEWABLE FUELS AND FLEX-FUEL VEHICLES

HEARING

BEFORE THE

SUBCOMMITTEE ON DEPARTMENT OPERATIONS,
OVERSIGHT, DAIRY, NUTRITION, AND FORESTRY

OF THE

COMMITTEE ON AGRICULTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

MAY 22, 2006, ROCHESTER, MI

Serial No. 109-32



Printed for the use of the Committee on Agriculture
www.agriculture.house.gov

U.S. GOVERNMENT PRINTING OFFICE

28-475 PDF

WASHINGTON : 2006

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) 512-2250 Mail: Stop SSOP, Washington, DC 20402-0001

COMMITTEE ON AGRICULTURE

BOB GOODLATTE, Virginia, *Chairman*

RICHARD W. POMBO, California

Vice Chairman

TERRY EVERETT, Alabama

FRANK D. LUCAS, Oklahoma

JERRY MORAN, Kansas

WILLIAM L. JENKINS, Tennessee

GIL GUTKNECHT, Minnesota

ROBIN HAYES, North Carolina

TIMOTHY V. JOHNSON, Illinois

TOM OSBORNE, Nebraska

MIKE PENCE, Indiana

SAM GRAVES, Missouri

JO BONNER, Alabama

MIKE ROGERS, Alabama

STEVE KING, Iowa

MARILYN N. MUSGRAVE, Colorado

RANDY NEUGEBAUER, Texas

CHARLES W. BOUSTANY, JR., Louisiana

JOHN J.H. "JOE" SCHWARZ, Michigan

JOHN R. "RANDY" KUHL, JR., New York

VIRGINIA FOXX, North Carolina

K. MICHAEL CONAWAY, Texas

JEFF FORTENBERRY, Nebraska

JEAN SCHMIDT, Ohio

MICHAEL E. SODREL, Indiana

COLLIN C. PETERSON, Minnesota,

Ranking Minority Member

TIM HOLDEN, Pennsylvania

MIKE McINTYRE, North Carolina

BOB ETHERIDGE, North Carolina

JOE BACA, California

ED CASE, Hawaii

DENNIS A. CARDOZA, California

DAVID SCOTT, Georgia

JIM MARSHALL, Georgia

STEPHANIE HERSETH, South Dakota

G.K. BUTTERFIELD, North Carolina

HENRY CUELLAR, Texas

CHARLIE MELANCON, Louisiana

JIM COSTA, California

JOHN T. SALAZAR, Colorado

JOHN BARROW, Georgia

EARL POMEROY, North Dakota

LEONARD L. BOSWELL, Iowa

RICK LARSEN, Washington

LINCOLN DAVIS, Tennessee

BEN CHANDLER, Kentucky

PROFESSIONAL STAFF

WILLIAM E. O'CONNOR, JR., *Staff Director*

KEVIN J. KRAMP, *Chief Counsel*

JOHN HAUGEN, *Communications Director*

ROBERT L. LAREW, *Minority Staff Director*

SUBCOMMITTEE ON DEPARTMENT OPERATIONS, OVERSIGHT, DAIRY, NUTRITION, AND FORESTRY

GIL GUTKNECHT, Minnesota, *Chairman*

RICHARD W. POMBO, California

JERRY MORAN, Kansas

JO BONNER, Alabama

VIRGINIA FOXX, North Carolina

JEFF FORTENBERRY, Nebraska

JEAN SCHMIDT, Ohio

JOE BACA, California,

Ranking Minority Member

DENNIS A. CARDOZA, California

G.K. BUTTERFIELD, North Carolina

TIM HOLDEN, Pennsylvania

HENRY CUELLAR, Texas

JIM COSTA, California

BEN ANDERSON, *Subcommittee Staff Director*

CONTENTS

	Page
Gutknecht, Hon. Gil, a Representative in Congress from the State of Minnesota, opening statement	3
Herseth, Hon. Stephanie, a Representative in Congress from the State of South Dakota, opening statement	5
King, Hon. Steve, a Representative in Congress from the State of Iowa, opening statement	8
Knollenberg, Hon. Hoe, a Representative in Congress from the State of Michigan, opening statement	1
Schmidt, Hon. Jean, a Representative in Congress from the State of Indiana, opening statement	6

WITNESSES

Cischke, Susan M., vice president, Environment and Safety Engineering, Ford Motor Company, Dearborn, MI	38
Prepared statement	60
Domagalski, Jim, soybean producer, president, Michigan Soybean Promotion Committee, and director, National Biodiesel Board, Columbus, MI, on behalf of the American Soybean Association and the National Biodiesel Board	28
Dorr, Thomas C., Under Secretary, Rural Development, U.S. Department of Agriculture	10
Prepared statement	61
Krause, Norbert, director, environmental engineering, Volkswagen of America, Auburn Hills, MI	33
Prepared statement	49
Modlin, Reg, director, regulatory affairs, DaimlerChrysler, Auburn Hills, MI ..	38
Prepared statement	57
Noel, Bruce, corn producer, and chairman, Ethanol Committee, National Corn Growers Association, Leslie, MI	22
Prepared statement	51
Reinholt, Keith, field operations director, Michigan Soybean Association and Michigan Soybean Promotion Committee, Frankenmuth, MI, on behalf of the American Soybean Association and the National Biodiesel Board	26
Prepared statement	54
Simpson, Tony, general manager, Michigan Ethanol LLC, Caro, MI, on behalf of the Renewable Fuels Association	26
Prepared statement	47
Stanek, Mary Beth, manager, strategic initiatives, General Motors, Detroit, MI	36
Prepared statement	58

[*Editor's note:* There are a number of instances where testimony was omitted by the official reporter. Every effort has been made to reconstruct any omission; where this is not possible, a notation has been made with ellipses.]

REVIEW THE FUTURE OF RENEWABLE FUELS AND FLEX-FUEL VEHICLES

MONDAY, MAY 22, 2006

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
SUBCOMMITTEE ON DEPARTMENT OPERATIONS,
OVERSIGHT, DAIRY, NUTRITION, AND FORESTRY,
Rochester, MI.

The subcommittee met, pursuant to call, at 9:00 a.m. at Oakland Center, Oakland University, Rochester, MI, Hon. Gil Gutknecht (chairman of the subcommittee) presiding.

Present: Representative Schmidt.

Present from the Committee on Agriculture: Representatives King and Herseth.

Also present: Representative Knollenberg.

Staff present: Ben Anderson, staff director, Subcommittee on Department Operations, Oversight, Dairy, Nutrition, and Forestry.

Mr. GUTKNECHT. This hearing of the Subcommittee on Department Operations, Oversight, Dairy, Nutrition and Forestry of the House Agriculture Committee is called to order.

One of the things I always say is that I went to auction college I was taught to start on time. So when we have a committee meeting, I do try to start on time.

First, I'm going to divert from the schedule. I'm going to ask my colleague, Joe Knollenberg, we are in his district—I want to thank him and his staff for helping put these arrangements together.

Joe, thank you for letting us come to Michigan. Thank you for the clear, brisk, cool morning. We are delighted to be here.

OPENING STATEMENT OF HON. JOE KNOLLENBERG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. KNOLLENBERG. Thank you, Gil, very much. It's a pleasure to have you all here today. Jean, Steve, Stephanie, thank you, and Gil. I'm glad you chose this particular area because, quite honestly, this is a central location for the topic that we are going to discuss today.

I can't think of a better location than right here, I really truly can't, because it's also important to the future of renewable energy.

Now, you might have thought I was going to talk to you about—rub it in a little bit with respect to what the Pistons did last night. And also you might know—this hurts Gil, I know, the Detroit Tigers are the winningest team in baseball. That wasn't true last year or the year before. I know you and I talked about Minnesota.

I just want you to understand that you are all welcome. We appreciate your being here and I want to particularly welcome those of you from other parts of the country. I appreciate the time that you have taken to come here because I believe that this will be the focus of something that is so important in the near term.

There are long-term strategies. There are short-term strategies. I think today is one that might fall into the category of being a short-term situation. I'm delighted that you are all here.

I want to also thank those from the auto industry that are here. If I misspeak in some fashion or miss somebody, I apologize.

Mr. Krause, Dr. Stanek, Mr. Modlin and Ms. Cischke, I appreciate their being here to participate. I'm sure I'm not alone, especially in this room, when I say that renewable energy is vital to the future, the future of the auto industry, the future of the economy here in Michigan and the future of our country's financial success.

With the recent surge in gas prices, last winter's high home heating costs' effect, and the effect of Katrina on our domestic oil reserves, our country is more focused than ever on alternative fuel. The President has made our addiction to oil a national priority.

Congress has taken a legislative agenda to move our country into the next generation of energy technology.

While the rest of the country has seen relative economic success over the last few years, the economy here in Michigan is still in recovery. These challenges that we face are broad and cross industry lines, but one challenge is a common denominator, the cost of energy.

Yet I believe our challenges will serve to make us all stronger. The wise man once said that necessity is the mother of invention and we all know the need for viable economic, competitive and renewable fuels.

The American innovative spirit is alive and strong and there is a successful future ahead for alternative energy. Meetings like this today bring people together to discuss the challenges and opportunity for renewable energy that will pave the way for producers and consumers in the future.

I'm very pleased that both industries are combining efforts to achieve mutually beneficial success, which is a viable issue for the auto industry here in Michigan and for consumers across the country and I'm happy that we are making some good progress. So, again, I want to thank all of you for being here to discuss this critical topic. I know that you have much to do today, so I'm not going to take up much of your time so you can get on with it.

I want to thank you, again, Congressman Gil Gutknecht, the chairman of this subcommittee for hosting the event in my district and for inviting me here today.

I want to welcome everybody once again and I want to particularly hope that you have—we should have a pleasant and productive stay here in Oakland County. I look forward to hearing about the results and the overall assessment of today's forum.

With that, thank you. I'll give it back to you, Mr. Chairman.

Mr. GUTKNECHT. Thank you, Joe. We are delighted to be here and thank you for the warm welcome.

OPENING STATEMENT OF HON. GIL GUTKNECHT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Mr. GUTKNECHT. It does not appear in the title of this subcommittee that we have responsibility for renewable energy, but it is true. The Committee on Agriculture and this subcommittee has responsibility for renewable fuels.

We have been involved with biodiesel and ethanol for a very, very long time. And for a number of years, a lot of people thought we were crazy to try and make energy out of corn and soybeans, but it's not so crazy anymore.

Let me talk a little bit because I think it's misunderstood by the general public. Frankly, it's misunderstood by people even in our own Department of Energy, and that is we have made enormous progress over the last several years in producing these fuels incredibly efficiently.

If you go to my district where I think we have more ethanol refineries than any other congressional district in the United States, most of them are farmer owned.

We have made enormous progress in the efficiencies of producing this fuel. With corn today at about \$2.30 a bushel, and with relatively expensive natural gas, we are currently producing ethanol in my district for \$1.20, \$1.15 per gallon.

If you compare that to the price or the cost to produce a gallon of gasoline, \$70 a barrel oil, very few refineries in the United States can produce gasoline for less than \$2.10 a gallon.

Now, I have to admit, we have to be honest when you discuss this, you don't get quite as many BTUs out of a gallon of ethanol as you do out of a gallon of gasoline.

But even when you apply the BTU test, ethanol today is cheaper to produce than gasoline on a BTU basis. It's partly because we have become much, more efficient. I think the story is going to get better. It's a good story, I think, for America.

The other side of that equation, last week I was privileged to be in a meeting with Jim Woolsey, the former CIA Director, talking about energy. He made a couple of interesting points we need to be aware of.

We are currently exporting, if you will, about a billion dollars every working day in the United States to other countries to buy oil. Many of the countries that we are buying that oil from are not particularly friendly to the United States of America.

Interestingly enough, he made the observation that some of that money that we are spending to buy this oil from countries that may or may not particularly like us, ultimately winds up in the hands of terrorists.

So for the first time since the Civil War we are involved in a war against a group of people which are, in effect, financing both sides. There is a big dimension to this debate.

Joe, I think I appreciate your acknowledging this, the President has talked about the need to wean ourselves from this dependence

on foreign oil. We believe that agriculture can be a very important part of that solution.

So now we have an energy source here in the United States that is cheaper to produce than oil. It's better for the environment than gasoline, but most importantly, we believe it is much, much better for our economy.

For every \$1 billion we send out of the United States to buy foreign oil, we are losing the opportunity to keep 10,000 jobs here in the United States. You see that throughout the Midwest. We have Ohio, we have Iowa, we have South Dakota and Minnesota represented here today.

But let me just give you one quick example of what an ethanol refinery can do to a small community.

We recently opened an ethanol refinery just west of Mankato, Minnesota in a little town of Lake Crystal. That plant will employ, I believe, 53 people. The starting wage for the folks working in that plant is about \$16.50 an hour, plus very good benefits.

Those are the kinds of jobs we need more of right here in the United States, and that's what renewable energy can do for the country. So this is a good story and it's going to get better. But if it's going to grow the way we think it can grow, we need to work with folks who have businesses in the town of Detroit, Michigan. Because we can only grow as fast as—in terms of providing this clean-burning efficient energy, as quickly as the auto manufacturers develop the technology to make it useful.

One of the stories—I'm going on here a little longer than I really intended to but one of the stories I want to talk about, whenever I talk about renewable energy, is an example of what has happened in Brazil.

Brazil is essentially completely independent of OPEC for their energy needs. They made a conscious decision to develop their ethanol business in Brazil and they have been working very closely with the auto manufacturers, some of which are represented here today, to the point I'm told that 73 percent of the new cars are sold in Brazil today are completely flex-fuel. In other words, they can burn anywhere from zero to 100 percent alcohol in the engines.

I also say Brazilians are not intrinsically any smarter than we are. If they have figured out a way to become independent relative to the fuel they burn, certainly we can do the same.

I will close by saying sort of a parallel to an old Frito Lay commercial. We who are representing agriculture say use all the ethanol you want, we will make more. We will make more.

I told the Secretary of Energy—last year we were at a meeting and he was bemoaning the fact we have not been able to build new refineries in the United States. This was after Katrina. He said, we just can't seem to build any new refineries.

I said, well, we built 93 new refineries in the last 6 years.

And he gave me a blank look. I said, they are called ethanol refineries. I said, more importantly, we have 40 on the drawing board right now. Over the next 5 years, we will probably build 100 refineries and they will be more efficient than the ones we have today.

And the better news is they are going to be distributed all across the country so they won't be in the orbit of one hurricane, so we can't lose all that production by one bad storm.

It is a good story. It is getting better and we on the agricultural side of this equation really want and need to work with folks here in Detroit and the auto manufacturers so we can move together to create a better energy future for our country, and in some respects for our planet.

With that, I will yield to my colleague from South Dakota, the Honorable Stephanie Herseth. She and I have worked on a number of issues on the Agriculture Committee, but I think renewable energy is one South Dakota and Minnesota are really joined at the hip.

Stephanie.

OPENING STATEMENT OF HON. STEPHANIE HERSETH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH DAKOTA

Ms. HERSETH. Thank you. It is a pleasure to be here. We do share a border in our districts of South Dakota and Minnesota. It's a pleasure to be here this morning.

Congressman Knollenberg, it's great to be here in your district. I represent the entire State of South Dakota. We don't have a professional basketball team or baseball and our allegiance is to Minnesota, but I'm pleased that the Tigers and Pistons are having such a good season.

I'm pleased to be here today as part of such a distinguished panel. I have been a stronger supporter of biofuels since I was elected to Congress almost 2 years ago. South Dakotans, like Minnesotans, in Congress we have been strong supporters of ethanol for many years prior to that.

I have never seen, however, such a remarkable and unique confluence of events as we have just seen in the past number of months that make this the perfect time to take action to promote biofuels across the country.

We know that our current addiction to oil costs us a great deal, not just at the pump but in terms of our national security and within our environment.

What many of us know is that biofuels present us with a tremendous opportunity to address these problems. Without question in the short term, the price of oil is a primary driver of the renewed interest in biofuels beyond the renewable fuel standards that became part of last year's energy bill, an issue that Congressman Gutknecht and I worked on.

In a rural State like South Dakota, with the vast distances between cities and very little public transit, as you can imagine, I can tell you the cost of gas and diesel is hitting people in their pocket-books. We are looking at one of the most expensive spring planting seasons, driven in large measure because of high fuel costs.

Oil prices are only part of the equation, however. Of the oil reserves in the world, two-thirds are in the most unstable, least-friendly countries in the world, as the chairman mentioned.

Because of the massive profits that these regimes receive from oil revenue, they have no impetus to modernize and liberalize their political and social cultures.

It is vitally important that biofuels are produced from plants, plants that are renewable and remove carbon from the air. In 2004

alone, ethanol use in the U.S. reduced CO² gas emission by more than 7 million tons, equal to removing annual emissions of more than 1 million cars from the road. This is another compelling reason to increase use of biofuels in the country.

Finally, from my perspective, a switch to biofuels represents another important—a transition to an energy policy that puts our national energy security in the hands of farmers, small communities and rural entrepreneurs. It represents one of the most important economic opportunities for rural America in generations.

In my home State of South Dakota alone, we have 11 functioning ethanol plants capable of producing more than 470 million gallons of ethanol.

Today more than 330 million gallons of additional capacity are in the planning stages or under construction in South Dakota. Most of this production is farmer owned and provides truly an economic boom to the State.

I introduced a bill that would require significant increases in the amount of biofuels over the next 10 years. Congressman Gutknecht, and others on the panel, have introduced or co-sponsored other legislation to achieve truly aggressive goals.

Increases in production are only part of the equation. This must be coupled with increases in availability of E-85 and biodiesel in the country and an increase in a number of vehicles that can use these fuels.

So I'm looking forward to discussing these issues with all of the panelists here today, particularly our auto industry representatives here on the third panel.

Thank you, again, Chairman Gutknecht, for your commitment to biofuel and your leadership holding the hearing today.

Mr. GUTKNECHT. Thank you, Stephanie.

Our newest member of the panel and one of the newest members of Congress is Jean Schmidt from the State of Ohio. Jean.

**OPENING STATEMENT OF HON. JEAN SCHMIDT, A
REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO**

Mrs. SCHMIDT. Thank you. It's always nice to be here in Michigan but I wish I could be here on a more winning note. The Reds only won one out of four games with the Tigers, but at least Ohio State beat Michigan.

I have a cousin that lives here. I actually spent the night with her last night and I wasn't able to go—she was able to do it to me.

The energy crisis is real. I remember 30 years ago when we faced a similar energy crisis. In fact, it was more like 32 years ago, and I remember the knee-jerk reaction the United States gave to a very serious issue.

This coming weekend we were going to have the Indianapolis 500, and 32 years ago in a response to an energy crisis, the folks at the Indianapolis Motor Speedway decided to hold only 2 days of qualifications instead of 4 because they thought that would help solve the energy issue, although the cars that go on the track don't use gasoline.

But we weren't serious about solving it then. Thankfully we have an administration that is serious about solving it now. The Presi-

dent was so right at the State of Union to say we have to get off of our addiction to foreign oil.

Thirty years ago we should have increased our refinery capacity. We didn't do that. 30 years ago we should have looked for alternative fuels. We didn't do that. 30 years ago automakers should have looked for more responsible CAFE standards, but that didn't happen. But it's happening today.

I'm impressed that our automobile manufacturers have more flex-fuel vehicles out there, more E-85 vehicles. In fact, my husband and I are purchasing one. It should be delivered next week.

But shame on the refineries in the United States, at our inability to have enough ethanol at the pumps. Because in Ohio, we only have about seven or eight gas stations that actually have E-85 capacity. One, in June, is going to be opening up in my district, in my hometown.

That's one of reasons why I'm buying the car. I want to be one of the first at the pump to get that E-85 fuel. We have the answers out there.

As my colleagues have stated, we need to do this for a national security interest and an economic security interest. We must relieve our dependence on foreign oil. If we don't, we are going to continue to find ourselves engaged in military conflicts around the world, because it is a protection for ourselves.

But more importantly is the economic issue. In the next 10 years, China is slated to be the primary user of oil. We know that with the oil cartel, we in the United States have been the tail that is wagging the dog as the largest user, to kind of impress upon the oil cartel the need to have a cheaper price for a barrel of oil for ourselves.

But China, in 10 years, is slated to be that tail that wags that dog and, therefore, it's incumbent upon us to have alternative fuels.

Ethanol is a great product because it's renewable, not only is it renewable for communities that have an agriculture base, like those in this panel, it's a win-win for us.

When you look at Ohio's farmers, especially Ohio's tobacco farmers that have to move away from tobacco to another source of production, when you can have ethanol, corn-based ethanol, that's only going to help those farmers have a better price for their product when they go to sell that grain. We have the capability to do it, we just need to get it out there in production and at the pump.

I encourage a lively discussion and I'm grateful that our manufacturers of automobiles in the United States are willing to come to the table toward this achievable goal. Because as my husband says, just as it's important for to us have American-made cars, it's also important for to us have American-made fuel. I look forward to the discussion.

Mr. GUTKNECHT. Thank you, Jean.

To introduce our first person who will testify and talk a little bit about his perspectives is Steve King from the State of Iowa. He represents a big chunk of western Iowa, and among other things, he also represents Under Secretary Tom Dorr, so my colleague from Iowa, Steve King.

**OPENING STATEMENT OF HON. STEVE KING, A
REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA**

Mr. KING. Thank you, Mr. Chairman. I want to thank you for pulling this hearing together today, and, Mr. Knollenberg, thanks for having it here in Michigan.

I'm very glad to be here and be close to the manufacturing center for the automobiles in America. I have an opportunity here this morning to make some remarks with regard to how this affects us in the Midwest.

I would look back to about 1983, we were into this farm crisis that a lot of us remember, when we are on the tail end of the oil embargo that came from the oil cartel in the Middle East. We were trying to do all kinds of things to solve our energy problems about that period of time.

I remember going down to Des Moines to an energy expo. The place was full of people. Entrepreneurs of all kinds, farmers. I spent my life in the construction business, heavy equipment, doing earth-moving work. We burned a lot of fuel for a lot of years.

I sat in on a seminar there presented from a fellow with the last name of Day, Mr. Day from Grimes, Iowa. He gave a slide show about the distillery they had produced on his farm. He had everyone mesmerized there. As he talked about it, people were taking notes and they were preparing to go back to make their own stills on their own farms.

This gentleman, Mr. Day, had converted his tractors to 100 percent ethanol to be able to burn it in his trucks and vehicles. He was burning ethanol essentially in everything. He was making his own ethanol on the farm. He had pretty much a closed system that worked there for him.

As we took those notes and listened and asked questions, he got down to the last remarks as he closed it out, after he had answered all the questions. He said, now I want you to understand that myself and the boys, when we leave here you are welcome to come by our place and see everything we've built. Actually, I did. When we get home we are going to cut it all up to pieces and start all over again, because you need to remember we are way, way behind on the engineering. That ADM and Cargill have this figured out. They are way ahead of us. We are scrambling to catch up. What I have built for you is more or less a model but it's not anything that can compete in the economy.

I stopped by to see what they had done and certainly verified that his presentation was on the mark from what I saw. He was exactly right. We needed to get up into massive production, a scale production, so we compete on a global scale. In 1983 we didn't have the engineering or capital to do that.

Now a lot of things have happened since that period of time. ADM and Cargill didn't appear to be interested in producing the ethanol in the production we needed to use it for fuel in this country to replace it at any significant economy.

We ended up with homegrown engineering firms. One of them grew out of the Minnesota-South Dakota relationship. Another engineering firm grew out of that relationship.

Now over that period of 20-some years, the expertise has been developed kind of in-house. Those engineering firms have grown to

the position now where they can attract the capital and set up ethanol plants, and this is growing across the Midwest.

But one of the other things I reflected upon this morning at breakfast was, that when I shake the hand of Iowa State Senator Thurman Gaskill, I know that's the hand that pumped the first gallon of ethanol in the United States of America. That's important to me, and the symbolism of that. I will return to that at my conclusion of introduction of our Under Secretary here this morning.

But as I left the Under Secretary's county here just a few years ago, that would be Cherokee County, we had done a ground-breaking ceremony to build an ethanol plant there that since that time is up and running, fantastic production. Its return on investment is so astonishing that I won't repeat the numbers here.

As I left there, and I drove south, I drove across a place called Buffalo Ridge, and there are now several hundred wind chargers on top of those ridges. And south of there is another ethanol plant I'll call Tricounty. In Cherokee County, Buena Vista County and Ida County, there are two ethanol plants and, in between, hundreds of wind chargers, and it occurred to me that just 5 or 6 years ago, we didn't have any of this and now we are an energy export center.

In my congressional district, which is 32 counties, the western third of Iowa that joins South Dakota, Minnesota on the north and west and Nebraska on the west and down to Missouri in the south, we will be up to 13 ethanol-productions facilities there averaging about 75 million gallons apiece on average. And, perhaps, five biodiesel plants in the same area. And we are starting to wonder how we compete soybeans versus corn for this energy part of the equation that's there.

It's attracting for our capital, private sector capital, for the 2006 construction year, and probably wrap some of it up in 2007, over a billion dollars for renewable energy construction in my congressional district alone.

I went down to Brazil and looked at what was going on down there. Mrs. Schmidt mentioned that their situation down there, they are—and Gil did too. I went through a General Motors plant producing automobiles. They are producing in that plant 98 percent are flex-fuel and 2 percent are not. The same numbers, I concur with the numbers overall, the vehicles sold in Brazil, about 70, 73 percent being flex-fuel.

We are in a chicken-and-egg situation with the flex-fuel issue. We can produce the ethanol. We can get it out there and get some tanks up and some pumps up across the Midwest, especially where we produce a lot of ethanol, it's a logical place to really concentrate our flex-fuel vehicles. We need the vehicles, and for the costs I understand and, hopefully, pick up that information today, it's not a significant component of the overall pricing figure of a new vehicle. I would submit, send all of them you can to my part of the country and we will find out a way to get the E-85 in their tanks. I would really appreciate it if you would do that.

I want to return then to our Under Secretary. That is, that he grew up in an area not very far from me. I wish I could have spent some time in that kitchen and around the family. The way I counted there is at least six boys in that family, and they are all men

now. They all know how to think for themselves. If there is anything that can cause a nation to fail to succeed in the fashion it might, is if we get stuck into lock-step thinking, if you establish a committee, the chairman of the committee will determine the direction of the thought process, and the other 360 degrees you might go never getting examined. That is not the case with Under Secretary Dorr. He examines all directions we might be able to go, does a lot of creative thinking, interacts with a lot of creative people and comes with a logical approach to the work that he does.

I appreciate the perspective I have been able to have with the work he has had and to know he was there on that day when the first gallon of ethanol was pumped by Thurman Gaskill.

I would introduce the Under Secretary for Rural Development, United States Department of Agriculture, Secretary Tom Dorr, and welcome you to testify at any moment you are comfortable. Thank you.

STATEMENT OF THOMAS C. DORR, UNDER SECRETARY, RURAL DEVELOPMENT, UNITED STATES DEPARTMENT OF AGRICULTURE

Mr. DORR. Thank you, Congressman King.

Mr. Chairman, it is a distinct pleasure for me to appear before you today to discuss the future of renewable energy in the United States, and I, frankly, think that future is very bright.

Let me make one anecdotal remark. There were seven sons at the table, no television in the house and we were instructed to at least read one editorial from the Des Moines Register, Wall Street Journal, Sioux City Journal and if we didn't, we didn't get to eat.

To be sure, in the short run, though, we are being challenged, as is every other country in the world by high oil, natural gas prices. No one is immune, neither us nor friends from London, Tokyo to Nairobi and Istanbul. This is a global issue.

At the same time, as President Bush has emphasized again and again, the American free-market system does have an unmatched capacity to turn challenges into opportunities. This is exactly what has happened today in renewable fuels. This did not happen overnight.

I have known George Bush for several years, going back actually before he ran for President. The need to reduce Americans' dependence on imported oil was something that he was talking about long before he threw his hat into the ring.

President Bush made a comprehensive energy strategy a first priority immediately upon taking office in 2001. And building on the passage of the energy bill, he then proposed an advanced energy initiative with a strong emphasis on transportation fuels.

Most recently, he proposed additional measures in response to the current increases in oil prices. This is, therefore, a longstanding commitment for President Bush. He has been in front of this issue and he has been consistent.

We have extensive reserves of clean, safe domestic energy. We have the technology to build clean coal plants and a new generation of safe, highly-efficient nuclear plants.

We are significantly accelerating research of renewable fuels across the board, and we can. We can kick the imported oil habit if we want to.

From our perspective at USDA Rural Development, biofuels are particularly attractive opportunities. On ethanol, the President and Congress have extended the ethanol tax incentive and doubled the size limitation for the small producer tax credits. U.S. ethanol use has already more than doubled since President Bush took office and cellulosic ethanol, just a few years down the road, has incredibly exciting potential.

The growth in biodiesel is even faster, albeit starting from a smaller base. From just 2 million gallons in 2000, biodiesel usage in the United States soared to 28 million gallons in 2004, and 91 million gallons in 2005. And it's on track, apparently, to double again in 2006.

The Energy Policy Act of 2005 provided the first ever Federal tax credits for biodiesel production. At USDA Rural Development, we are supporting biodiesel investments across the country to our businesses in cooperative programs.

You know it's not just enough to refine biofuels on the delivery end. We need more E-85 and biodiesel pumps in the field. We are doing that as well with the new tax credit and the installation of clean fuel infrastructure. The potential is enormous.

In the aggregate, including direct combustion, as well as biofuels, biomass has already surpassed hydropower as the largest domestic source of renewable energy.

A recent U.S. Forest Service and Department of Energy report entitled "Biomass As Feedstock For a Bioenergy and Bioproducts Industry" the technical feasibility of a billion ton annual supply, better known as the Billion Ton Report, estimates there are over 1.3 billion dry tons per year of biomass potential in the United States, enough to produce biofuels sufficient to meet more than one-third of the Nation's current demand for transportation fuels by 2030.

That said, I should add as a reminder, USDA Rural Development supports not only biofuels but also renewable energy across the board. Since 2001 we have invested nearly \$360 million in over 650 renewable energy conservation projects ranging from wind and solar, to methane gas recovery to conservation. Biofuels, ethanol and biodiesel are clearly the leading applications. But they are at the lift-off stage and they are going mainstream. But we recognize that renewables, in general, are an enormous opportunity across the board particularly as wealth creators in rural America.

The bottom line, this is an historic opportunity for jobs and wealth creation in rural America, as well as our national security and the American economy as whole.

Ethanol and biodiesel are distributed resources, and I think it's important to remember that distributed resources and small and midsize producers are able to compete. We are acutely interested, therefore, in the development of investment in business models that encourage a high degree of local ownership in rural communities. It's indeed a privilege for us at USDA Rural Development to contribute to these issues.

So today the USDA, I might hasten to add, is the leading Federal entity supporting the commercialization of renewable energy to reduce dependence on foreign oil and create economic opportunity in rural America. I'm proud of that record and I really do look forward to working with all of you to sustain this momentum in the years ahead.

Thank you very much, and I will be delighted to take any questions you may have.

[The prepared statement of Mr. Dorr appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you, Secretary Dorr. Just to reiterate a couple of points you made. There is a lot of misunderstanding, I suspect, among folks in big cities like Detroit about what rural development is and how you work.

First of all, maybe we should dispel the myth, you don't just give away money, do you?

Mr. DORR. No. Actually, Rural Development is a lender, a loan guarantor of resources.

As I indicated earlier this morning, we are a very large bank. We have a \$91 billion portfolio and, I believe that my last report in March, we had a 1.16 default rate at the end of 12 months, so we are a very well-run bank.

Mr. GUTKNECHT. Most banks would be happy to have that kind of record. Particularly as you get to renewable energy, it's an even better story isn't it.

Mr. DORR. It truly is. As Congresswoman Schmidt identified early on, and Congressman King, and others as well, what we did or did not do in the early 1970's compared to what is going on now.

In 1979, 1980, the—administration, part of the Rural Development, financed, I believe, 16 ethanol facilities, 15 of them went bankrupt.

Today that story is considerably different. In fact, we are making a conscious attempt at financing less ethanol facilities and putting our resources where they are needed because ethanol is a very successful story.

Mr. GUTKNECHT. My staff brought a few extra of these so anyone that wants one, we would be happy to hand them out. It's a little brochure that we put together talking about energy future.

In it is a little chart, and it's so instructive. We have heard this story, and in several ways so far this morning, we have been through a couple of episodes with OPEC, and it started in 1974. We have administrations and Congresses literally for a long time that have said, we have to become more independent relative to energy. But if you look at the chart, it's really, the story has gotten worse.

When OPEC had their oil embargo back in the mid-1970's, we were importing about 30 percent of the gasoline or petroleum that we use. Today it's only 60 percent.

I believe that a goal is an agreement—and I believe success leaves clues.

Mr. Under Secretary, the question I really want to get back to is, there are some amazing things happening in this field. I don't think most Americans realize how much more efficient we are and

what farmers are doing and what these refineries are capable of producing at relatively low costs.

The challenge I think we have, and this is something I want to talk about today, and I talk about everywhere we go, and that is we can do this, and I think auto manufacturers can be a very important part of this, but, ultimately, what we need more than anything else in this industry is access to market.

Because up until very recently, the oil companies really expressed very little interest. As a matter of fact, they have actually been an impediment to getting more of this fuel out into the marketplace.

Now, in Minnesota, one of the things that our legislature and our Governor—I want to give him a lot of credit for this—we required that 10 percent of fuel sold in the State of Minnesota has to be renewable fuel.

Could you talk a little bit about how we create new markets or what we perhaps can do to get better access to those markets?

Mr. DORR. I think the underlying philosophy or principle that guides me in the context of how I approach these issues recognizes that any time you try to implement a new sort of business model on the legacy system, you have a lot of things that you have to do to get by.

Reflecting back very quickly on the history of where we are now, in 1980 after—about the time that Dennis Day, as Congressman King was pointing at, who was, by the way, financed with some of the—money, was trying to figure out how to develop his system, the wet millers, the ADMs, Cargills, and others, quite honestly, viewed this industry as kind of one that may happen. We had the tax credits that were implemented around that time, and it made it possible to continue going.

But the dry millers were viewed kind of as the Neanderthals. They were viewed as guys that couldn't hardly walk and get their hands off the ground at the same time, perhaps a bit crude, but that's the way they were looked at.

The interesting thing is the folks that developed the dry-milling industry literally came from Minnesota, South Dakota and Iowa. Those were the three major players. They were all, in every case, I believe, more or less, farm kids. They all sat down from a livestock/engineering base and said, how do we figure out how to do this?

What has happened, the efficiency on the production—because up to this point, nobody really believed that we could build enough capacity to provide the kind of ethanol necessary to build out the infrastructure that you are talking about.

In 1980 you would be lucky to convert a bushel of corn into 2.2 gallons of ethanol.

In 1980 you were lucky if you could keep an ethanol plant, a dry mill, on-line 300 to 320 days a year without some mechanical breakdown. Today they run consistently at 360 days.

Capital costs and labor costs have gone down by a factor of three per gallon of capacity.

In fact, they are pulling people out of South Dakota that are giving some of the most remarkable presentations I have ever heard about how to implement technologies in the manufacturing process.

Clearly right out of Clayton Christiansen's textbook at Harvard. It's a remarkable, remarkable story.

What has ultimately happened, we aggregated a mass that can't be, No. 1, overlooked. And No. 2, we clearly have a national and energy security issue that we have to deal with. All at once the mother of necessity, the mother of invention, is clearly coming to bear.

I think if we understand where the history of these efficiencies have come from, and where we are today, that gets us a long way toward believing in this industry.

The other thing I think is important to recognize, that most of these new energy resources are going to be very distributed in nature, whether it's wind, with a 1½ megawatt wind turbine, whether it's a 100 million gallon ethanol plant, because clearly you can't put up a 500 million gallon ethanol plant where you have a limited supply of corn or cellulosic availability.

These are distributed businesses. Distributed businesses means that somehow you have to develop the regulatory, the statutory and the investment vehicles to facilitate their incorporation into the old legacy systems.

The legacy systems are not going to turn over. They are not going to walk away from it. It's not in their nature. It's not in the way business operates.

If we understand this and build on this from an experience standpoint, I think, ultimately, we can draft good policy that doesn't require a lot of government intervention, or particularly subsidies, but yet recognizes the need to provide some direction that facilitates the development of this, will solve our problem.

Mr. GUTKNECHT. Thank you, Tom. I want to let everybody else ask questions. I think you have really hit on an incredibly important point. I believe—I want to make two points. Number 1, you mentioned the grain family. You are correct, they are headquartered in Sioux Falls, South Dakota. They're from Kenyon, Minnesota. They are good stock either way, but they are doing some amazing things and I think this story is a good story, and it's going to get better.

But, ultimately, this whole issue of access to market I think is the real issue. We were not really talking about subsidies because \$70 barrel oil, frankly, I don't think we need subsidies. That is heresy for people in our position to say that.

But the real issue, we have to have access to market. The point you made is so important to this subcommittee and others involved in this issue, there is no such thing as a win-lose deal. There has to be something in this for the people who run the refineries, who run the pipelines and sell the gasoline.

We have to create an environment where it's win-win for everybody. A win for the auto manufacturers and other energy companies. So if we approach this from a positive standpoint with that attitude, in the long term I think we will make a whole lot more progress a lot faster.

With that, I will turn to my colleague from South Dakota.

Ms. HERSETH. Thank you, Under Secretary Dorr, for being here and for your testimony.

I did want to hone in on some repeated references that you made with regard to the economic opportunities and wealth creation in rural America. What we are trying to realize here is economic prosperity for rural America, and there are many communities in Iowa and South Dakota, Minnesota and I'm sure Ohio, have struggled in the past based on developments within the agriculture industry that haven't always been good for family and farming and for the smaller rural communities that they help sustain, and small businesses there.

Do you have—you refer to importance of local ownership and control, do you have some ideas on what we can do, perhaps, in addition to what we did in the 2002 farm bill, what we can do in the 2007 farm bill, what we might be able to extend?

As you talk about that, do you foresee we may have a problem on our hands looking down the road where ADM and Cargill, that initially weren't quite as interested, based on some of that other private equity coming in the market, do you think we may have a problem on our hands where ethanol plants that are farmer owned, start being cherry picked and we disrupt the farmer ownership that has been good in terms of their diversification of income that support smaller communities?

Mr. DORR. It's a multifaceted question but it's a very good question. A couple of things we need to understand. Number 1, over the years, there has not been a tendency of rural America to all that entrepreneurship because of the nature of the industry.

Number 2, and probably equally and if not more important, originally when the Broins and the Fagans and the groups came into these rural communities to put up 20 and ultimately a 45, 50 million gallon ethanol plant, that's the one that built 3 miles from my farm.

They wanted to raise about \$22 million to make sure they adequately capitalized. So when they came into the community, they spent literally a year and a half, 2 years, and ultimately were able to raise \$14 million, \$15 million equivalent to common stock equity.

The vendors, the builders and others kind of sucked it up and they added more money, and they took a preferred position, either in bond or preferred stock. They built a plant. This is the way this industry got built out.

Today, though, if you go out with the plant that is turning 30 to 40, or 50 percent return on equity, and you go into a rural community and you want to build, say, 100 million gallon plant, it's going to cost you \$150 million. If you only put 40 percent equity, probably get by with 35, but 40 is an easy number, that's \$60 million.

Most likely, it will take you 3,000 to 4,000 transactions to raise that \$60 million in that rural community. You can go to New York City, Chicago, Des Moines, you can get it with 1, 2, 3 transactions. Does that mean that we should somehow restrict the big guys, or that is bad? No, not at all.

But I think as policymakers what we have to do is figure out, both at the State and Federal level, how we deal with disclosure and investment issues and all of the things surrounding these kinds of investments to facilitate the ability to set up well-governed, transparent investment funds that allow everyone from the plumber, to the schoolteacher, to the superintendent, to the bus

driver, to the landowner, the tenant/operator to invest in a pool that someone can stop in and get the money in the one stop as equity investment.

It's not something that we spent a lot of time working at, looking at, in rural America for these sorts of things. Whether it's a \$150 million ethanol plant or a \$40 million biodiesel plant or \$20 million, \$30 million wind farm, these are all clearly substantially more than individual farmers are going to want to invest in themselves in terms of all of their equity.

So I think it's imperative that we figure out how to deal with these investment issues of these small distributed businesses to make it reasonable for those folks to get into.

Now, I clearly don't think we ought to impose restrictions or limits from whoever wishes to invest in it. I believe you have heard me say that before but, for the record, I went to the renewable energy finance forum in New York City last June. There was 570 participants in that room, the second annual, and they represented \$125 billion worth of capital looking for a place to invest in green energy. So this is clearly a very good business to be in one. It's we one need to make sure we foster the ability for local people to invest in.

Mr. GUTKNECHT. I will now yield to the gentleman from Iowa, Mr. King.

Mr. KING. Thank you, Mr. Chairman.

A couple of different approaches I would like to explore, but I think you will have these numbers in your head, Mr. Under Secretary, and that is you mentioned a figure of about how much biomass was available and that could replace perhaps a third of the fuel needs in the country, from your testimony.

Looking at it from a corn perspective, then a soybean perspective, then a broader, maybe greater variety, biomass perspective, how much ethanol can we produce from corn and without starving our feedstocks, for example, and then how much from biodiesel potentially and how much then from the overall balance of the biomass?

Mr. DORR. I think the billion ton study that was referred to indicated there was about 1.3 billion tons of available bone-dry biomass that could be converted into liquid fuels without impacting negatively the environment or impeding our ability to service our domestic food and feed demands, as well as sustain a reasonable export demand.

Corn today, using these production numbers I talked about, you can produce something in the neighborhood of 90 to 100 gallons of ethanol per ton.

In cellulosic ethanol, the numbers are going to vary from 30 to 50 gallons per ton, depending on the technology and depending on the feedstock. So it will all kind of evolve from there but I think in the aggregate, as I pointed out in our conversation prior to the hearing, that I remember back in 1975 when we were trying to pass this first check-off in Iowa with Mr. Gaskill, now State Senator Gaskill, going on—telling people we had to have this market development check-off fund because some day we would have to sell 10 billion bushels worth of corn. And that point we were only pro-

ducing 5 billion annually, and people looked at me as though I was smoking something from the fence line.

The simple fact of the matter is, in the last 2 years, we produced 11 billion bushels of corn, and I anticipate with the bioengineering taking place, corn reduction, water demands, more efficient conversion of nutrients into fruit, it's probably not too far down from the road, we will be producing 13, 14, 15 billion bushels of corn in this country and we will be producing ethanol from that corn while we are developing the cellulosic technology strategies.

Mr. KING. If I could maybe do a specific look at corn, say if we go to 15 billion bushels, can we convert half of that crop for energy, or more, and what percentage of overall corn crop, what percentage of the overall bean crop? In your estimation, I know it's going to be—

Mr. DORR. I'm not sure we have covered—we are exporting about 1.9 to 2.1 billion bushels a year. We are domestically consuming something in the neighborhood, for feed and otherwise, around 5 billion, I believe. So that's 7 billion, so depending on how those change.

The thing that is interesting, I mean, yes, I'm not the economist, and I'm not speaking on behalf of the Secretary but in terms of tabletop calculation, I would think a 15-billion-bushel corn crop, you could use somewhere between 6 and 7 billion bushels for ethanol.

I think the thing we forget is the calculation of these things, as societies become more economically sophisticated, their caloric demands, human caloric demand, goes down. Probably needed 3,500 calories when we were out working behind a horse every day. Today if we consumed 3,500 calories, we know what happens. We need about 2,000 calories. Yet our consumption of energy growth is linear. What we have is energy in food is going down as we increase our economic prowess.

Our demand for fuel, electrical and other energy sources goes up. Frankly, this is an interesting example of how we repositioned our resources as the market demanded.

Mr. KING. I think that's an interesting example of a viewpoint I hadn't thought of and point out that Lewis & Clark's discovery corps ate 8 to 10 pounds of meat a day to drag that boat up the Missouri River, and they needed it all.

So then by that calculation, we take, say, using my numbers now, extrapolating, perhaps 7 billion bushels of corn annually committed to ethanol production could take us to, perhaps, to around 20 billion gallons on an annual basis.

Then if we go to the—from a biodiesel perspective, do you have a sense of an overall soybean crop and what might be converted to biodiesel?

Mr. DORR. In all honesty, I don't. I'm not familiar enough with the numbers to make any real prognostication.

Mr. KING. The point I'm working to fill in some of the blanks is, my viewpoint, overall we need to grow the size of the energy pie. And all of the components of energy that we have, whether all the renewables we here are talking about today, hydrocarbons, nuclear, solar, the list goes on and on. I put a chart up on the floor that has that overall pie chart with different sizes and proportions set up that we are using today and how we need to make that a lot

bigger, far more BTUs than we have available today, which drives the price down on our energy, and then change the proportions of the size of that. But we need to know to what limits we might be able to go with some of these renewables to find out what we might have to develop in the area of hydrogen, for example. That's why my interest focuses on that.

I think another part of this that is essential is the part that you discussed with Ms. Herseth, and that is the financial structure of how we are going to finance this. And I look at the people that have invested in these ethanol plants, the local producers, that were maybe selling a corn crop for around \$1.70 a bushel. And if you look at that return on investment for their shares on their return, maybe that corn actually, if you calculate that way, comes to \$3. That keeps the wealth at home instead of it going to Wall Street. That's one of the things I'm interested in.

But I'd appreciate if you would go a little further into some of the ideas on how you might structure a way for local people and smaller investors, and if you could thread into that. I happen to know of one ethanol production facility that's going up now that went out for capital and once they discovered—once they analyzed the business models, understood that if they put out an offering to raise capital of local people and local producers, that they would be spending at least \$100,000 a year just to comply with Sarbanes-Oxley.

So instead they went the other route with preferred investors. The preferred investors, the conditions they set, you had to either have had a taxable income of \$200,000 for two consecutive years, the last two consecutive years, or have a million dollars of net worth in order to be able to invest in this ethanol production facility. That, to me, seems to go the wrong way. We would like to bring more people up rather than set up a structure that actually is preferred towards wealthy people. I like everyone getting wealthy and staying wealthy, but my—Sarbanes-Oxley, what that might have done and then how we can—more detail, if you could, on how we can lay out a structure for the smaller investors to participate in this energy boom.

Mr. DORR. I am most definitely not an expert on Sarbanes-Oxley. Let me start out from this standpoint, that historically the way in which rural Americans tended to fund those efforts, are what I would call kind of the traditional supply co-op, one person, one vote.

Those co-ops worked very well in the old days. What they did not do and have not done very well is provided the kind of transparency, the kind of equity growth and liquidity necessary to really attract serious money to go out and build something in an equity manner from the ground up.

So what happened there has been an evolution in the co-op model that came out of, initially, Wyoming, and then it migrated to Minnesota, Iowa, Wisconsin. So it's a new generation co-op.

What it does is it provides the kind of—protection for small producers and yet gives them a vehicle similar to an LLC or a partnership so there is that transparency, that equity, et cetera.

What is clear now, you go into these 10 to 150, \$200 million businesses, ones that these community members really do understand

and would like to have an opportunity to invest in, is that we have to look at the kinds of investment vehicles that are available to be utilized that have the kind of governance, that have the kind of transparency that can serve as not debt, but equity investment vehicles.

It's easy to find the debt financing, but it's the equity investment you would like to generate. That's how you kept the wealth at home. So we have to address that issue.

And, I think, simultaneously to that we have to take a look at the existing tax structures, however they may impact the development of these distributed businesses. Then, in order to keep them from taking so much time to doggedly be able to get incorporated into the system, we have to look at the regulatory system.

I mean, if you look, for example, the easiest one to talk about is the electric system, but we know that between PURPA and the Public Utility Commissions Regulations, they are largely designed to regulate 200 to 1,000 megawatts generation facilities and oversee the transmission of power to residential and commercial customers and facilitate peak-demand pricing and other things in ways that are part of what we call a legacy system. It's very difficult to get these small short grade systems on-line.

Let me give you an example. Last week I was in Indiana. Governor Daniels, about a year ago, went out to a small town called Reynolds, which they now renamed Biotown U.S.A.

What they did after spending a lot of time—in the sense, first, they identified all of the liquid fuels demand. They identified all the natural gas demands, they identified all of the electricity demand for that community. Ultimately determined it required about 1.9 megawatts of energy at peak load.

In addition, they had some friends from General Motors to facilitate the use of biofuels, went in and gave away 20 2-year-lease E-85 vehicles, and then facilitated a purchase program in a zip code area around this community, I believe, had 500 vehicles, they facilitated the sale of an additional 95 flex-fuel vehicles, which is indicative of the consumers in that community's willingness to commit to biofuels.

When they got all done, they went out then and identified, I'm not sure how far outside the town, but I don't think it was much more than 10 or 15 miles, available energy resources to support that town.

They went to the landfill. They went to the hog facilities and livestock facilities around there. They calculated the biofuels corn. When they got all done, they found out they had about 13 times the available power they needed to sustain that community.

They just announced last week they selected a management group. They have purchased pyrolysis gasification and anaerobic digesting capacities. They intend, as near as I can tell, to take that town completely off-grid within 2 years.

Now, if you were a traditional provider of this electricity, whether you are an REC or whether you are investor-owned, you can, if you are looking at your own legacy system, get pretty paranoid, deciding what I'm going to do? I have all of these contracts out there and they are taking this down off-grid.

What we have to do is foster this kind of transition because there is still going to be a terrific amount of opportunity. Somebody has to read the meters and somebody has to put in all of the new switches and watch over the Dygen.

These are going to create, in the long an final analysis significant new economic opportunities. And then to put this into a final framework and the significance of getting to this point is that the last 2 years net farm income in this country has been about 70 to \$75 billion.

The President, in his speech, State of the Union, said I want to displace 75 percent of the Persian Gulf imports into this county.

They are about 750,00 million barrels directly from the Persian Gulf. Let's call it a billion barrels. That's \$70 billion. That's the same as net farm income year after year after year. That's why all of this is beginning to really take form, take shape and it is why in an environment in which we have for so long assumed that there was going to be minimum net margins that we were going to have to be dependent upon the government—and as Congressman Gutknecht said, there is plenty of money out here that doesn't require subsidies.

We have to foster the kinds of policies that encourage these local people to understand it is their best interest. It's a way to get their kids so they can have opportunities to stay in their local towns. They can raise the kids next to their grandparents. They can grow these communities in ways they haven't seen the likelihood of for a long time.

Mr. KING. I just want to make a statement to give you the opportunity to disagree with it. And that is, I want to give some comfort here to the flex-fuel-producing people in this region. We have a corn belt that stretches across the Midwest, down south a ways. I envision that being replete with ethanol production facilities, perhaps within a decade, or less.

The biodiesel portion, we have soybean that is broader than that. I envision that being replete with biodiesel production facilities, perhaps a little longer than that period of time.

The biomass, a little bit of—the jury is out. But there will be—it should be that kind of production out there within a decade. That kind of image, I give you an opportunity to disagree if you do, Mr. Under Secretary.

Mr. DORR. I think it's absolutely correct. I think the focus on developing the E-85 structure, the infrastructure so that we can have refueling sites, is incredibly important.

I think as the capacity is built to provide that quantity of fuel, you will begin to see the migration of this development very quickly.

Mr. GUTKNECHT. Thank you. Next the gentlelady from Ohio, Ms. Schmidt.

Mrs. SCHMIDT. Thank you. One of the concerns that some of my farmers from my district are saying regarding the growth of ethanol production is the effect it would have on the livestock industry and also on the poultry industry. And, in fact, some are saying their concern is it might make the United States a net importer of livestock productions.

Do you think those are valid or invalid concerns?

Mr. DORR. Well, I think on the surface, if you look at the numbers you could probably get yourself concerned. My problem is that I tend to believe in markets. And I think the markets will resolve these issues.

It's like I mentioned early on, and when I was out trying to sell corn—corn farmer in Iowa and telling people we are going to have to sell 10 billion bushels of corn, they thought I was a bit off base.

I think the likelihood of us not figuring out how to develop appropriate ration formulations and utilization of the DDGS, and others that come from these byproducts, I'm pretty comfortable we will be able to deal with those problems.

Mrs. SCHMIDT. Thank you.

Mr. KING. I don't have any questions.

Mr. GUTKNECHT. Since you don't have any more, I will yield to the gentlelady from South Dakota.

Ms. HERSETH. Just a quick follow-up, would the administration support a separate renewable fuel standard for biodiesel? And, second, could you elaborate on the administration's research agenda for facilitating the producing process for cellulosic ethanol.

Mr. DORR. In answer to the first question, frankly, I don't have an answer. But I know there is a strong commitment from the administration to build out the renewable energy so I'm certain we will take a look at all realistic efforts.

As you know, the President in his 2007 budget has committed \$150 million to the advanced energy initiative component that affects cellulosic ethanol research.

We have developed within the administration some very close and collaborative relationships between DOE, USDA, EPA and the Department of Interior. And we are meeting on a regular basis. I'm chairing the Energy Council for the Department of Agriculture.

We are meeting with our colleagues across the government and there is a considerable focus and a sense of urgency to get this accomplished, and I'm sure that we will.

Mr. GUTKNECHT. I will yield to Congressman King one last question.

Mr. KING. Thank you, Mr. Chairman.

I just want to clarify, that year the first gallon of ethanol was pumped, where did that happen and what year was it?

Mr. DORR. I'm not sure. It was in probably 1977, or 1978, but I'm not 100 percent sure.

Mr. KING. Do you remember the town?

Mr. DORR. No.

Mr. KING. Thank you very much.

Mr. GUTKNECHT. Under Secretary Dorr, we want to thank you for coming today and you clearly are an outside-of-the-box visionary, and I think we, on this subcommittee, share the same vision. And in response to a question that Representative Schmidt asked, I do have some livestock people who are concerned that this is going to drive up the price of corn.

But the way I respond to that is, I certainly hope it will. I think this is one of the ways that we begin to make agriculture just like every other business, and I do believe in markets. And if it means that our corn producers are going to get a little more for their corn, I don't necessarily think that is a bad thing.

But I also believe that long-term, cellulosic, and other things, will begin to create a balance out there in the marketplace that ultimately will make sense for everybody.

I'm not one that believes corn is the answer to all of our problems relative to renewable energy. I think we will find the market will sort out whatever the most efficient producers are.

Mr. DORR. Thank you, and thank you for allowing me to join you today.

I make one follow-up comment. I think this is a very significant bipartisan issue. I don't find any contention about the need to solve it, and solve it effectively and I, frankly, appreciate what you and your committee have done to give this more hearing as well.

Mr. GUTKNECHT. Thank you very much, Mr. Under Secretary.

Mr. GUTKNECHT. Next we are going to call up the next panel. I think we have name tags for them. Our first panelist is Mr. Bruce Noel, who is a corn producer and chairman of the Ethanol Committee of the National Corn Growers Association, from Leslie, Michigan.

Welcome.

STATEMENT OF BRUCE NOEL, CORN PRODUCER, AND CHAIRMAN, ETHANOL COMMITTEE, NATIONAL CORN GROWERS ASSOCIATION

Mr. NOEL. Good morning, Mr. Chairman.

I appreciate the opportunity to address your committee. It's good to see you again. I was indeed with you on April 25 when the President congratulated us in what we had done so far and challenged us to continue our work in the renewable fuel areas.

With gasoline prices the way they are today at record levels, the imports, the rising strain on the family budgets, I, as a farmer, should I get out of here in a timely fashion today, would like to get back to the dirt. I've got the corn in. I've got soybeans to go yet. But the weather has not been very cooperative in the last week. We will get back to business as soon as we leave here today.

My name is Bruce Noel. I'm the chairman of the National Corn Growers Ethanol Committee. My vice-chairman is Brian Holt, from South Dakota. My panel members are from all of your respective States. I will drop names.

Indeed, I do have staff working from all of the United States, all the States that are part of the NCGA trying to come up with answers to this domestic problem.

I am a corn grower, of course. I do raise soybeans and other crops. Corn is my primary function to be a spokesperson today.

When I talk about NCGA, our national organization, it's a federation created in Iowa originally in 1957. It has 33,000 dues-paying members and it's in check-off programs where we collect for every bushel sold, that represents probably 300,000 producers nationwide.

For 20 years we have been working side by side with government and other industry players trying to move forward on energy and ethanol and corn and biobased products. And we were really pleased to have the signing in New Mexico last year of the Energy Policy Act of 2005.

As we move forward, I will host a lot of questions, I'm sure, because we are indeed working on ownership. Farmer ownership has dropped off somewhat and the new surge to produce energy, it is easier, and venture capitalists have recognized their returns are very attractive so farmers are somewhat challenged, rural communities are challenged to invest. I will talk about that later.

In Michigan we have one producing ethanol plant up in the Thumb, the Caro facility, of which Tony is the manager—40 million gallons.

We have several under production, in Lake Odessa—down in the south and west part of Michigan, is looking to produce 55 million gallons, and MGP helped our Michigan bunch, from Iowa, is finishing production design and breaking ground and moving forward on their 57 million gallon production facility, east of Detroit—or west of Detroit.

There are several other projects of note announced recently. NextGen Energy up near Traverse City, in Kingsley, is talking about 50 million gallons of production and we have another facility talking in mid-Michigan, Liberty Fuels, up to a 100 million gallon production facility.

I can tell you that I host a lot of questions personally at home as I pass out my cards on closed-loop systems, which I will discuss later, and other small projects that don't hit the news but are being considered at this time throughout Michigan.

In 2005 our industry produced just short of 4 billion gallons of ethanol. That was about 1.4 billion bushels of corn, about 13.6 percent of our total use corn.

We set record crops of the last couple of years. In 2004 we broke the existing record by several bushels at 160 bushels per acre. Previous high being 142 in 2003. And even in 2005 where some of our key areas in Illinois and others had drought, we still averaged 147.9 bushels per acre.

We've looked at the trend line, something you alluded to earlier about the trend line, over time looking at the increasing yield of the effectiveness of our cropping rotations, of payback on genome research and cultural practices, and all of those things, high prices, fixed high prices, so farmers are looking at how they can make their operations more energy efficient.

But we think we will be looking at probably 173 bushels an acre by 2015, and that will answer some of the questions that we get forward on our math.

We see a minor shift in acreage. I know there has been some discussions earlier this year from 81 million, maybe as low as 78 million bushels of corn, acres of corn being planted this year, because of pressure from input costs. That will remain to be seen, what the actual crop is. But given that the yields are increasing every year, we think we are well positioned to meet the demand of this growing energy fuel.

When I look forward into nonethanol use of corn, we have had some surges recently in export of raw corn. We would much prefer to sell a value added corn, a DDG. There is no shortage of starch in the world but there is a shortage of

* * * * *

I'm a subtask force National Corn Ethanol Research Committee, the Broin Company, and several others, on researching DDG's flowability, nutritional characteristics and making all of those things easily available to nutritions for poultry rations * * * .

We have been doing a lot of homework on that and even here in Michigan when the poultry producers went to Washington, DC concerned about the price of corn going up and increasing the price of production, our Michigan group was rather quiet because we have given them money and helped them research DDG use in their turkey co-op, and they are marketed in Canada and other areas through the fast food restaurants and are using * * * .

As we have become more energy efficient, we have had some arguments in the past that it takes more energy to produce ethanol than you get out of it, which are mostly bunk.

Mr. GUTKNECHT. May I correct you? It's all bunk.

Mr. NOEL. In that gray area for those that have compassion for—that have nothing else to talk about.

But Dr. Bruce Dale, Dr. Wang, USDA's own researchers, have proven over the years even from production to harvest and making ethanol, it is a win-win situation.

One of the things we have been talking is E-85 and conversion of underutilized assets at gas stations to utilize those tanks that may have been premium to midgrade in the past that are not selling, convert those to E-85, working through that.

We have had some partners here in Michigan that have been great friends of ours, even before they knew they would get the 30,000 credit for putting infrastructure in, thought it was the right thing to do. Those pumps were put in this area, and just north of Detroit.

One thing that we are working on in Michigan, and we have partnered with other States, and looking at, is creating a corridor.

We realize in Michigan tourism being No. 3 behind agriculture, that varies from year to year—but we understand that if people do have some spendable income and they want to visit this great State, they have be able to get somewhere and get home.

We think GM has the products, Ford has the product, Chrysler has the products. If we provide infrastructure those routes of travel within the State, and across other State areas, this will re-invigorate our whole Midwest economy. And like you said earlier, put it where it makes sense.

The problem has been infrastructure. Those that have had vision, have added those pumps. I was at a pump opening in Greenville, Michigan on the west side of the State, near the home of Meijer's Thrifty Acres, which have been greater partners and made an announcement they will add more stations.

I was in Greenville, a small family operation decided we want biobased everything. They put up the first—they were very pro-active. We are starting to see those people think like I do, that it makes sense to use in a homegrown fuel.

One of the concerns we also talked about today was where we were going with this industry. I support, and NCGA supports your bill, H.R. 4357, to continue the growth of this industry.

When I talk about what I have been working on this year with my partners from across the United States on my committee, one

of the things we have been working on very hard is ownership, farmer ownership.

I have been almost exclusively working on farmer ownership since I took chairmanship last fall.

It's important for me and I think for farmers and for the rural economy that farmers stay involved. When I went to the RFA conference in Vegas, there was no shortage of suit-and-tie types from New York, and other places, including foreign countries.

MGP sold out to Global, which is an Australian firm, which has ties to South Africa and industrial diamonds. That's the kind of money that is looking at this industry.

We are trying to create a fund within NCGA that has the ability to keep farmers invested, and not just ethanol, which is the shining star at the moment, but those future technologies we have been funding in the past with our research—anything made from chemicals comes from carbon based, soy, corn and other feed stocks. And to that end we are trying to keep farmers invested and keep them on the farm. Nothing makes me more sad than to attend a Farm Bureau meeting or local chapter of any farm group and look at the color of the hair. And understand that they have told their children go off to college to get a real job. When the kids come home to the farm and look at dad 70 years old, look at all his assets but understand spendable income might not be available to them until he has passed. Understanding we are sitting on a land base in transition.

I see 4, 5 years where we still have an opportunity to get those kids back to the farm. Energy field, some projected that we have about 2 years to get it right to keep farms—I don't know if that's true but I feel the pressure to keep us invested.

We are looking at mutual funds and other vehicles that give us the ability to stay invested. I have two examples here in Michigan that understand too the need to keep rural economies strong.

I have seen a numbers over 90 percent of non—of rural people are nonfarmers. When I look at policies for retaining land ownership and production—if you change that situation and understand that now, as a neighbor, when I'm going down the road with my hay bind processing hay, I got a whole hand salute instead of a finger that I have seen in the past because they understand agriculture. What a better way to understand agriculture than to let our nonfarming neighbors invest in a rural economy and get them reengaged.

I think this creates a lot of opportunity and regionalization within Michigan. Certainly, we can't push corn much further than Clare for grain production, but corn also has a cellulosic component that we can be part of as well. So we are not thinking that corn can solve all of the problems but we want to keep the people on the land until the next thing comes along and do our share of bridging technologies from gasoline to corn to our new renewable fuels. Thank you.

[The prepared statement of Mr. Noel appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you, Mr. Noel. We are going to try to keep moving along.

Those of us in the upper Midwest, we are not only exporting ethanol all over the world, we are also exporting ethanol experts.

The next witness actually has been exported from southern Minnesota to Michigan. Tony Simpson ran the EXOL plant for a while on the Iowa border. We are delighted to have you here today. I should give your title, general manager, Michigan Ethanol, L.L.C. Welcome, Tony.

STATEMENT OF TONY SIMPSON, GENERAL MANAGER, MICHIGAN ETHANOL LLC, CARO, MICHIGAN, ON BEHALF OF THE RENEWABLE FUELS ASSOCIATION

Mr. SIMPSON. Thank you, Mr. Chairman, members of the committee. Thank you for inviting me this morning.

My name is Tony Simpson. I'm general manager of Michigan Ethanol, L.L.C., a 50 million gallon ethanol refinery located in Caro, Michigan. The plant was designed, built and managed by * *

I also have the pleasure of sitting on the Renewable Fuels Association Board of Directors. I want to thank you for the opportunity to speak to you today about the fastest-growing portion to the energy industry in the United States, the ethanol industry.

It's also a special pleasure to see Chairman Gutknecht. It's nice to see you here in Michigan where we can combine the discussion of biofuels with our friends from the automobile industry and talk about a partnership that could have long lasting—in the future in both our industry and where consumers take alternative energy.

Today's ethanol industry is an incredibly dynamic and growing industry. It's made up of 97 biorefineries located in 19 different States.

* * * * *

Thank you very much.

[The prepared statement of Mr. Simpson appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Next we have Keith Reinholt, field operations director of Michigan Soybean Association and Michigan Soybean Promotion Committee.

STATEMENT OF KEITH REINHOLT, FIELD OPERATIONS DIRECTOR, MICHIGAN SOYBEAN ASSOCIATION AND MICHIGAN SOYBEAN PROMOTION COMMITTEE, ON BEHALF OF THE AMERICAN SOYBEAN ASSOCIATION AND THE NATIONAL BIODIESEL BOARD

Mr. REINHOLT. Thank you, Mr. Chairman, and members of your committee.

I am Keith Reinholt with the Soybean Association, has a stated purpose that you were interested in reviewing the future of biofuels, and I'm representing biodiesel as that component of biofuels.

My written testimony is in greater detail than I will go into here, cognizant of time constraints so the written testimony basically addresses the overall growth, the importance and future need of the biodiesel industry, and it also details the farmer's part in this. I think this is a key and I will only mention it briefly but back in

1992, we began the effort of biodiesel in the State of Michigan. Michigan farmers took it upon themselves and said this is important enough. And the farmers across the United States put over \$50 million in the first—soybean oil was the raw product of choice, in part, because it's very functional, price competitive and available.

I'm going to make a few comments, cognizant of the time, relative to Michigan, because Michigan in a microcosm is, in fact, what is happening in the United States of America in the biodiesel industry.

We began in 1992. In fact, interestingly enough from our little office in Frankenmuth, north of here about 60 miles, we had to get our fuel shipped to us, the B100 shipped to us by 5-gallon containers through UPS. We blended it ourselves and since that time have personally driven about 600,000 on diesel-powered pickups fueled with a blend of biodiesel * * *.

Our efforts throughout the 1990's was to demonstration efforts—we had demonstration efforts through the 1990's, the Department of Energy vessels out on the Great Lakes, through the mass transits in the city of Flint, and through a number of universities and municipalities across the State of Michigan.

These demonstration efforts have resulted in use by various universities across the State of Michigan. In fact, the university where we are sitting here, much effort is going into it. We've worked with cooperative programs with these folks, by municipalities, we are glad to say, by school systems. Because who else should use it as opposed to school systems, where youngsters are breathing these fumes?

We know of 40 school systems across the State, which is embarrassing in terms of numbers, that are using this. We are also working with the State park systems and the national forest systems, now using the B-20 product also.

Just this year, where else should they use this but the local county fairs that generate their rides and the power from their rides by diesel-powered generators, where the youngsters go to, and we know two of those that are using it this year. We were quite proud of that also. So this has resulted in probably exponential growth.

In part, we need to thank the ethanol industry for making the roads. Now the roads aren't completely paved but they are making the roads because it makes our efforts that much easier.

We also know that because of those efforts it has resulted in the demand out there and we know there are 110 retailers of petroleum diesel. Excuse me, may I make a clarification? We have identified the retailers out there as either a petroleum retailer or a fuel retailer.

The petroleum retailers are a hard nut to crack. The fuel retailers are very interested in working with us. We know of 110 fuel retailers out there at the present time that are peddling, marketing biodiesel and biodiesel blends.

We also know, made a greater progress because we don't have some of the hurdles to overcome. We know of about 40 stations out there that are marketing biodiesel. Our records indicate that only

40 percent of stations handle diesel fuel. We have 40 and we are proud of that fact also.

We also know, being a microcosm, we are very much paralleling the United States, in general. We have been doubling use in the State of Michigan to a somewhat embarrassing projected 6 million gallons used at the end of this year, but that has been doubling over the last 4, 5 years, much like the Nation, in general, where I think Secretary Dorr said, we are going to be in the 150 to 175 million gallons nationally.

We also have three plants under construction in the State of Michigan. We have been importing all of our product. We have three under construction at the present time. These are those refineries previous speakers had referred to, and we had six more in the preconstruction stage, and that would be everything from feasible study to a marketing plan.

This somewhat parallels nationally because we know in 2004, there was around 20 to 25 plants, that increased to over 60, and now they have over 70 that are on the plan. They are increasing nationally as well.

What does the future hold? I guess this is what we have to look to because we, in the soybean industry, are not naive enough to think the soybean industry is the end all. We think there will be other opportunities.

When I give presentations I try to throw out some thought-provoking comments and I think some of these are: Where we would be today, when Rudolph Diesel fired the diesel engine back in the early 1900's, he used peanut oil, as I think you are aware of.

Where would we be today if we would have used the last 100 years to market some renewable biodegradable domestically-produced product, rather * * *.

I think as we go down the road, the farmers have been great at producing crops for food and fiber. We have not produced energy crops. We will grow energy crops. I don't think we have to be real concerned about that.

There are a lot of things in the future and soybeans is not the end all. We think we will be a part because of functionality.

I appreciate the opportunity to comment and represent the biodiesel industry and soybean farms and would be glad to answer any questions at a later time.

[The prepared statement of Mr. Reinholt appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you.

Next we have Jim Domagalski, who is a soybean producer, president of the Michigan Soybean Promotion Committee and director of National Biodiesel Board. Welcome.

**STATEMENT OF JIM DOMAGALSKI, SOYBEAN PRODUCER,
PRESIDENT, MICHIGAN SOYBEAN PROMOTION COMMITTEE,
AND DIRECTOR, NATIONAL BIODIESEL BOARD, ON BEHALF
OF THE AMERICAN SOYBEAN ASSOCIATION AND THE NA-
TIONAL BIODIESEL BOARD**

Mr. DOMAGALSKI. Thank you, Mr. Chairman. And also thank you for pronouncing my name so well.

Ladies and gentleman, I, along with Mr. Noel there, am concerned about the nature of agriculture because I have eight children myself, one wife, eight children, and I don't see any of those children handling the farm after my retirement, which I don't see that retirement in the near future, but that is the main concern.

My children see the high cost of production, they see the return. It's difficult at this time with the low prices of commodities to replace machinery, with the cost of fuel, fertilizers, et cetera, and our property taxes. Let me go on with my testimony * * *.

Yes, I am Chairman of the Michigan Soybean Promotion Committee and a member of the National Biodiesel Board.

I come to you today, ladies and gentlemen, as a farmer. I live and farm in St. Clair County, raising crops of soybeans, corn and wheat.

In my operation I began using biodiesel 4 years ago on my tractors ranging from 80 to 170 horsepower. I began using biodiesel in those with satisfactory results.

I drove 70 miles north for my first purchase of biodiesel and loaded four drums in the back of my pickup, which I blended with petroleum fuel on my farm that day.

Just a couple of years ago, I finally convinced my biodiesel supplier to supply me with biodiesel. He agreed to store a custom blend and deliver it.

Some of my primary reasons for using biodiesel are concerns with risk—harmful emissions.

There are approximately, right now, 53 biodiesel plants in production and about 40 more under construction. One of our biodiesel meetings at the National Board was addressing the harmful effects of sulfur emissions.

The Federal Clean Air Legislation requires slashing the sulfur content of petroleum fuels by 97 percent, lowering the current content of 500 parts per million to 15 parts per million.

* * * * *

The U.S. Department of Energy has found that biodiesel in contrast to petroleum fuel produces 78½ percent less carbon dioxide in emissions.

This new source of renewable energy, biodiesel, is nontoxic and biodegradable, 10 times less toxic than table salt and biodegrades as fast as sugar.

It can power school buses, all our perishables, lumber, steel and grain, fuel our ships and military equipment. In turn it can reduce our oil imports from over 60 percent to a more tolerable level in the future.

As farmers we are eager to respond to the call of this State and this country by producing grain for fuel that maintains high performance levels in our diesel engines, provides us with—and reduces harmful emissions so that you and I can live in a cleaner, healthier environment.

Mr. GUTKNECHT. Thank you, Jim. We want to move along as quickly as we can, so I will forego any questions.

I want to make a real quick comment, I think it's misunderstood by some people. One of the real benefits, and Stephanie mentioned it earlier, one of the real benefits of renewable energy is that etha-

nol, for example, I think is 35 percent oxygen, and biodiesel, I think you, Jim, indicated the environmental benefits.

But one of the best benefits of all we need to make sure that folks understand and that is, all of the carbon dioxide that's created when we burn fuels, all of that it, at least in terms of the renewable side of it, gets recycled in next year's crop. So it's a perfect cycle. I think that story needs to be told all around the country, that this is a great story. With that, I will yield to my colleague from South Dakota, Ms. Herseth.

Ms. HERSETH. Thank you, Mr. Chairman, and thank you to each of you for participating today. I appreciated the information provided and some of the Michigan-specific information, the development of both ethanol and biodiesel here and for consumers throughout the regional corridor that you are looking at.

I will pose the quick question to our two gentlemen representing the American Soybean Association. Would you support a separate renewable fuel standard for biodiesel—that, perhaps, that may pave the road that ethanol has provided for your industry?

Mr. REINHOLT. I believe that has been thrown around in the halls in the office of the American Soybean Association considerably and I'm sure they are leaning in that direction and I know the National Biodiesel Board had some discussion on that, too.

Mr. DOMAGALSKI. Yes, that would be a positive effect—looking forward to that.

Ms. HERSETH. OK. And how do you all feel about something that we can do beyond what we did in the Energy Policy Act to facilitate the infrastructure for the fuel availability? You talked a little bit about the partnerships that you had with local stations. There is a tax credit. There is—in terms of installation costs and offsetting that, but have you talked in terms of the national associations that you are representing today, of what more from a policy perspective we might be doing to facilitate the infrastructure availability of biofuels.

Mr. NOEL. We at National Corn Growers have a public policy group—that represent us in DC, but also we have farmer owners and farmer producers, of course—try to think about the best way to facilitate this whole thing. And in some areas ethanol plants are actually retailing it themselves.

We consider that—and I thought about that some time ago. Does it make sense for some farmer to give 85 percent of his fuel to 15 percent from petroleum, and let them do the marketing of it? What is the reward? We talked about that with Mr. Dorr, what is the reward? We are still struggling a little bit with that. Direct marketing is something we have had some discussions about. We have not really arrived at any conclusion.

My little concern about the standard for soy diesel and ethanol, we try to keep our quality up and we do understand trying to have the marketplace open up by fall, and having no sulfur in—I hope it's not so punitive that those are trying in spirit to get things right, because things do happen. I just hope that we don't turn off the retailers and make it so onerous in this transition that they can't do it. That's just some commonsense approach.

We have struggled, and we still struggle, what makes good sense policy-wise? Mandates sometimes get people hackled up. We try to incentivize. We haven't yet found that vehicle.

Mr. REINHOLT. Just a quick comment. We are not quite big enough to get that snowball going downhill yet to really be recognized in the biodiesel industry. Mr. Dorr referred to that, I think.

I go back because I don't—the diesel industry over the road, we are going to have to market our biodiesel through the petroleum companies, I believe.

And I get back to the comment of petroleum retailers versus fuel retailers. And I think encouragement of these multi-national companies, federally, for them to be cognizant and be aware to carry the biodiesel component and be fuel retailers, not petroleum retailers. I think that's important.

Mr. SIMPSON. On a State level, from the Federal policy standpoint obviously, we have been supportive of some of the legislation introduced. At the State level we are working with a coalition, Corn Growers, Farm Bureau, others as well, to promote a package that will bring alternative fuels to fruition in the State.

Some of the highlights are actually a tax credit for both biodiesel blending and E-85 blending from the State gas tax, an additional credit or grant program that would allow for the construction of infrastructure or for the conversion of existing infrastructure.

One of the areas we have seen significant success in ethanol in E-85 transitions is taking existing premium pumps and converting them to E-85, taking existing kerosene or propane tanks and converting those to E-85. You have a much smaller capital outlay.

You have in many cases additional volume opposed to premium or in personal experience, at least similar volumes, and what you can affect is a larger spread of these pumps, a larger amount of availability for a similar amount of dollars, than going out and creating new construction.

The other things that we are working on in the State are making State fleets—requiring State fleets to use E-85 or biodiesel.

Ms. Herseth. I don't have any further questions. Just a comment to share in light of concerns expressed by some, if not all of you, in the future of agriculture. When we talked a moment ago about the preferred-investor models that keeps out young farmers. This is part of what we have to look at in the next farm bill, as well as the broader issue of the future of agriculture and what we do to find the business models and investment opportunities to diversify not just the farm income, but diversify the family members who are going to continue to be involved in these operations that will sustain the local economy. So I appreciate the comments that some of you shared on that issue. Thank you.

Mr. GUTKNECHT. The gentleman from Iowa, Mr. King.

Mr. KING. Thank you, Mr. Chairman.

In the interest of time, I would ask if we could keep the answers short and I will try to keep my questions short.

One of them is, Mr. Reinholt, you mentioned interestingly that 600,000 miles driven on a biodiesel blend. I'm wanting to know if you have had any problems with animal fats blended in with the biodiesel, if you support that idea? And the same question, how

many gallons of biodiesel can we make out of soybeans out of an annual crop that we have today?

Mr. REINHOLT. I have had no problems with my biodiesel. 99 percent of biodiesel is probably virgin soybean oil. We know you can get from a bushel of soybeans about 1.5 gallons of biodiesel. One can equate 40 bushels an acre, 60, you know, one can equate that.

Mr. GUTKNECHT. Thank you very much.

Mr. Noel, the corn crop that you have projected here to go to 14, 15 billion in annual bushels, and dedicating about 5.5 billion bushels of that to ethanol production going to about 16 billion gallons a year, it looks to me like that whole increase—most of the whole increase would have been dedicated to ethanol production. Couldn't we—if we are capable of converting that much today, couldn't we use a greater percentage of that corn crop for ethanol production than close to a third?

Mr. SIMPSON. I think we can—while we are moving forward with that. We are doing a lot of homework on identifying within the corn kernel itself how much we can really squeeze out of it and we're moving to hybrids that are more highly fermentable.

There are some unknowns that we don't know yet. With the National Science Foundation working on corn genome, we know there's some triggers that will move the crop into nontraditional areas. * * * so there are some nontraditional areas that could be seeing more corn production * * *.

Mr. KING. Even after this production you wouldn't rule out, perhaps, doubling that production.

Mr. SIMPSON. I have no crystal ball. I certainly know we are growing a crop that works and we are getting smarter every day.

Mr. GUTKNECHT. The gentlelady from Ohio, Mrs. Schmidt.

Mrs. SCHMIDT. Thank you.

This question is directed to Mr. Noel. Are the current corn and soybean and other crop-support programs consistent with a shift to renewable fuels? Some farmers in my district contend it's not economical to produced crops that may be good biofuel feedstocks but do not receive subsidies. Therefore, do the current policies create crop production distortions that may be bad for agriculture, as well as for renewable fuels?

Mr. SIMPSON. We certainly will have a lively discussion on that with public policy. I have phone calls and discussions on a regular basis about our farm subsidy programs and living in a State that had borders closed to Canadian imports for a while * * *.

We are cognizant of the discussions, WTO, what it does for that. And we do realize there are regional differences in crop production. And in some cases, if you have a short crop and nationwide, the LDP is good but you don't have a crop, what do you do about that?

It's hard. There are no one program benefit packages that fits all-size operations and that is something I think we are going to have to continue to work on, is to look at the individual components and farmers and you have a better handle on the size of those crops.

Are there some distortions from time to time? Absolutely. I would be lying if I didn't say there were.

Mr. GUTKNECHT. Thank you. I will dismiss this panel and bring up the next. Thank you so much for your testimony, and really, ul-

timately, as you leave and the next group comes up, I will mention, ultimately part of the reason we are doing these hearings is because we are beginning to think about what kind of a farm bill we are going to have in the next several years, if we put one together. Energy policy is going to be part of that discussion. So that's part of the reason we are here.

Now we want to hear from some of the folks that are in the business of making automobiles. That's why we are here in Detroit.

Thank you for coming and welcome, Mr. Krause, who is the director of Environmental Engineering of Volkswagen of America. Welcome.

**STATEMENT OF NORBERT KRAUSE, DIRECTOR,
ENVIRONMENTAL ENGINEERING, VOLKSWAGEN OF AMERICA**

Mr. KRAUSE. Good morning, ladies and gentlemen. Thank you for the opportunity to have my testimony here today. My name is Norbert Krause. I'm the director of the Engineering and Environmental Office of Volkswagen of America.

The Volkswagen Group is the fourth largest automobile manufacturer, the 15th largest company.

On behalf of my 1,200 colleagues who work at Volkswagen at our Auburn Hills headquarters, I would like to welcome you to Michigan and thank you for Congress' interest in biofuels.

Volkswagen is convinced that biofuels will play a critical role in meeting transportation needs in the United States and throughout the world—we have established a global powertrain and fuel strategy that emphasizes the needs to development advance propulsion technologies in a way that is integrated with the development of future fuels.

Biofuels, such as biodiesel and ethanol, from the foundation for portfolio of renewable fuels that will be needed to achieve standard mobility and to reduce the dependence on petroleum.

At Volkswagen we believe it is critically important to make the most efficient use of existing resources, like petroleum-based fuels since they will continue to play a large role.

Our chairman, Dr. Bernd Pischetsrieder has stated that every new Volkswagen model will use less fuel than its predecessor.

Volkswagen has invested in developing a wide range of fuel-saving technologies from systems that increase the fuel efficiency of gasoline-fuel cars, to clean diesels that offer both superb performance and high efficiency, to hybrids and, for the long term, hydrogen fuel cells. Our major focus today is on the development of clean, efficient diesel passenger cars for the U.S. market.

Volkswagen is the leading seller of diesel-powered passenger cars in the United States. Worldwide over 40 percent of our production is powered by a diesel engine.

In the United States, penetration of diesel is relatively small but growing. We believe that the growth of diesel sales in the U.S. will continue as more and more consumers and policymakers and the public recognize that diesel cars are powerful, economical and environmentally friendly.

In addition, diesels are future oriented. They offer an efficient and flexible platform for the use of renewable fuels that are the subject of today's hearing.

Modern diesel vehicles inherently produce more power than the gasoline counterparts. This results in a superior driving behavior. Diesel fuel itself contains more energy per gallon than gasoline. Diesel engines always have been known to deliver high torque at low engine speeds.

In addition, the diesel engine's high compression, aided today by turbo charging and

diesel vehicles are inherently more powerful than their gasoline counterparts. Diesel fuel itself contains more energy per gallon than gasoline. Diesel engines always have been known to deliver high torque at low engine speeds. In addition, the diesel engine's high compression, aided today by turbo charging and direct injection, yields high thermal efficiency—less of the fuel's energy is wasted. This gives the diesel driver immediate acceleration and powerful performance coupled with great fuel efficiency. In March of this year, a diesel powered Audi R10 race car won the 12 Hours of Sebring—the first Sebring victory ever for a diesel powered race car. The car was fueled with a synthetic diesel fuel made from natural gas. The same process can be used to make diesel fuel from biomass. We hope for a repeat victory at the 24 hours of LeMans next month.

Diesels also have long been noted for their economy. Diesels offer more than a 30 percent increase in fuel economy over similar models with a gasoline engine. Today, this is achieved without sacrificing performance and also with a substantial performance improvement. According to the EPA, 4 of the 10 most fuel-efficient vehicles available in America for the 2006 model year are diesel powered Volkswagens.

Today's advanced diesel engine is also environmentally friendly. Concern about emissions of greenhouse gases has increased throughout the world. Diesels emit around 30 percent less CO₂, the principle greenhouse gas emission from automobiles. Diesel emissions overall have been reduced by 80 percent over the last 10 years. Soon, we will introduce diesel vehicles that meet the same emissions limits that are applicable to gasoline cars.

Because of its excellent fuel economy, diesel provides an excellent way to conserve existing petroleum resources. The diesel engine is also future oriented since it provides an excellent platform for the use of renewable fuels like biodiesel that will power tomorrow's cars. Already, biodiesel is gaining acceptance and popularity in the U.S. market. In the future, synthetic diesel fuels made from natural gas and biomass will join biodiesel as the next generation of biofuels. This diverse portfolio will continue to displace petroleum use and support clean efficient diesel technology for decades to come.

Biodiesel is a renewable fuel currently made from soybeans, canola, and other crops. Biodiesel has been popular in Europe for many years, and is used often as an invisible, low level blending agent that extends the supply of petroleum, contributes to reduced greenhouse gas emissions, and provides an important market for our farmers. The biodiesel industry is developing rapidly in the US, and Volkswagen is working closely with the industry.

In 2004, Volkswagen and ADM entered a cooperative research agreement to study the use of biodiesel on our light duty diesel ve-

hicles. After over a year of research and testing, Volkswagen decided in March of 2005 to recommend that our U.S. customers can fuel their cars with B5, a five-percent blend of biodiesel in petroleum diesel, without affecting warranty coverage. We were the first manufacturer to offer this coverage.

It is important to recognize that the properties of all fuels are of great concern to vehicle manufacturers, since we must certify and guarantee the performance of our products. Our ability to extend our warranty coverage is directly related to the existence of suitable standards for fuel, so that we can be sure of consistently adequate fuel properties for all of our customers at all times. The Biodiesel Industry, and particularly the National Biodiesel Board has worked in close cooperation with us to develop new elements for fuels standards that are needed today and in the future.

We are now conducting fleet tests using B-20 to determine how this more concentrated blend will affect current and future engines and emissions control systems. We will be informing the biodiesel industry of the results and will continue to cooperate with them in the standards setting process.

As this research continues, we are educating our customers about the use of B5 and participating in promotional activities to encourage the development of high quality biodiesel fuels that will provide excellent performance and reliability, cut net greenhouse gas emissions, and reduce petroleum dependence.

Volkswagen is participating actively in projects to help to develop other renewable fuels such as synthetic diesel fuels made from biomass (BTL), and ethanol made from cellulosic feed stocks. We design our gasoline-fueled cars to run on low-level ethanol blends such as E10, and we are evaluating the market for flexible fuel cars, which we do produce and sell in Brazil. We have significant partnerships with Choren Industries and DaimlerChrysler on the BTL diesel fuel, and with Shell and Iogen on a new process for making ethanol from any cellulosic feedstock.

Volkswagen believes that none of these alternatives alone can or will replace the others. It is therefore necessary for companies like ours to cooperate with agricultural producers, energy companies, governmental authorities and other stakeholders to develop an integrated array of technologies and fuels that will support sustainable mobility.

We believe that the growth of the light duty diesel market and the increased use of biodiesel in the U.S. are intertwined. In the month of April, as gas prices rose, demand for the diesel versions of some of our models grew to over 40 percent in some markets, compared with a traditional rate of around 10 percent. Surveys show that many diesel buyers select their cars not only for performance and fuel efficiency, but also for their ability to use biodiesel blends.

There are several public policies enacted by Congress that have encouraged us to invest time and resources in the biofuels sector. These include:

The Federal tax credit for biodiesel producers. This has helped the construction of new biodiesel plants throughout the United States.

The requirement of Ultra Low Sulfur Diesel fuel that becomes effective this October. Cleaner fuel is absolutely critical to the industry's ability to offer technology that meets our energy and air quality needs.

Consumer tax credits for advanced technology vehicles: The 2005 energy bill expanded the consumer hybrid tax incentive to include light duty diesels which meet the strict Tier II, Bin V emission standards. This tax credit will help to expand advanced diesel sales and provide a larger market for biodiesel fuels.

Together, vehicles manufacturers and the agriculture community can help meet America's growing transportation needs while still providing safe, reliable, affordable, and exciting vehicles.

On behalf of Volkswagen, I would like to thank you for the opportunity to testify.

[The prepared statement of Mr. Krause appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you, Mr. Krause. Let me take this opportunity—you mentioned the race, this is something most Americans don't know, it was announced last year that this year for the first time every car racing in the Indianapolis 500 will be using an ethanol blend. In 2007, their fuel will be 100 percent ethanol.

Our next panelist is Dr. Mary Beth Stanek. She is the manager of Strategic Initiatives at General Motors here in Detroit. Welcome.

STATEMENT OF MARY BETH STANEK, MANAGER, STRATEGIC INITIATIVES, GENERAL MOTORS

Ms. STANEK. Thank you for having me. I want to talk a little bit about what General Motors is doing with E-85. I will be very brief because I think you want to get to some questions.

First of all, I will cover several topics, including the benefits of E-85. We believe there are many benefits of using E-85 including

Ethanol being a renewable fuel; using E-85 helps reduce greenhouse gas emissions; using E-85 helps to reduce dependence on petroleum and helps to create greater diversity in our Nation's energy supplies and sources; using E-85 helps to reduce smog forming emissions; using E-85 can help to support the domestic agriculture industry in the U.S. and support new job growth

General Motors has placed a very high priority on flex fuel vehicles and renewable fuels. General Motors produces a broad lineup of flex fuel offerings including the Chevrolet Tahoe, Suburban, Silverado, Avalanche, Impala, Monte Carlo and GMC Yukon, Yukon XL and Sierra. General Motors is approaching 2 million vehicles on the road with many more to come.

In addition to producing flex fuel vehicles capable of running on E-85, GM has also partnered with the Governors' Ethanol Coalition. As part of this collaboration, GM has loaned E-85 flex fuel vehicles to 28 States and organizations so that they may use them to educate the public and promote the benefits of using ethanol. This partnership has been extended for 2006 and the loan of GM's 2007 E-85 flex fuel vehicles is underway.

The member States include: Alabama, Arizona, Arkansas, Colorado, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, South

Carolina, South Dakota, Tennessee, Texas, Washington, Wisconsin and Wyoming. Puerto Rico is also a member.

General Motors launched a national advertising campaign in February of 2006 beginning with the very visible 2006 Super Bowl XL hosted in our city of Detroit, Michigan. The unmatched visibility and viewership presented by the Super Bowl offered a great opportunity for us to launch a major marketing and advertising campaign that focuses on key energy diversification issues, and helps us illustrate a core element to GM's overall vehicle strategy. After the Super Bowl, the campaign continued through the 2006 Winter Olympics. Web traffic to our Livegreengoyellow.com website was in the millions as consumers investigated E-85, GM flex fuel vehicles, and station locations.

The campaign is a key element in building the GM brand equity, as part of the overall North American turnaround. With 1.9 million E-85 capable GM vehicles already on the road, and our plan to produce many more FlexFuel vehicles, we want to educate consumers to know that they have choice of fuel options and to also understand the benefits of ethanol.

A part of our E-85 outreach, we will be equipping E-85 capable Chevrolet and GMC cars and trucks with yellow fuel caps and exterior flex fuel badging. This will help consumers to determine whether their vehicle is FlexFuel. The yellow cap will also be a regular reminder that these consumers have a fuel choice each time they fill up their tank. We are also developing a current owner notification program that will be implemented in 2006.

In addition, GM is working on several efforts to educate the public. In 2006, we have stepped up these efforts with several regional and local marketing efforts in conjunction with our national advertising campaign. We also intensified efforts to help the public understand the benefits of E-85, including enhanced labeling, dealer and consumer education, collaboration with State and Federal ethanol initiatives, and continued support of industry events.

General Motors is continuing efforts to promote the availability and use of E-85 refueling infrastructure in several States. Most recently, we announced that General Motors is partnering with Meijer, CleanFuelUSA, the State of Michigan and the State of Indiana to work towards approximately forty new retail outlets. We have previously announced similar partnerships in California with Chevron, Pacific Ethanol and the State of California; in Illinois with VeraSun, Gas City and an upcoming pilot with Shell; in Minnesota with VeraSun and Erickson Oil; and in the State of Texas with Kroger and Abengoa Bioenergy in 2006. In 2005, GM co-marketed fuel coupons and owner awareness in Sioux Falls, South Dakota.

The collaborative effort is important to help grow the E-85 refueling infrastructure and to increase the availability of the fuel to more E-85 flex fuel drivers

GM will support the collaboration by promoting awareness among flex fuel owners, company drivers and prospective buyers

As an example, in the North Central region GM is offering a \$1,000 fuel coupon with each new flex fuel purchase-supporting our flex fuel marketing effort and our E-85 retail partners

We believe that by continuing to work in collaborative partnerships that we can be a catalyst to the development of true fuel diversity in the United States.

In summary, GM supports the various proposals advanced by the President to secure and diversify our energy supply. GM is working with industry partners and Federal and State governments to develop new technologies and to shift to more alternative fuel choices. GM believes these actions will help to significantly reduce our dependence on oil. GM is also providing a diverse portfolio of hybrid choices to consumers, and supports research for battery advances. GM is also aggressively working to have cost-competitive fuel cell propulsion systems ready by the end of the decade to help usher in the hydrogen economy. In addition to the items listed by the President, GM also supports consumer incentives for the early adoption of advanced clean technology vehicles.

Thank you for your time.

[The prepared statement of Ms. Stanek appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you, Dr. Stanek.

Our next panelist is Mr. Reg Modlin, Director of Regulatory Affairs for DaimlerChrysler here in Auburn Hills.

STATEMENT OF REG MODLIN, DIRECTOR, REGULATORY AFFAIRS, DAIMLERCHRYSLER, AUBURN HILLS, MI

Mr. MODLIN. Thank you, Mr. Chairman, and Committee.

I'm from DaimlerChrysler, about 2 miles up the road. Actually, across the street from my colleagues at Volkswagen.

I would like to thank the subcommittee and Oakland University for being able to present DaimlerChrysler's views.

We have been a strong supporter of E-85 flex-fuel vehicle programs since our introduction of our minivans under the Caravan and Town & Country brand back in 1996.

According to our estimations, full deployment of FFVs operating on E-85, 10 percent ethanol on all other conventional gasoline vehicles, and full penetration of B-20 in the marketplace use for both light-duty and heavy-duty applications could reduce U.S. demand for petroleum-based transportation fuel by 3.6 million barrels per day.

* * * * *

Again, I would like to extend our thanks.

[The prepared statement of Mr. Modlin appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you.

Our final witness is Susan M. Cischke, vice president of Environmental and Safety Engineering at Ford Motor Company. We welcome you.

STATEMENT OF SUSAN M. CISCHKE, VICE PRESIDENT, ENVIRONMENTAL AND SAFETY ENGINEERING, FORD MOTOR COMPANY

Ms. CISCHKE. Thank you. It's a pleasure to be here. I graduated from Oakland University back in 1976. I really wanted to be a part of this event here today.

Energy security is a significant issue facing our Nation today, and the rapidly growing interest in renewable fuels and flexible-fuel vehicles as a way to address this energy concern is of great importance to the auto industry, and especially here in Michigan. So I do appreciate the opportunity to share with you Ford Motor Company's views on alternative fuels, particularly ethanol and our flexible-fuel vehicle.

At Ford we recognize we have a responsibility to do something to help address American's energy security needs, and we are accelerating our efforts to develop innovative solutions.

For example, Ford produced the first American hybrid on the road today, the Ford Escape hybrid, and now we have committed to building up to a quarter million hybrids a year by the year 2010.

In addition to hybrids, we believe the greater use of renewable fuels like ethanol, domestically-produced renewable fuels, will help reduce reliance on foreign oil.

We applaud Congress's efforts that resulted in the Energy Policy Act of 2005, as well as the President's recent commitment to address our Nation's addiction to oil.

Ford has been building flexible-fuel vehicles for over a decade and we are an industry leader in technology.

These FFVs are capable of operating on 85 percent ethanol, or gasoline or a mixture in between and all of our gasoline-power vehicles are capable of operating on 10 percent ethanol, or E10.

In 2006, this year, Ford will produce an additional 250,000 FFVs by the end of year and will have placed a total of 2 million FFVs on America's roads, including America's best-selling vehicle, the Ford F150, a vehicle that most farmers are familiar with.

But we are not stopping there. Earlier this year we unveiled the Ford Escape Hybrid E-85 research vehicle which marries two petroleum-saving technologies, hybrid electric power and E-85 flexible-fuel capability.

Though, there are many significant technical and cost challenges to address this, we believe that if just five percent of the U.S. fleet were powered by E-85 hybrid vehicles, like our research vehicle that we are developing, oil imports could be reduced by nearly 6 billion gallons of gasoline a year.

As a whole, U.S. automakers will have produced enough FFVs so that nearly 4 percent of the U.S. fleet can run on ethanol. If all of these vehicles used E-85, the Nation would save 3.6 billion gallons of gasoline per year. That's like saving a full year of gasoline consumption in a State like Missouri or Tennessee.

While I'm talking about FFVs, let me clear the air about what it takes to make an FFV. We've heard from many people that all it takes to make a FFV is "a little tweak to the chip that runs the engine". I really wish it was that simple—but it's not. Out front today, you will see a 2006 F-150 FFV. What you can't see are the special features that allow it to operate on E-85. Because ethanol is a unique fuel with unique properties, fuel tanks with low permeation characteristics are required. It also requires a special fuel pump and fuel lines to deliver the fuel to the engine. Unique injectors introduce the fuel into the engine where special calibrations programmed into the on-board computer determine how much ethanol is in the fuel and how best to set spark timing and fuel

flow to ensure the engine operates properly and meets emission standards on all ethanol and gasoline mixtures. And because there is more than one fuel calibration within an FFV, costly development and certification testing is doubled. Many of the FFV parts and processes are patented by Ford and are the result of innovative ideas by our best engineers, and we're proud of them. The bottom line—making an FFV is a significant investment for auto manufacturers.

We all know however, that producing alternative vehicles is only half the equation. We need to make sure Americans have a place to fill up their tanks with alternative fuels like E-85. That's why Ford is working closely with VeraSun Energy, the second largest ethanol producer in the U.S., and other key stakeholders to promote the expansion of E-85 infrastructure in key markets. We recently announced that Ford and VeraSun will be working together to create the Nation's first "Ethanol Corridor" across Missouri and Illinois. Station sites are now being selected in locations that will allow an FFV driver to travel from Kansas City, Missouri to Chicago, Illinois using only E-85. We are very excited about this project and our efforts to make E-85 more readily available to FFV owners who choose to fill their vehicles with a fuel that enables the U.S. to reduce its dependence on imported oil. Ford and VeraSun are simply planting the seeds of a much broader ethanol supply system that will grow as more and more stakeholders step up to the plate and help to nurture a pathway to energy independence. But much more needs to be done to dramatically increase E-85 availability.

We believe that in order to meet the challenges of rapidly increasing our use of renewable fuels, we must engage in an integrated approach—a partnership of stakeholders. It should include the automotive and fuel industries, government, consumers, and other sectors. That's the best way to address the issue with a full range of solutions including advanced vehicle technologies, alternative fuels, infrastructure development, and government incentives. Domestic auto manufacturers are committed to doing their share, but effective and efficient solutions require a wider commitment from other players.

We have called upon the oil industry to join us in our effort to diversify America's energy sources. We obviously need key partners like the oil industry to invest in developing and marketing renewable fuels like E-85—and we need it to do so now and rapidly. We fully support government incentives to encourage the industry and others to accelerate this investment.

On the government side, Federal, State, and local incentives to accelerate the introduction of advanced technology vehicles and the alternative fuel infrastructure to fuel them will ensure the success of the Nation's energy diversity initiatives. With government actions, infrastructure expansion will support price competition and drive the success of renewable fuels.

To put this all in perspective, there are about 170,000 retail gasoline stations in the U.S., but only about 600 have ethanol pumps. It will take significant growth in the number of stations to effectively fuel existing FFVs, and even more as the number of FFVs

rises in the future. Growing the infrastructure will be a challenge for stakeholders, but must be done.

For the future, we need national research efforts to pursue the production of ethanol from more energy-efficient cellulosic materials like rice straw, corn stover, switch grass, wood chips or forest residue. Ethanol derived from these sources will make ethanol even more available by broadening the feedstock sources, and will also further reduce greenhouse gas emissions.

Over the next year, we will have an enormous opportunity to strengthen our use of renewable fuels through the reauthorization of the Federal farm bill. As the farm bill process begins, we must focus efforts on supporting the nation's energy independence through funding of programs that will support wider use of renewable fuels like ethanol. We encourage Congress to provide an emphasis on energy security as it considers the Bill in 2007.

Consistent implementation of an integrated approach across all sectors will allow us to achieve much more in a shorter timeframe and at a significantly lower cost than if each stakeholder were to pursue solutions independently. Energy independence is too important to the Nation to proceed any other way.

The challenges are considerable but not insurmountable, and there is an enormous amount we can achieve if we act together. We have to ensure that our business is sustainable by making vehicles that continue to meet the changing needs of the 21st century. That's a responsibility we owe to our customers, shareholders and our employees. But at another level, all of us have the opportunity to do something about energy independence—and that's a responsibility we owe future generations.

Thank you for this opportunity to address the Committee.

[The prepared statement of Ms. Cischke appears at the conclusion of the hearing.]

Mr. GUTKNECHT. Thank you. I just want to requote the challenges are enormous but not insurmountable.

I remind my colleagues and my constituents whenever I can, that this is a country that has done some pretty amazing things. We cured polio without help of the Federal Government.

We won World War II in 3½ years. This is a country that can do some pretty amazing things if we decide to become energy independent and if we really make that decision, I'm convinced we can do it much more quickly than people can imagine.

It's a great quote. I wrote it down. I will try to quote you.

I want to go first to Dr. Stanek. Thanks to all of you for your presentations. We will go out here when we are finished and look at some of the vehicles. I want to congratulate all of you and your companies for what you are doing in this arena.

I'm not sure all American consumers really understand how much is being done here in the city to advance the whole idea of renewable fuel.

I want to go back to Dr. Stanek because you talked about your testimony, that the effort your company has made to advance the whole notion, the advertising campaign, talk to me about the consumer—what does the consumer want? What kind of response are you getting from the marketplace right now?

Ms. STANEK. Consumer awareness is growing. It took a little while. We did our * * * not understanding flex fuel or E-85 unless you were in Minnesota or key areas where it has been * *

I don't have hard figures right now to say based on a campaign resulted * * *. But I can tell you the amount of calls that are coming in, the amount of inquiring, consumers are much more educated on what the * * *. I would say there is a great awareness that is emerging. It's not all there yet.

Mr. GUTKNECHT. Let me just add, I don't know when the survey was done, I think it was last year and someone mentioned how many E-85 pumps there were in the country. I think at one time, I think it was a year ago, about a third of those pumps were in my congressional district. And even there, it's hard to get the word out.

I will defer any more questions, I want to get to the vehicles. I will yield to my colleague from South Dakota.

Ms. HERSETH. Thank you, Mr. Chairman. Thank you all for your testimony, for the work that each of your companies are doing and for the statements that you made in support of what this means for rural American, as well as for those of us that grew up on the farm and still have family out there trying to make a living, as well as the small communities that we represent.

This is probably the best opportunity we have since really what the New Deal did to keep people out in the Great Plains and in the Midwest making a living from farming.

You all mention the fact * * * have any of your companies done research to determine how they run on higher blend, 20percent, 30 percent, 40 percent? We have the first pump in South Dakota in terms of throughout the country where you can program in your own blend. And I have done my own research. I'm not going to tell you what kind of car I drive, but it's one from one of your companies. And I put in about—I mix E-85 and E10 to get about an E30. And I run my car fine on that. It gets about the same kind of gas mileage I would get even * * *.

Have your companies done research to determine how high they can go, whether or not that should be part of our infrastructure discussion to have pumps where you can blend?

Ms. CISCHKE. I would like to address that. I think you need to be careful. We don't recommend going over E10. Ethanol is very corrosive. That's why you need to change the fuel line, the fuel pump. You have to be a little bit careful long term what that is going to do to your vehicle.

From a drivability standpoint, you probably will not notice anything different. In the long term it will eat away the seals and different things.

The oxygen sensor in our vehicle is capable of being able to figure out the ratio. We do the calibrations and use the feedback from that vehicle to adjust and make sure.

The material issue is my major concern. That's why you need to have dedicated vehicles that can take up to the 85 percent ethanol and then can operate on any mixture in between. That's going to be the limiting factor, is the materials issue.

Mr. MODLIN. That's exactly the issue.

Mr. KRAUSE. That's the issue that we are—also the issue in Brazil. We have to make a special technical adjustment to the vehicles to sell these vehicles coming out of Europe, for example, to let them run on the E22.

Ms. HERSETH. Are you familiar with any studies outside of the auto manufacturing industry that have been done that have researched the impact on the materials or performance and efficiency with higher blends, or any ongoing research that might be conducted?

Ms. CISCHKE. It was mentioned that the Coordinating Research Council, oil and auto industry have done some research. I think we can get you more data. It is a material issue as far as the attack of the ethanol on the fuel tank and there is concern about permeability and in terms of evaporative issue, but mostly it's the fuel seals, the fuel pump and fuel injectors.

Ms. HERSETH. What about converting existing vehicles to use E-85? We have heard different estimates from \$100 up to \$500, to take it in and have the vehicle that I currently run, which isn't a flex-fuel vehicle. Take it in, because we have millions of car on the road that aren't flex-fuel vehicles.

So what are the costs generally to convert those vehicles, as we also look to manufacture * * * can each of you comment on that and whether or not the service providers, that your dealerships, are capable of providing that service in terms of converting a nonflex-fuel vehicle?

Mr. GUTKNECHT. Bear in mind they are in the business of selling new cars.

Ms. HERSETH. I understand, but this is part of consumer awareness too. What we understood and have seen in the reports, we have seen all of the different figures, how much it costs and how do consumers know where to go to do this and how does it effect the warranty, just broadly.

Mr. KRAUSE. Let's talk about retrofitting, for example, diesel vehicle with particular traps, and stuff, you know. It's the same thing if we have a conventional gasoline vehicles retrofitted to FFV, for example. It's a huge cost coming up. And the most important thing to make the development for these older vehicles and old engines, and so on and so on.

I think there is really no benefit for the customer if we talk about retrofitting older vehicles to be a flex-fuel vehicle.

Ms. STANEK. Two things came to mind. First of all, when we built vehicles, we study a lot of optimum systems. So your vehicle was built a certain way for a certain reason. You don't want to jeopardize that. You don't want to start tampering with that.

The other thing, you don't want to get into a situation where you may be jeopardizing your warranty. When you start taking it apart and replacing part of that and part of that, you tamper with the performance of your vehicle. It's not the answer that you want and I don't have the cost for the retrofit. On the whole, * * * new vehicles have been built for the express purpose of flex fuels * * *

Ms. CISCHKE. I think there is another issue, and that's the emissions certification. It's not legal, really, to modify your vehicle that hasn't been certified to run on E-85. You would have to check into

it. That's why we have to do the development both for E-85 and gasoline and produce a certificate that says it passes all of the emissions requirements.

For somebody to take their vehicle today that is a gasoline vehicle and modify it to be higher than the E10 and true flexible-fuel vehicle, it would not be a certified vehicle. So from a legal standpoint, I'm not sure the dealerships can do that.

Ms. HERSETH. So everything that we have been hearing out in the countryside, so to speak, there is a way to convert your engine with anywhere from \$100, \$200, \$300, \$500, is that not accurate.

Ms. CISCHE. You can certainly change over the parts, the fuel tank, fuel line, fuel pumps, fuel injectors, but today, and maybe, Reg, you know more about the legal requirements, but that vehicle would not be certified then to be driven in the U.S. because it has not been tested to pass the emissions requirements.

Now, if they demonstrate that, then that would be a different situation too. But I don't think from a wholesale standpoint it would encourage dealers to be changing over.

I think what I would recommend for people today who have production vehicles to run on E10 and buy flexible-fuel vehicles or use the 4 million that are out there today that could operate on flex fuel because they have been certified to run that way.

Ms. HERSETH. One final question I will ask of Mr. Modlin. You have been manufacturing at DaimlerChrysler, 1996, you said, the minivan and other models that are flex-fuel vehicles. Do you have any estimates on how many individuals who currently own those vehicles today are aware that they own flex-fuel vehicles and if there have been any discussions in terms of the consumer-awareness issues of how we make those individuals aware, that can help us look towards penetration—market penetration of the flex-fuel vehicles with what exists in the mid-'90's to today, and all of the new vehicles coming on-line, as it relates to what we do to build that infrastructure.

Because we have talked about proposals here legislatively where we work with the Secretary of Energy to determine the penetration of FFV so that we can help and direct incentives to the fuel retailers and gas stations to carry those pumps.

Could you address that, anybody that would like to?

Mr. MODLIN. Quickly, it's a very good observation, very good question.

Back when we started in 1996, maybe all of us had this experience, I will speak for DaimlerChrysler, when you start producing those vehicles, we found out pretty darn quick, when customers went to the showroom, thought it was a pretty big deal * * * vehicle that runs on flexible fuel and runs on E-85. They didn't know what any of that meant.

What happened, customers' natural adversity to technology * * * the customers are always willing to let their neighbor buy the new technology and after it's been tried out for a while, then they will buy it themselves.

What we found, we really couldn't get too vocal about it being an FFV. So we made it part of the package, like a 3.3 liter minivan, FFV, it just is.

Recently with the work GM has been doing, quite notably, and also with Ford, and work that Congress has been doing to hype the need for renewables and * * * different with every customer. The public has been out there. Now we do see a need to educate the customers to whether their vehicle is an FFV. There is a lot of discussion within the company and within the industry how to promote the existing fleet. It's also something you can * * *.

Ms. CISCHKE. I would just like to congratulate GM for the awareness they are putting out. For a while we had a very large fleet of Tauruses and Sables that were badged flexible-fuel vehicles * * *.

Our customers asked us to take it off because it hurt the residual values of the vehicle. People didn't know what it meant and they felt the technology was different. It was affecting residual value. Now they look like smart customers. We are going to encourage that, and make people more aware.

What the President has done, what other companies have done to encourage the awareness and the consumer education will go a long way into making us do a better job of badging and marketing the vehicle so people can be proud of the fact it's flexible fuel.

Mr. GUTKNECHT. The gentleman from Iowa.

Mr. KING. Thank you. In the interest of time, I'm going to try to pick this pace up and try to keep it brief.

I went down to Brazil, the hospitality down there at the GM production plant, 98 percent of the vehicles coming across there were flex-fuel in that particular plant. And asked them about the cost of—the additional cost for flex fuel. It depended, of course, on how you amortize your recovery on R and D but generally in the category of \$50, \$100 a vehicle.

I want to ask just broadly across here if it's consistent with your experience from each of the manufacturers and then have you considered just incorporating that into the broader overall pricing mechanism in all of your vehicles and shipping as many as possible where the maximum amount of ethanol is produced in the United States so we can sell them off the lots as fast as we can and we don't have to worry about the chicken or the egg? We will put up tanks from our ethanol plants at local filling stations and we can grow this thing in the same fashion that the ethanol production is being grown. Anyone that wants to start?

Ms. CISCHKE. I would be happy to start. That's why we selected the F150. We know the farmers use it in the Midwest. We are not charging any additional cost for the flexible-fuel vehicle. We're trying to do one engine family at a time because of development cost but component cost is * * * couple of hundred dollars higher than what's quoting in Brazil, a lot less than a hybrid.

Mr. MODLIN. I think the costs depends where you start from, one, and what market you are aiming at, No. 2. For us the environmental compliance is what puts a pretty big spring in the cost but in neighborhood of 50 to \$250 captured * * *.

Ms. STANEK. I would say particular attention to the testimony * * * no two systems are the same. It's very dependent on the engine, fuel tank and all things in between. This is no price point. And it is a range.

Also, as Susan echoed, calibration issue is very significant * * * important you shift from parts plus calibration, engineering and also the type of system you are working with.

And, again, these are some of the things. They are not insurmountable. They take time and a significant amount of investment. It's better to release the flex-fuel vehicle * * * as opposed to doing it all at once. We do have a technical challenge.

There is also a direct-injection engine as well. There is a lot of R and D still going on. So we have to kind of expand the discussion to think in terms of not only parts, but calibration and ongoing R and D.

Mr. GUTKNECHT. Thank you.

Mr. KRAUSE. As you know, Volkswagen is one of the larger manufacturers of flex-fuel vehicle in Brazil, for example. We do not support—or we do not bring these vehicle into the United States because it's different engines and different vehicles and so on, so on.

This is a very important point to notice. We in the United States maybe have also to think about what is the right engine for the market. That is our decision we have made in our group, that we focus more on diesel vehicles, to sell these in regard to safe energy, and so on, because of better fuel consumption, better fuel economy, and so on.

Again, as I said it before, it's better to have E10 in the whole country for all vehicles at the same time, because all vehicles can run on the E10 issue than to focus just on these E-85 purpose.

Mr. KING. Mr. Krause, I will be taking a good look at diesel vehicles because of your testimony today. I appreciate that a great deal.

I reiterate my point, we grow flex-fuel marketing where the ethanol is produced, because it's easy for us to go to the local ethanol producers and ask them to set up a relationship with filling stations in the area, to set up a tank and set up the pumps and work in, I will say, a cooperative relationship. And we are doing that in some of the areas we are producing ethanol. And we can do a lot more of that if the vehicles are available, and I encourage you to take a look at that. Thank you very much. I appreciate your testimony.

Mr. GUTKNECHT. The gentelady from Ohio.

Mrs. SCHMIDT. I have a quick comment for time. It pays to advertise, my husband and I just bought a Chevy Tahoe, E-85.

Mr. GUTKNECHT. We hated to rush through this. We want to see these vehicles. I do want to thank Rochelle Black, Sharon Redding, and everyone else here at Oakland University for hosting us today. This has been wonderful.

But I wanted to close with a couple of remarks, and some of the farmers earlier—someone I will always quote him, Gerald Tumbleson, a constituent of mine, now president of the National Corn Growers. He says this, and I steal this and it's something you may all want to think about. If you think of the world, there are only two things the world needs more of. One is protein and the other is energy. The beauty of this story is that the farmers here in the United States, Michigan, Ohio, South Dakota, wherever, we are in a very strong position to help provide both of those two things.

One of the challenges for us on the Agriculture Committee is to not think about the energy issue as just what are we going to do to help farmers. It really now is what are we going to do to help the country and the world.

The truth of the matter is we have a huge opportunity out in front of us. I want to thank you for being here, and I want to thank all of your companies because you are a very important part of the ultimate solution.

I agree with Mr. Krause. I'm a strong believer in E-85 and flex-fuel vehicles. But my bill is to require a 10 percent blend nationwide by 2010.

A 10 percent blend may well easily go to a 20 percent, or more, but I think we can demonstrate, as we have in Minnesota, that a 10 percent blend makes perfect sense. If you do that, you dramatically reduce—you don't quite eliminate the oil we take in from OPEC, but very quickly we could be in a position where rather than being under their thumbs, we would have some negotiating power with them.

Finally, let me say some people have said, I'm also on the Science Committee so I do believe that we eventually will move to a hydrogen economy. It's going to be a long ways away. From what I've seen we're a long ways from being a hydrogen economy but I do believe we are quickly moving to hydrocarbon economy. Again, that's where agriculture and farmers really play a very important role.

So, again, thank you to you and all of your companies. We look forward to working with you as we begin to develop the next farm bill, one that will make sense not only for the farmers, but for consumers, those in the transportation industry. We all have a role to play in making certain that America becomes energy independent within the foreseeable future. I think we need a specific deadline. And that's my view, and I continue to work with my colleagues and folks in the administration on that.

With that, if there are no further comments, I will adjourn this hearing.

[Whereupon, at 12:00 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

STATEMENT OF TONY SIMPSON

Good morning, Mr. Chairman and members of the committee. My name is Tony Simpson, and I am the General Manager of Michigan Ethanol, LLC, a 50 million gallon ethanol refinery in Caro. I also serve on the Board of Directors for the Renewable Fuels Association, the national trade association representing the U.S. ethanol industry. I am pleased to be here this morning to discuss the fastest growing energy resource in the world—the U.S. ethanol industry.

Michigan Ethanol is currently the only ethanol refinery operating in the State. However, since Congress passed the Energy Policy Act of 2005, Michigan has begun construction on three additional ethanol refineries. In my view, Michigan's ethanol industry is a remarkable reflection of the ongoing domestic biofuels energy infrastructure, and I look forward to discussing with this Committee the growth of the ethanol industry and the growing flexible fuel vehicle marketplace.

Mr. Chairman it is good to see you again, prior to becoming the General Manager at Michigan Ethanol, I managed an ethanol plant in your district in Minnesota and I appreciate you taking the time to organize this hearing in the manufacturing backyard of the flexible fuel vehicle industry.

TODAY'S ETHANOL INDUSTRY

Today's ethanol industry consists of 97 biorefineries located in 19 different States with the capacity to process more than 1.7 billion bushels of grain into nearly 4.5 billion gallons of high octane, clean burning motor fuel and 9 million metric tons of livestock and poultry feed. It is a dynamic and growing industry that is revitalizing rural America, reducing emissions in our Nation's cities, and lowering our dependence on imported petroleum.

Ethanol has become a ubiquitous component of the U.S. motor fuel market. Today, ethanol is blended in more than 40 percent of the Nation's fuel, and is sold virtually from coast to coast and border to border.

In 2005, the U.S. ethanol industry consumed more than 1.4 billion bushels of corn in the production of 4 billion gallons of ethanol. That represents approximately 12 percent of last year's 11 billion bushel crop. The industry also used 55 million bushels of sorghum, or about 14 percent of that crop. Finally, ethanol is produced from a variety of agricultural waste products, including cheese whey, beer and beverage waste.

The 4 billion gallons of ethanol produced and sold in the U.S. last year contributed significantly to the Nation's economic, environmental and energy security. According to an analysis completed for the RFA, the 4 billion gallons of ethanol produced in 2005 resulted in the following impacts:

- Added \$32 Billion to gross output;
- Created 153,725 jobs in all sectors of the economy;
- Increased economic activity and new jobs from ethanol increased household income by \$5.7 billion, money that flows directly into consumers' pockets;
- Contributed \$1.9 billion of tax revenue for the Federal Government and \$1.6 billion for State and Local governments; and,
- Reduced oil imports by 170 million barrels of oil, valued at \$8.7 billion.

As the industry has grown, it has also changed. Today, the single largest ethanol producer, taken as a whole, is the farmer-owned ethanol plant.

But we are not done yet. There are currently 35 plants under construction. Twenty-one of those have broken ground just since last August when President Bush signed last year's Energy Policy Act into law. With existing biorefineries that are expanding, the industry expects more than 2.2 billion gallons of new production capacity to be in operation within the next 12 to 18 months.

NEW MARKETS, E-85 AND FLEXIBLE FUEL VEHICLES

Ethanol today is largely a blend component with gasoline, adding octane, displacing toxics and helping refiners to meet Clean Air Act specifications. But the time when ethanol will saturate the blend market is on the horizon, and the industry is looking forward to new market opportunities for E-85. Today there are approximately 5 million flexible fuel vehicles (FFVs) on the road capable of using E-85, a mix of 85 percent ethanol and 15 percent gasoline. There are about 600 E-85 refueling stations across the country. Frankly, we can and must do better.

Five million FFVs represent less than 2 percent of the total U.S. motor vehicle fleet. This year, the U.S. will purchase about 17 million vehicles. Approximately 500,000, or roughly 3 percent of those, will be FFVs. In contrast, more than 60 percent of the vehicles produced and sold in Brazil this year will be FFVs.

Clearly, U.S. auto manufacturers have made a significant commitment to FFV technology, and their commitment is increasing. Ford, General Motors and DaimlerChrysler have made significant strides in producing and promoting FFVs, and we should applaud them, but we can do better.

If consumers are to have options during times of gasoline price volatility, FFV technology must be more widely available. There are many approaches to encourage auto manufacturers to maximize FFV production. The RFA is not wedded to any one approach, and we remain open to a dialogue with stakeholders that will assure the objective of increased FFV availability is met. Congressional forums like this hearing today provide a good first step toward the consensus necessary to assure greater FFV availability.

As FFV vehicles are commercialized, it is important to encourage the most efficient technologies. Some FFVs today experience a reduction in mileage when ethanol is used because of the difference in BTU content compared to gasoline. But that debit can be addressed. General Motors has introduced a turbo-charged SAAB that experiences NO reduction in fuel efficiency when ethanol is used. That's the kind of innovation the government should be rewarding in any program designed to encourage E-85 use.

Of course, FFVs will be wasted without a commensurate increase in E-85 fuel availability. Reforms of the ethanol tax incentive passed by Congress last year have made it much easier for ethanol producers to work with gasoline marketers directly to promote E-85. Indeed, several ethanol producers have moved aggressively to market E-85. As a result, it is estimated that more than 10 million gallons of E-85 were sold last year, and while still a small fraction of the ethanol that is produced domestically, sales continue to grow.

Still, convincing gasoline marketers to sell E-85 under their canopies remains a challenge. Last week, bipartisan legislation was introduced in both the House and the Senate creating new incentives for E-85 refueling infrastructure. The RFA supports these efforts and others to encourage wider availability of E-85 fuel as FFV vehicle technology expands.

In the final analysis, many things have to happen for E-85 to become a more consequential component of the U.S. motor fuel marketplace. There must be more vehicles. There must be more refueling pumps. And there must be more ethanol to supply this market, which likely means cellulosic ethanol capacity. But the need to develop meaningful alternatives to gasoline has never been more apparent. But we must invest now, or that future will never materialize.

In his State of the Union Address, President Bush acknowledged the Nation "is addicted to oil" and pledged to greatly reduce our oil imports by increasing the production and use of domestic renewable fuels such as ethanol and biodiesel. The Energy Policy Act of 2005 clearly put this Nation on a new path toward greater energy diversity and national security through the RFS. Additional and more focused research, targeted incentives for E-85 vehicles and refueling infrastructure, and the continued commitment of this Committee will make the President's vision of a more energy secure America a reality.

STATEMENT OF NORBERT KRAUSE

Good Morning. My name is Norbert Krause and I am Director of the Engineering and Environmental Office of Volkswagen of America, Inc. The Volkswagen Group is the world's fourth largest automobile manufacturer and the world's fifteenth largest company. On behalf of my 1,200 colleagues who work for Volkswagen at our Auburn Hills headquarters, I would like to welcome you to Michigan and thank you for Congress' interest in biofuels.

Volkswagen is convinced that biofuels will play a critical role in meeting transportation needs in the U.S. and throughout the world. We have established a global Powertrain and Fuels Strategy that emphasizes the need to develop advanced propulsion technologies in a way that is integrated with the development of future fuels. Biofuels such as biodiesel and ethanol form the foundation for a portfolio of renewable fuels that will be needed to achieve sustainable mobility, and to reduce dependence on petroleum.

At Volkswagen, we believe it is critically important to make the most efficient use of existing resources like petroleum based fuels, since these will continue to play a large role. Our chairman, Dr. Bernd Pischetsrieder, has stated that every new Volkswagen model will use less fuel than its predecessor.

Volkswagen has invested in developing a wide range of fuel saving technologies, from systems that increase the fuel efficiency of gasoline fueled cars, to clean diesels that offer both superb performance and high efficiency, to hybrids and, for the long term, hydrogen fuel cells. Our major focus today is on the development of clean, efficient diesel passenger cars for the U.S. market.

DIESEL

Volkswagen is the leading seller of diesel powered passenger cars in the United States. Worldwide, over 40 percent of our production is powered by a diesel engine. In the US, the penetration of diesels is relatively small, but growing. We believe the growth of diesel sales in the U.S. will continue as more and more consumers, policy makers and the public recognize that today's diesel cars are Powerful, Economical, and Environmentally Friendly. In addition, diesels are Future Oriented—they offer an efficient and flexible platform for the use of renewable fuels that are the subject of today's hearing.

Diesel vehicles are inherently more powerful than their gasoline counterparts. Diesel fuel itself contains more energy per gallon than gasoline. Diesel engines always have been known to deliver high torque at low engine speeds. In addition, the diesel engine's high compression, aided today by turbo charging and direct injection, yields high thermal efficiency—less of the fuel's energy is wasted. This gives the die-

sel driver immediate acceleration and powerful performance coupled with great fuel efficiency. In March of this year, a diesel powered Audi R10 race car won the 12 Hours of Sebring—the first Sebring victory ever for a diesel powered race car. The car was fueled with a synthetic diesel fuel made from natural gas. The same process can be used to make diesel fuel from biomass. We hope for a repeat victory at the 24 hours of LeMans next month.

Diesels also have long been noted for their economy. Diesels offer more than a 30 percent increase in fuel economy over similar models with a gasoline engine. Today, this is achieved without sacrificing performance and also with a substantial performance improvement. According to the EPA, 4 of the 10 most fuel-efficient vehicles available in America for the 2006 model year are diesel powered Volkswagens.

Today's advanced diesel engine is also environmentally friendly. Concern about emissions of greenhouse gases has increased throughout the world. Diesels emit around 30 percent less CO₂, the principle greenhouse gas emission from automobiles. Diesel emissions overall have been reduced by 80 percent over the last 10 years. Soon, we will introduce diesel vehicles that meet the same emissions limits that are applicable to gasoline cars.

Because of its excellent fuel economy, diesel provides an excellent way to conserve existing petroleum resources. The diesel engine is also future oriented since it provides an excellent platform for the use of renewable fuels like biodiesel that will power tomorrow's cars. Already, biodiesel is gaining acceptance and popularity in the U.S. market. In the future, synthetic diesel fuels made from natural gas and biomass will join biodiesel as the next generation of biofuels. This diverse portfolio will continue to displace petroleum use and support clean efficient diesel technology for decades to come.

BIODIESEL

Biodiesel is a renewable fuel currently made from soybeans, canola, and other crops. Biodiesel has been popular in Europe for many years, and is used often as an invisible, low level blending agent that extends the supply of petroleum, contributes to reduced greenhouse gas emissions, and provides an important market for our farmers. The biodiesel industry is developing rapidly in the US, and Volkswagen is working closely with the industry.

In 2004, Volkswagen and ADM entered a cooperative research agreement to study the use of biodiesel on our light duty diesel vehicles. After over a year of research and testing, Volkswagen decided in March of 2005 to recommend that our U.S. customers can fuel their cars with B5, a five-percent blend of biodiesel in petroleum diesel, without affecting warranty coverage. We were the first manufacturer to offer this coverage.

It is important to recognize that the properties of all fuels are of great concern to vehicle manufacturers, since we must certify and guarantee the performance of our products. Our ability to extend our warranty coverage is directly related to the existence of suitable standards for fuel, so that we can be sure of consistently adequate fuel properties for all of our customers at all times. The Biodiesel Industry, and particularly the National Biodiesel Board has worked in close cooperation with us to develop new elements for fuels standards that are needed today and in the future.

We are now conducting fleet tests using B-20 to determine how this more concentrated blend will affect current and future engines and emissions control systems. We will be informing the biodiesel industry of the results and will continue to cooperate with them in the standards setting process.

As this research continues, we are educating our customers about the use of B5 and participating in promotional activities to encourage the development of high quality biodiesel fuels that will provide excellent performance and reliability, cut net greenhouse gas emissions, and reduce petroleum dependence.

OTHER RENEWABLE FUELS

Volkswagen is participating actively in projects to help to develop other renewable fuels such as synthetic diesel fuels made from biomass (BTL), and ethanol made from cellulosic feed stocks. We design our gasoline-fueled cars to run on low-level ethanol blends such as E10, and we are evaluating the market for flexible fuel cars, which we do produce and sell in Brazil. We have significant partnerships with Choren Industries and DaimlerChrysler on the BTL diesel fuel, and with Shell and Iogen on a new process for making ethanol from any cellulosic feedstock.

Volkswagen believes that none of these alternatives alone can or will replace the others. It is therefore necessary for companies like ours to cooperate with agricul-

tural producers, energy companies, governmental authorities and other stakeholders to develop an integrated array of technologies and fuels that will support sustainable mobility.

SUPPORTING BIODIESEL AND OTHER BIOFUELS DEVELOPMENT

We believe that the growth of the light duty diesel market and the increased use of biodiesel in the U.S. are intertwined. In the month of April, as gas prices rose, demand for the diesel versions of some of our models grew to over 40 percent in some markets, compared with a traditional rate of around 10 percent. Surveys show that many diesel buyers select their cars not only for performance and fuel efficiency, but also for their ability to use biodiesel blends.

There are several public policies enacted by Congress that have encouraged us to invest time and resources in the biofuels sector. These include:

- The Federal tax credit for biodiesel producers. This has helped the construction of new biodiesel plants throughout the United States.
- The requirement of Ultra Low Sulfur Diesel fuel that becomes effective this October. Cleaner fuel is absolutely critical to the industry's ability to offer technology that meets our energy and air quality needs.
- Consumer tax credits for advanced technology vehicles: The 2005 energy bill expanded the consumer hybrid tax incentive to include light duty diesels which meet the strict Tier II, Bin V emission standards. This tax credit will help to expand advanced diesel sales and provide a larger market for biodiesel fuels.

Together, vehicles manufacturers and the agriculture community can help meet America's growing transportation needs while still providing safe, reliable, affordable, and exciting vehicles. On behalf of Volkswagen I thank the committee for this opportunity to testify.

STATEMENT OF BRUCE NOEL

Good morning, and thank you Chairman Gutknecht and members of the Committee, for giving me the opportunity to testify before you today about a key issue facing our Nation today—energy, national and economic security. With gasoline prices at record levels, petroleum imports rising, domestic energy production declining, and the Nation's energy crisis slowing economic growth, now is the time to maximize the production and use of domestic renewable fuels.

My name is Bruce Noel, and I am Chairman of the Ethanol Committee of the National Corn Growers Association (NCGA). I also serve as the Treasurer of the Corn Marketing Program of Michigan. My wife, Alice, and I grow corn and soybeans on our family farm in Leslie, Michigan.

NCGA was founded in 1957 and represents more than 33,000 dues-paying members from 48 States. NCGA also represents the interests of the more than 300,000 farmers who contribute to corn checkoff programs in 19 States, including Michigan. NCGA's mission is to create and increase opportunities for corn growers and to enhance corn's profitability and use.

For more than 20 years, NCGA has worked side by side with farmers, industry and government to build the ethanol industry from the ground up. Corn growers celebrated the August signing by President George W. Bush of the Energy Policy Act of 2005, which included a 7.5 billion gallon renewable fuels standard (RFS) by 2012. This is a significant accomplishment for corn growers as it establishes a floor for ethanol production, which uses corn as its chief feedstock, and ensures a solid market for corn growers well in the future.

Our Nation's farmers are the best in the world at growing corn, which means that we must continually grow existing markets and discover new ones for our product. Corn growers have proudly invested in this growing ethanol industry that is doing good things for America. The ethanol market is the single most successful and fastest growing value-added market for farmers. Nearly 50 percent of all U.S. ethanol plants are farmer-owned.

With increased interest in ethanol, production at ethanol plants is above projected capacities and investments continue to grow for new facilities. Michigan has one ethanol plant operating today, Michigan Ethanol, LLC, that began operation November 2002 in Caro. This plant uses approximately 20 million bushels of corn each year and has been operating above its expected 40 million gallon capacity. The plant provides 33 jobs for the local community.

Three more ethanol plants are currently under construction in Michigan. U.S. Bio Woodbury, located in Lake Odessa, will utilize 15 to 17 million bushels of corn to

produce 45 million gallons of ethanol annually, and add over 35 jobs to the local community when it begins production in September 2006. Andersons Albion Ethanol, LLC is under construction in Sheridan Township north of Albion. The plant will annually produce 55 million gallons of ethanol, and is planning on starting production in August 2006. Midwest Grain Processors broke ground in August on their ethanol plant in Riga Township near Blissfield. With a projected start-up date of December 2006, the plant is permitted to produce 57 million gallons of ethanol annually, utilizing approximately 20 million bushels of corn.

Another plant is in the final permitting stages. Marysville Ethanol LCC will have an annual capacity of 50 million gallons to be located in Marysville. The plant would require 18 million bushels of corn annually.

Two more projects have recently been announced. Next Gen Energy, LLC announced plans to start the construction of a 50 million gallon ethanol plant in Kingsley. The plant would utilize about 18 million bushels of corn and provide about \$110 million to the local economy. Liberty Renewable Fuels, LLC announced plans to build a new ethanol plant in mid-Michigan. The plant will be designed for the annual production potential of up to 100 million gallons of ethanol. Plans also call for the co-production of biodiesel on the same site.

As you can see, Michigan ethanol production looks to meet in-State consumer demand as well as potential markets in the Northeastern United States. Market demand for ethanol in the Northeast is already high and is projected to increase in the future. This region of the U.S. currently does not have the capacity for ethanol production because they lack easy access to high volumes of corn. These States are still interested in ethanol, especially as a clean burning additive. Michigan is uniquely positioned to supply the clean burning additive—ethanol—to replace MTBE to this region.

The U.S. ethanol industry is expanding at a dramatic rate. In 2005, the industry produced just over 3.9 billion gallons of ethanol, nearly twice the amount produced in 2002. More than 1.4 billion bushels of corn—or 13.6 percent of total corn use—went to ethanol production in 2005. Rapid growth is expected to continue well into the future. The considerable increase in corn use for ethanol has caused many traditional corn customers to question how feed, food, and export markets will be affected by increased ethanol production. Among the most frequently asked questions are: Will there be enough corn to satisfy feed, food, and export demand, as well as the growing demand for ethanol? How much corn can go to ethanol without significantly disrupting other markets?

INCREASING CORN YIELDS

The corn yield curve is increasing at an accelerated rate due to advances in biotechnology and improved cropping practices. Increased yields allow growers to harvest considerably more corn without significantly increasing acreage. Growers set a new yield record in 2004 with 160.4 bushels per acre. The previous high was 142.2 bushels per acre (bu/acre) set in 2003. And in 2005, despite drought conditions in the central Corn Belt, growers still managed the second-highest average yield on record with 147.9 bu/acre.

Based on a 15-year trend line (1990–2004), average yields are projected to hit 162 bu/acre by 2010 and 173 bu/acre by 2015. To illustrate the impact of incremental yield growth, consider that an increase of just 2 bushels per acre from one year to the next results in an additional 150 million bushels of corn. That additional corn could be used to produce 420 million gallons of ethanol.

New biotech hybrid technology will further accelerate the yield curve. Transgenic traits offering increased drought resistance and enhanced nitrogen fixation are among the exciting new developments coming to market in the mid-term.

INCREMENTAL ACREAGE SHIFTS

As corn demand continues to increase due to ethanol, some acreage may be shifted to corn away from other crops such as soybeans, and to a lesser degree cotton and wheat. U.S. farmers make their plantings decisions based on demand signals from the marketplace. If demand for corn is high and projected revenue-per-acre is encouraging, corn acres will likely increase. Some portion of the 35 million acres currently dedicated to the Conservation Reserve Program could also be brought back into production. ProExporter Network projects 86 million acres may be planted to corn by the 2011–12 crop year, an increase of about five percent from the 05–06 planted acreage of 81.8 million acres.

For every additional 1 million harvested acres, roughly 150 million bushels of corn will be added to total supply (assuming a conservative future average yield of 150

bu/acre). In other words, 1 million harvested acres translates into an additional 420 million gallons of ethanol.

DEMAND FOR NON-ETHANOL CORN USE IS FLAT

Corn use for livestock feed is not projected to grow significantly in the long term. Economists project livestock use to average about 5.5 billion bushels between 2007 and 2016, down from about 6.1 billion bushels in both 04–05 and 05–06. Export use is also projected to be flat. Many economists project export use to average 1.8–2.0 billion bushels between 2007 and 2016. Though slightly more bullish on exports, USDA's baseline forecast also shows flat trends in feed use and export. It could be argued that total non-ethanol corn use is likely to flat-line at about 9.1 billion bushels (high case) in the long-term. Accordingly, increased production can go to ethanol without radically affecting traditional markets.

DDGS WILL INCREASINGLY DISPLACE CORN IN FEED RATIONS

Increased ethanol production will generate increased supplies of distillers grains, often referred to as DDGS. These high-protein co-products will increasingly displace corn in beef and dairy rations, and eventually poultry and swine rations. The quality and transportability of distillers grains products are steadily improving and future products will be more prescriptive in nature. ProExporter projects distillers grains to displace more than 1 billion bushels of corn for feed per year starting in 2011–12.

IMPROVED ETHANOL EFFICIENCY

Ethanol facilities are extremely energy efficient and actually yield more energy than gasoline. According to the U.S. Department of Agriculture (USDA), the net energy balance of ethanol indicates that ethanol produces 67 percent more energy than it takes to generate. In addition, a separate USDA analysis has found corn growers today use half the energy to produce a bushel of corn than they used just 25 years ago. As American farmers have become more efficient, so has ethanol production. New technologies and processes have had a dramatic effect on the energy required for ethanol production—greatly reducing energy input without adversely affecting the amount of ethanol and valuable co-products created. Those who claim that ethanol production is a net energy loser are using outdated information, old technology, and conveniently forgetting to mention that no fossil fuel can have a positive energy balance.

The ethanol industry is driven by innovation. New technologies will “squeeze” more ethanol out of a bushel of corn. The average ethanol conversion rate today is 2.8 gallons per bushel (gals/bu), up from 2.5 gal/bu several years ago. That conversion rate will soon be 3 gal/bu or higher due to new processing technologies entering the market.

Uniform application of these technologies across the industry would result in a dramatic increase in ethanol production without significantly altering corn acreage. The multiplying effect of increased ethanol conversion rates and increased corn yields results in a considerable gain in ethanol per acre.

E-10 AND E-85

Americans drive billions of trouble-free miles using ethanol-blended gasoline every year. The majority of this gasoline has been E-10, a blend of 10 percent ethanol and 90 percent unleaded gasoline. In 2003, Michigan residents used 150 million gallons of ethanol and this statistic has significantly increased since then. In addition to E-10, our State, like many others in the cornbelt, is working to develop E-85.

There are more than 6 million Flexible Fuel Vehicles (FFV), capable of running on E-85 fuel (a blend of 85 percent ethanol and 15 percent unleaded gasoline), on the roads today. Over the past year, many of the automobile manufacturers have launched aggressive advertising campaigns to help inform consumers about their FFV models and ethanol as a fuel option.

A major hurdle to increase the use of E-85 is availability and infrastructure. In the past few months, several Michigan fuel suppliers realized the demand for E-85 and have made the fuel available at their stations.

Last September, Greenville, Michigan opened their first E-85 pump and began offering E-85 and biodiesel to its customers. In October, two E-85 pumps were also opened in the greater Detroit area; one in Dearborn Heights and one in Southfield. Early this spring, another E-85 pump was opened in Adrian, Michigan. Last month,

yet another E-85 pump was opened in Jackson where it will be available for fleet and member use.

Several more E-85 pumps are anticipating opening over the next few months. Ann Arbor is anticipating the opening of an E-85 pump in their city, where they have been working in collaboration with their local Clean Cities Organization. A station in Canton, Michigan will soon have E-85 available to its customers. E-85 sales at the two Detroit E-85 pump locations have been very strong. The two stations have sold over 100,000 gallons of E-85 since the pumps were first opened last fall.

On April 18, 2006, Grand Rapids-based Meijer Inc. announced their plans to install 20 E-85 pumps in Michigan in a collaborative effort with General Motors and CleanFUEL USA.

So how much ethanol can come from corn without disrupting other markets?

NCGA recently conducted an analysis of future corn use dynamics. Because of increasing yields, incremental acreage shifts, new technology and the displacement effect of distillers grains, it seems quite feasible that corn growers could harvest a crop of 14 to 15 billion bushels by 2015-16. Under this scenario (medium case), approximately 5.5 billion bushels would be available for ethanol conversion. At a conservative conversion rate of 2.9 gal/bu, this would equate to nearly 16 billion gallons of ethanol—or roughly 10 percent of our Nation's expected gasoline demand.

The increased use of ethanol in our Nation's fuel supply is not the singular answer for America's dangerous dependence on foreign oil; however, ethanol is already playing an important role in our Nation's overall energy policy, and will play an integral part in finding a long-term energy security solution. With the 7.5 billion gallon RFS in place, NCGA looks forward to working on behalf of corn growers with you and your colleagues in Congress to ensure even greater markets for ethanol in the future, and to ensure a continued significant role for growers in ethanol plant ownership. NCGA commends you, Chairman Gutknecht, on the introduction of H.R. 4357, bipartisan legislation requiring a 10 percent blend of renewable fuel in all gasoline sold in the United States by 2010.

Thank you again, Mr. Chairman, for the opportunity to testify today on this timely and important issue. NCGA looks forward to working with you in advancing ethanol legislation in the future.

STATEMENT OF KEITH REINHOLT

Good morning Mr. Chairman, Ranking Member Baca, and committee members. It is a pleasure to be here today. We appreciate the committee holding this hearing and providing the opportunity to examine this important issue.

My name is Keith Reinholt and I've been with the Michigan Soybean Association and Michigan Soybean Promotion Committee for 20 years. These organizations originally began in the 1970's by farmers throughout the State who believed that there was a need for coordinated efforts within our industry. We exist today because that need is still there, but also as important is the need for our coordinated efforts among many industries. For example our involvement with biodiesel began in the early 1990's. Biodiesel was "discovered" in part through the investment soybean farmers made in research of new products from the processed soybean. As a result, biodiesel was born and has grown rapidly for more than a decade. From our initial effort in 1992 when we literally received B100 in 5 gallon containers shipped via UPS, I have personally driven more than 500,000 miles in four diesel powered pickups fueled on biodiesel blends ranging from B2 to B-20. We personally experienced how simple it is to use biodiesel. Once folks understand the simplicity of its use, they're more apt to use it too. There are little to no engine modifications and we simply splash blend the fuel.

We estimate B100 use in Michigan to have doubled each year since 2000 with an expected use in 2006 in excess of 6 million gallons. Efforts to date have resulted in biodiesel blend use by schools, county road commissions, State and national parks services, marine industry, amusement companies, municipalities, universities, State government, U.S. Postal Service, construction and waste management companies, and more. Part of the success of such widespread use of biodiesel was an initial effort to get farmers to ask their fuel supplier to carry biodiesel in support of an American grown fuel. Doing this, as well as working with the diesel suppliers, we've helped grow the availability in Michigan to more than 110 biodiesel suppliers with 39 commercially available pumps throughout Michigan carrying various blends of biodiesel. At least three production plants are under construction with several others in the feasibility and/or planning stages. This is truly an industry that has needed to become very coordinated and intertwined with many entities to be as successful as it is today across the Nation.

The announced purpose of this hearing is to review the future of renewable fuels and flex-fuel vehicles. Renewable fuels, particularly biodiesel and ethanol, are currently experiencing tremendous growth. I would like to continue my comments this morning on the factors that have contributed to that growth for biodiesel, why this growth is important to the American people, and what must be done to keep it on its current successful trajectory.

Biodiesel is a diesel fuel replacement that is made from agricultural fats and oils and meets a specific commercial fuel definition and specification. Soybeans are the primary oilseed crop grown in the United States, and soybean oil makes up about half of the raw material available to make biodiesel. The other half consists of all other vegetable oils and animal fats. Biodiesel is made by reacting the oil with an alcohol to remove the glycerin in order to meet specifications set forth by the American Society of Testing and Materials (ASTM). Biodiesel is one of the best-tested alternative fuels in the country and the only alternative fuel to meet all of the testing requirements of the 1990 amendments to the Clean Air act.

As I've already mentioned, biodiesel is an American soybean farmer success story. After Operation Desert Storm in the early 1990's, soybean farmers struggled to maintain profitability because of high energy prices and low commodity prices. Investment in the development of a biodiesel industry was a priority to farmers eager to contribute to our domestic energy supply, while finding ways to add value to their crops. Farmers invested more than \$50 million dollars throughout the 1990's to conduct research and develop biodiesel. Much of that effort focused on the testing of biodiesel to ensure performance, establish quality standards, and gain acceptance by engine and equipment manufacturers.

The biodiesel industry has shown slow but steady success since the early 90's, however, in the past 2 years, it has grown exponentially. In 2004 there was approximately 25 million gallons of biodiesel sales. That increased to 75 million gallons in 2005. We are currently on track to exceed 150 million gallons in 2006. Likewise, we went from 22 biodiesel plants in 2004 to more than 60 biodiesel plants currently. There are over 40 more plants currently under construction, with another 30 projects in pre-construction.

America relies on imports for 60 percent of its petroleum needs. Imported petroleum makes up the single largest component of our national trade deficit amounting to approximately one third of the total. As crude oil prices continue to rise, America's trade deficit continues to balloon. Every gallon of domestic, renewable biodiesel that is used to replace diesel fuel refined from imported crude reduces the need for imported crude and finished fuel, extends the diesel supply, and expands domestic refining capacity. Even a small reduction in demand has a positive effect on straining price pressures.

The need for increased use of biofuels has never been more pressing. Diesel fuel prices are at an all-time high. The majority of diesel fuel in this country is used in over-the-road trucks. The trucking industry serves as a critical part of our economy, and impacts every industry, business, and consumer in America. Virtually every product that we use everyday is brought to us by a diesel-powered truck. In addition, America's manufacturing sector has moved to "just-in-time" inventory systems to reduce storage and inventory costs. America's manufacturing inventory is now stored primarily in the trucks that are driving down the highway at any given time. Fuel is the single largest operational cost in the trucking industry. Average diesel fuel prices have nearly doubled over the past four years. This dramatic increase in operational cost offers enormous challenges to the trucking industry, and will be felt throughout our entire economy.

The American Trucking Association (ATA) endorsed the use of B5 as a way to supplement our Nation's energy supply. Likewise, Sysco Corporation, the largest private truck fleet in the Nation has begun using B5 in its trucks. Truckers often become interested in biodiesel because they would rather rely more on farmers for their fuel and less on the Middle East. However, after they begin using it, they are most often impressed by its premium fuel characteristics. Biodiesel contains oxygen so it burns cleaner, reduces smoke and smell, increases cetane, and improves lubricity. As ultra-low sulfur diesel (ULSD) fuel gets phased in beginning in June of this year through June 2007, biodiesel is well positioned to replace the lubricity that will be lost in ULSD. Diesel fuel injection systems rely on the lubricating characteristic of fuel to keep them functioning properly. Just 2 percent biodiesel can improve lubricity by as much as 65 percent.

The high price of fuel is one of the factors contributing to increased biodiesel use. However, there are three main Federal policy measures that have been extraordinarily effective in stimulating biodiesel's increased production and use. Because of these three policy measures, biodiesel is beginning to make a small but significant impact on our Nation's energy supply. These measures are all working extraor-

dinarily well, but are soon scheduled to expire, and must be continued in order to keep the growth in biodiesel going strong. Although biodiesel is showing signs of success, the industry is still in its infancy, and is where ethanol was in 1982.

The first measure, the biodiesel blenders tax credit, was part of the restructured Volumetric Ethanol Excise Tax Credit or "VEETC" legislation in the JOBS Act of 2004. The new blender's tax credit for biodiesel went into effect in January of 2005. It functions similarly to the ethanol tax credit, and it has been extraordinarily effective in incentivizing the blending of biodiesel into the Nation's diesel fuel supply. It has been the primary stimulant in 2005 for the dramatic increase in new plants and jobs in biodiesel, bringing economic opportunity to both rural and urban areas.

Legislation has been introduced in the Senate that includes an extension of the biodiesel blender's tax credit through 2010 and beyond. It is likely that the need for this program will go beyond 2010, but it is critical that this tax credit, which has been so effective for biodiesel, not be allowed to expire. Legislation is also currently pending in the House extending this credit through 2010 (HR 2498, Representatives Hulshof and Pomeroy).

The second policy measure that has been very effective in energizing biodiesel's growth is the Bioenergy Program. The program was initiated by the USDA in 2000 to stimulate the use of crop surpluses for energy needs. As you may recall, it was memorialized as part of the 2002 farm bill. However, the program is set to expire in July of this year. This program provides a production incentive which has been highly effective in the growth of the biodiesel industry. A 2005 OMB Program Assessment Rating Tool or "PART" evaluation reported that the program did an excellent job of stimulating biodiesel growth, and indicated that the program could continue to be effective for the emerging biodiesel industry. The report stated, "Increases in the production of biodiesel indicate a rise in the supply of domestically produced renewable fuels. It's also an indicator of the viability of the biodiesel industry and its expanded consumption of agricultural commodities."

High diesel prices are also hurting farmers as they have entered spring planting. Fuel is a very large operational cost for farmers. But while costs are going up, the projected value of their crop is going down. Soybean acreage in 2006 is estimated at a record 76.9 million acres, and USDA is projecting that soybean prices drop below \$5.00 per bushel in 2006-07. The Food and Agricultural Policy Research Institute (FAPRI) is forecasting Marketing Loan Gains and Counter-Cyclical Payments to soybean producers of \$0.72 per bushel for the 2006 crop. According to Centrec Consulting Group, if an extended 2007 Bioenergy Program for biodiesel increased soy-based biodiesel production by a very modest 40 million gallons it would be expected to increase soybean prices by a approximately \$0.07 per bushel. Based on a 3.0 billion bushel crop, this increase could reduce soybean farm program outlays by up to \$210 million. This would more than offset the cost of extending the Bioenergy Program for biodiesel for FY-2007. Extension of this program for biodiesel has many positives. It will be good for farmers, good for biodiesel, and will be a net plus for the U.S. Treasury. I ask that you please consider doing what you can to extend this important program which is scheduled to expire in July of this year.

The third program that has greatly contributed to biodiesel's success is the USDA's Biodiesel Fuel Education Program. This program was additionally a part of the energy title of the 2002 farm bill. The program provides educational funding to support increased fuel quality measures, increased acceptance of biodiesel by engine and equipment manufacturers, petroleum partners, users, and the general public. The USDA has done a superb job in implementing this program and it has been a key ingredient to biodiesel's recent growth. A recent survey done to benchmark the program's progress showed that the public's awareness of biodiesel rose from 27 percent in August 2004 to 41 percent in December of 2005. To impact the American public's awareness that significantly on any given issue is remarkable. In addition to greater awareness from the general public, market research shows familiarity among trucking executives increased from 27 in 2004 to 53 in 2005. Also of note:

- Four-in-five consumers continue to support a tax incentive that would make biodiesel cost-competitive with regular diesel fuel.
- 88 percent of environmental group leaders and 84 percent of health organization leaders support biodiesel as a transitional fuel, because biodiesel can make an immediate impact on reducing emissions until zero emissions technology is developed.

While the program has been highly effective, the biodiesel industry is still immature, and faces enormous challenges. Continued education is needed. I ask that you please look for ways to expand and extend this program beyond 2007.

To summarize the three Federal policy measures that have been very effective in the development of the biodiesel industry and should be continued:

- (1) Extension of the biodiesel blender's tax credit;
- (2) Extension of a Bioenergy Program for biodiesel;

(3) Extension and expansion of the biodiesel fuel education program.

During the 2006 State of the Union speech, President Bush outlined his Advanced Energy Initiative, which stated the goal of reducing petroleum imports from the Middle East by 75 percent by the year 2025. Biodiesel and ethanol can be the first tools used to begin reaching that goal because they are liquid renewable fuels that are available right now, ready for blending into our existing fuel supply and used in our existing vehicles. As an illustration of how biodiesel can play a role in that effort, please note that Iraq is the second largest provider of crude oil into the United States from the Persian Gulf region. Of the crude that comes from Iraq, approximately 1.85 billion gallons of diesel fuel is refined for the U.S. market. If long-term, America were to replace just 5 percent of its 37 billion gallons of on-road diesel fuel with biodiesel, it would equal 1.85 billion gallons—the same amount of diesel fuel that we get from Iraq.

Finally, in addition to the significant benefits that biodiesel offers to increase our domestic refining capacity and overall energy supply, biodiesel offers enormous benefits to our agricultural sector. Biodiesel does much more than just utilize surplus agricultural commodities; it adds multiple layers of value to agricultural economics. There have been 5 major comprehensive economic studies evaluating biodiesel in the last 4 years. All of these studies, using different economic models, had similar conclusions: that increased utilization of fats and oils for biodiesel increases the value that farmers receive for their crops, while making protein meal cheaper as a feed for our domestic livestock producers and more competitive in international protein markets for food and feed. Not only does this allow farmers to more profitably supply global food markets, it may have the effect of increasing agricultural processing in the United States. Additional biodiesel production further increases domestic chemical processing from renewable by-products.

Mr. Chairman, members, we appreciate the opportunity to come before you today on this most critical issue. Thank you for all of the support you have given not only to the biodiesel industry, but the development of the biofuels industry overall. We look forward to continue to work with you on this important endeavor.

STATEMENT OF REGINALD MODLIN

DaimlerChrysler appreciates the opportunity to give our views on renewable fuels. DaimlerChrysler Corporation strongly supports the use of renewable fuels. Since 1996, DaimlerChrysler has produced and sold over 1½ million flexible fuel vehicles (FFVs). These vehicles are capable of operation either conventional gasoline, E-85 (a mixture of 85 percent ethanol and 15 percent gasoline, or any combination of the two). The FFV concept was developed to overcome the “chicken and egg” dilemma. Collectively, the auto industry has produced over five million FFVs, but, since the E-85 retail marketing infrastructure is still in the early stages of development, most of these vehicles are operated primarily on gasoline, not E-85.

However, if the FFVs on the road today were operated exclusively on E-85, we could reduce America’s dependence on petroleum by 250,000 barrels per day. Additionally, several auto manufacturers, including DaimlerChrysler, have announced plans for deployment of substantially higher volumes of FFVs in the future. In the case of DaimlerChrysler, our plan anticipates production of nearly 500,000 FFVs in the 2008 model year. Our modeling suggests that if industry-wide production of E-85 capable FFVs increased to 30 percent of total production, and these vehicles operated exclusively on E-85, our Nation could reduce its petroleum demand by almost 2.5 million barrels/day in 20 years, compared to the EIA base case scenario.

Congress can act in two arenas to facilitate this potential substitution of ethanol for petroleum in the light duty transportation sector. First, Congress has recognized in the past that there is an incremental cost to auto manufacturers to make a vehicle E-85 compatible. Given that there is currently little customer demand for this option, Congress has authorized a CAFE credit encourage the production of FFVs. To continue, and expand FFV availability, Congress should extend this credit program beyond its currently scheduled termination in 2014. Second, Congress should help in accelerating the growth of ethanol production, distribution, and retail sales infrastructures through tax incentives, capital depreciation allowances, or other fiscal instruments.

On another front, DaimlerChrysler has been a leader in promoting the use of renewable biodiesel, both in the light and heavy duty transportation sectors. All DaimlerChrysler diesel vehicles, from the Smart mini-car to Freightliner class 8 freight hauling 18-wheelers are validated for operation on properly formulated B5 (5 percent biodiesel/95 percent petroleum-based diesel) meeting appropriate quality specifications. While diesel engines are inherently more efficient than comparably

performing gasoline engines, the use of renewable biodiesel offers an opportunity for further displacement of petroleum demand. To further promote the use of biodiesel, and elevate consumer awareness, the Jeep Liberty CRD diesel-powered SUV, each vehicle has been fueled with B5 (a mixture of 5 percent biodiesel and 95 percent petroleum-based diesel at our Toledo, Ohio assembly plant from the first day of production). Going a step farther, we recently announced that DaimlerChrysler will endorse the use of B-20 (20 percent biodiesel in petroleum diesel) in the Dodge Ram truck equipped with a Cummins diesel engine when used in fleets managed by our commercial, government, and military fleets who follow the U.S. Defense Department's specification A-59693A. We are able to take these actions (B5 factory fill for the Liberty, and endorsement of B-20 in fleets) because in both cases, the fuel is carefully specified, and its use is managed by professional fuel handlers. The matter of proper quality specifications for B-20 is paramount importance. Given an enforceable, high quality ASTM specification, DaimlerChrysler is prepared to endorse the use of B-20 in most if not all of our diesel-powered vehicles. We are currently working on development of such a specification with industry partners, academia, and government agencies, under the overall direction of Next Energy, a Detroit-based non-profit corporation whose mission is to develop energy alternatives. The use of B-20 across the board, in both light and heavy duty diesel applications offers the potential for the reduction of demand for petroleum by 700,000 barrels per day.

As with E-85 ethanol, there is a role for Congress to play in promoting the expanded use of renewable biodiesel. First, diesel-powered vehicles capable of operation on biodiesel blends should be eligible for a CAFE credit analogous to that given to E-85 FFVs. Second, Congress can craft some tax-based incentives for the production, distribution, and retail marketing of biodiesel.

Today the vast majority of ethanol and biodiesel are produced from corn and soybeans, respectively. While these fuels, from these feedstocks allow for substantial petroleum demand displacement today, we believe that there is a need for significantly improved processes for both ethanol, and renewable diesel fuel. In particular, there are significant advantages for cellulosic ethanol and Biomass-to-Liquids (BTL) processes. These processes need to be judged on a "field-to-wheels" life cycle analysis. This does not mean that farmers are to be excluded from the renewable fuels production process. Rather, we see a future in which there "food farmers", and "fuel farmers". Again, there is a role for Congress to play. Current process for cellulosic ethanol and BTL carry substantial capital costs in an uncertain market. Congress can help facilitate the adoption of new processes by funding research into optimal processes for fuel production, and financial incentives to encourage investment in new processes.

In conclusion, DaimlerChrysler sees great opportunities for renewable bio-fuels to reduce the demand for petroleum in the United States. We are committed to produce larger volumes of E-85 capable FFVs, and B-20 capable diesel-powered vehicles. However, DaimlerChrysler does not produce, distribute, or market fuels, so the energy sector needs appropriate encouragement to invest renewables. There are opportunities for Congress to accelerate both the production of vehicles capable of running on renewable fuels, and the installation of renewable fuel feedstock growth, production, distribution, and marketing facilities for renewable fuels.

STATEMENT OF MARY BETH STANEK

Mr. Chairman and Members of the committee, thank you for the opportunity to testify today on behalf of General Motors. I am Mary Beth Stanek, Manager of General Motors Strategic Initiatives, and I am leading several aspects of the E-85 partnership activities and supporting General Motors national Live Green Go Yellow marketing campaign.

I would like to briefly cover several items including the benefits of E-85, our current model offerings, national and regional marketing efforts and our infrastructure partnership activities to-date.

We believe there are many benefits of using E-85 including

- Ethanol being a renewable fuel
- Using E-85 helps reduce greenhouse gas emissions
- Using E-85 helps to reduce dependence on petroleum and helps to create greater diversity in our Nation's energy supplies and sources
- Using E-85 helps to reduce smog forming emissions
- Using E-85 can help to support the domestic agriculture industry in the U.S. and support new job growth

General Motors has placed a very high priority on flex fuel vehicles and renewable fuels. General Motors produces a broad lineup of flex fuel offerings including the Chevrolet Tahoe, Suburban, Silverado, Avalanche, Impala, Monte Carlo and GMC Yukon, Yukon XL and Sierra. General Motors is approaching 2 million vehicles on the road with many more to come.

In addition to producing flex fuel vehicles capable of running on E-85, GM has also partnered with the Governors' Ethanol Coalition. As part of this collaboration, GM has loaned E-85 flex fuel vehicles to 28 States and organizations so that they may use them to educate the public and promote the benefits of using ethanol. This partnership has been extended for 2006 and the loan of GM's 2007 E-85 flex fuel vehicles is underway.

The member States include: Alabama, Arizona, Arkansas, Colorado, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Washington, Wisconsin and Wyoming. Puerto Rico is also a member.

General Motors launched a national advertising campaign in February of 2006 beginning with the very visible 2006 Super Bowl XL hosted in our city of Detroit, Michigan. The unmatched visibility and viewership presented by the Super Bowl offered a great opportunity for us to launch a major marketing and advertising campaign that focuses on key energy diversification issues, and helps us illustrate a core element to GM's overall vehicle strategy. After the Super Bowl, the campaign continued through the 2006 Winter Olympics. Web traffic to our Livegreengoyellow.com website was in the millions as consumers investigated E-85, GM flex fuel vehicles, and station locations.

The campaign is a key element in building the GM brand equity, as part of the overall North American turnaround. With 1.9 million E-85 capable GM vehicles already on the road, and our plan to produce many more FlexFuel vehicles, we want to educate consumers to know that they have choice of fuel options and to also understand the benefits of ethanol.

A part of our E-85 outreach, we will be equipping E-85 capable Chevrolet and GMC cars and trucks with yellow fuel caps and exterior flex fuel badging. This will help consumers to determine whether their vehicle is FlexFuel. The yellow cap will also be a regular reminder that these consumers have a fuel choice each time they fill up their tank. We are also developing a current owner notification program that will be implemented in 2006.

In addition, GM is working on several efforts to educate the public. In 2006, we have stepped up these efforts with several regional and local marketing efforts in conjunction with our national advertising campaign. We also intensified efforts to help the public understand the benefits of E-85, including enhanced labeling, dealer and consumer education, collaboration with State and Federal ethanol initiatives, and continued support of industry events.

General Motors is continuing efforts to promote the availability and use of E-85 refueling infrastructure in several States. Most recently, we announced that General Motors is partnering with Meijer, CleanFuelUSA, the State of Michigan and the State of Indiana to work towards approximately forty new retail outlets. We have previously announced similar partnerships in California with Chevron, Pacific Ethanol and the State of California; in Illinois with VeraSun, Gas City and an upcoming pilot with Shell; in Minnesota with VeraSun and Erickson Oil; and in the State of Texas with Kroger and Abengoa Bioenergy in 2006. In 2005, GM co-marketed fuel coupons and owner awareness in Sioux Falls, South Dakota.

- The collaborative effort is important to help grow the E-85 refueling infrastructure and to increase the availability of the fuel to more E-85 flex fuel drivers
- GM will support the collaboration by promoting awareness among flex fuel owners, company drivers and prospective buyers
- As an example, in the North Central region GM is offering a \$1,000 fuel coupon with each new flex fuel purchase-supporting our flex fuel marketing effort and our E-85 retail partners

We believe that by continuing to work in collaborative partnerships that we can be a catalyst to the development of true fuel diversity in the United States.

In summary, GM supports the various proposals advanced by the President to secure and diversify our energy supply. GM is working with industry partners and Federal and State governments to develop new technologies and to shift to more alternative fuel choices. GM believes these actions will help to significantly reduce our dependence on oil. GM is also providing a diverse portfolio of hybrid choices to consumers, and supports research for battery advances. GM is also aggressively working to have cost-competitive fuel cell propulsion systems ready by the end of the decade to help usher in the hydrogen economy. In addition to the items listed by the

President, GM also supports consumer incentives for the early adoption of advanced clean technology vehicles.

STATEMENT OF SUSAN M. CISCHKE

Good morning. My name is Sue Cischke and I am vice president of Environmental and Safety Engineering at Ford Motor Company. I am especially pleased to be here at Oakland University where I spent my undergraduate years. Energy security is a significant issue facing our Nation today, and the rapidly growing interest in renewable fuels and flexible fuel vehicles as a way to address energy concerns is of great importance to the auto industry, especially here in Michigan. I appreciate the opportunity to briefly share with you Ford Motor Company's views on alternative fuels - particularly ethanol - and flexible fuel vehicles.

At Ford, we recognize that we have a responsibility to do something to help address America's energy security needs, and we are accelerating our efforts to develop innovative solutions. Recently, our chairman, Bill Ford, renewed our company's commitment to driving American innovation when he declared that "innovation will be the guiding compass of everything we do." That innovation begins with alternative fuels and vehicles. For example, Ford produced the first American hybrid on the road today—the Ford Escape Hybrid. Now, we have committed to building up to a quarter-million hybrids a year by 2010.

In addition to hybrids, we believe that greater use of renewable fuels like ethanol, a domestically produced renewable fuel, will help reduce reliance on foreign oil. We applaud Congress' efforts that resulted in the Energy Policy Act of 2005, as well as the President's recent commitment to address our Nation's addiction to oil.

Ford has been building flexible fuel vehicles for over a decade, and we are an industry leader in this technology. These FFVs are capable of operating on up to 85 percent ethanol, or gasoline, or any mixture in between. And all of our gasoline powered vehicles are capable of operating on 10 percent ethanol or "E10". FFVs are a great alternative for our customers because they provide them with an option to choose between E-85 and gasoline as they desire. As ethanol production increases, driven by growing availability and demand, competitive pricing will help lower the cost of E-85, increasing its use as well as demand for FFVs.

In 2006, Ford will produce 250,000 FFVs, and by the end of the year, we will have placed a total of nearly 2 million FFVs on America's roads, including America's best selling vehicle—the Ford F-150.

But we are not stopping there. Earlier this year we unveiled the Ford Escape Hybrid E-85 research vehicle, which marries two petroleum-saving technologies: hybrid electric power and E-85 flexible fuel capability. Though there are many significant technical and cost challenges to address, we believe that if just 5 percent of the U.S. fleet were powered by E-85 Hybrid Electric Vehicles, oil imports could be reduced by nearly 6 billion gallons a year.

As a whole, U.S. automakers will have produced enough FFVs so that nearly 4 percent of the U.S. fleet can run on ethanol. If all of these vehicles used E-85, the Nation would save 3.6 billion gallons of gasoline per year. That's like saving a full year of gasoline consumption in a State like Missouri or Tennessee.

While I'm talking about FFVs, let me clear the air about what it takes to make an FFV. We've heard from many people that all it takes to make a FFV is "a little tweak to the chip that runs the engine". I really wish it was that simple—but it's not. Out front today, you will see a 2006 F-150 FFV. What you can't see are the special features that allow it to operate on E-85. Because ethanol is a unique fuel with unique properties, fuel tanks with low permeation characteristics are required. It also requires a special fuel pump and fuel lines to deliver the fuel to the engine. Unique injectors introduce the fuel into the engine where special calibrations programmed into the on-board computer determine how much ethanol is in the fuel and how best to set spark timing and fuel flow to ensure the engine operates properly and meets emission standards on all ethanol and gasoline mixtures. And because there is more than one fuel calibration within an FFV, costly development and certification testing is doubled. Many of the FFV parts and processes are patented by Ford and are the result of innovative ideas by our best engineers, and we're proud of them. The bottom line—making an FFV is a significant investment for auto manufacturers.

We all know however, that producing alternative vehicles is only half the equation. We need to make sure Americans have a place to fill up their tanks with alternative fuels like E-85. That's why Ford is working closely with VeraSun Energy, the second largest ethanol producer in the U.S., and other key stakeholders to promote the expansion of E-85 infrastructure in key markets. We recently announced

that Ford and VeraSun will be working together to create the Nation's first "Ethanol Corridor" across Missouri and Illinois. Station sites are now being selected in locations that will allow an FFV driver to travel from Kansas City, Missouri to Chicago, Illinois using only E-85. We are very excited about this project and our efforts to make E-85 more readily available to FFV owners who choose to fill their vehicles with a fuel that enables the U.S. to reduce its dependence on imported oil. Ford and VeraSun are simply planting the seeds of a much broader ethanol supply system that will grow as more and more stakeholders step up to the plate and help to nurture a pathway to energy independence. But much more needs to be done to dramatically increase E-85 availability.

We believe that in order to meet the challenges of rapidly increasing our use of renewable fuels, we must engage in an integrated approach—a partnership of stakeholders. It should include the automotive and fuel industries, government, consumers, and other sectors. That's the best way to address the issue with a full range of solutions including advanced vehicle technologies, alternative fuels, infrastructure development, and government incentives. Domestic auto manufacturers are committed to doing their share, but effective and efficient solutions require a wider commitment from other players.

We have called upon the oil industry to join us in our effort to diversify America's energy sources. We obviously need key partners like the oil industry to invest in developing and marketing renewable fuels like E-85—and we need it to do so now and rapidly. We fully support government incentives to encourage the industry and others to accelerate this investment.

On the government side, Federal, State, and local incentives to accelerate the introduction of advanced technology vehicles and the alternative fuel infrastructure to fuel them will ensure the success of the Nation's energy diversity initiatives. With government actions, infrastructure expansion will support price competition and drive the success of renewable fuels.

To put this all in perspective, there are about 170,000 retail gasoline stations in the U.S., but only about 600 have ethanol pumps. It will take significant growth in the number of stations to effectively fuel existing FFVs, and even more as the number of FFVs rises in the future. Growing the infrastructure will be a challenge for stakeholders, but must be done.

For the future, we need national research efforts to pursue the production of ethanol from more energy-efficient cellulosic materials like rice straw, corn stover, switch grass, wood chips or forest residue. Ethanol derived from these sources will make ethanol even more available by broadening the feedstock sources, and will also further reduce greenhouse gas emissions.

Over the next year, we will have an enormous opportunity to strengthen our use of renewable fuels through the reauthorization of the Federal farm bill. As the farm bill process begins, we must focus efforts on supporting the Nation's energy independence through funding of programs that will support wider use of renewable fuels like ethanol. We encourage Congress to provide an emphasis on energy security as it considers the Bill in 2007.

Consistent implementation of an integrated approach across all sectors will allow us to achieve much more in a shorter timeframe and at a significantly lower cost than if each stakeholder were to pursue solutions independently. Energy independence is too important to the Nation to proceed any other way.

The challenges are considerable but not insurmountable, and there is an enormous amount we can achieve if we act together. We have to ensure that our business is sustainable by making vehicles that continue to meet the changing needs of the 21st century. That's a responsibility we owe to our customers, shareholders and our employees. But at another level, all of us have the opportunity to do something about energy independence—and that's a responsibility we owe future generations.

Thank you again for the opportunity to address the Committee.

STATEMENT OF THOMAS C. DORR

Mr. Chairman, it is a distinct pleasure for me to appear before you today to discuss the future of renewable fuels in the United States. That future is bright.

To be sure, in the short run we are being challenged—as is every other country in the world—by high oil and natural gas prices. This is a global issue. Each of us feels the impact every time we fill up the car or pay a heating bill—as do our friends in London or Tokyo, Nairobi or Istanbul. Nobody is immune.

But at the same time, as President Bush has emphasized again and again, the American free market system has an unmatched capacity to innovate, to create new

technologies and markets, and to turn challenges into opportunities. That is what we are doing today. This has been since 2001, and is still today, a core commitment of this Administration.

President Bush made a comprehensive energy strategy a first priority immediately upon taking office in 2001. He worked for 4 years to get it passed in Congress. He followed up that success by proposing an Advanced Energy Initiative focused on transportation fuels and better ways to power our homes and businesses, and he recently proposed additional measures in response to the current increase in oil prices.

Most of these initiatives, however, long predated the current price increases. President Bush has been far in front of this issue, and he has been consistent. The strategy is straightforward. The United States will, in the long run, deal from strength, not weakness. We do have a costly addiction to imported oil. But we can kick that addiction if we make up our minds to do so. The President is determined to do just that.

The President's energy initiatives—from his initial National Energy Policy recommendations in 2001 to the Energy Policy Act of 2005 and the Advanced Energy Initiative—are comprehensive.

The United States has extensive supplies of clean, safe energy. These include significant reserves of conventional oil, natural gas, and coal. We have the technology to recover these resources in an environmentally safe manner, and we should do so.

We have the technology today to build low emissions coal plants as well as safe, highly efficient nuclear plants. We should do so. We are also developing the technology for near-zero atmospheric emissions coal plants and a new generation of nuclear energy technologies.

We are significantly accelerating research on wind and solar power, on hydrogen and fuel cells, on battery technology for hybrid and plug-in hybrid vehicles. Past research on these technologies, along with tax incentives and other policy tools to promote deployment, has helped some of these technologies penetrate the market. At USDA Rural Development alone, we have helped finance 130 wind systems since 2001. More research is needed to further reduce costs of these technologies.

Last but certainly not least, biofuels are an important component of our plan to reduce our dependence on energy imports. U.S. consumption of ethanol last year reached 4 billion gallons, more than doubling the level of 2000. To ensure that this growth stays on pace, the energy bill established a Renewable Fuels Standard of 7.5 billion gallons per year by 2012.

The President and Congress have also extended the ethanol tax incentive, doubled the size limitation for the small producer tax credit, and provided a tax credit of up to \$30,000 for the installation of clean fuel infrastructure, such as storage tanks and pumps.

Looking a bit further down the road, President Bush has proposed \$150 million in 2007—a 65 percent increase—in Department of Energy (DOE) research funding on ways to produce ethanol cost effectively from cellulosic feedstocks like corn stalks, forestry byproducts, and switchgrass. The 2007 Budget also provides a funding increase for DOE's basic science research on biomass as part of the President's Advanced Energy Initiative.

Process costs for cellulosic ethanol are still relatively high, but the technical experts seem confident that they can be substantially reduced. When this happens, the potential feedstock base for ethanol production will be multiplied many times over. This is one of the most promising mid-term possibilities for displacing a large fraction of our imported oil, and it is therefore a research agenda to which the Administration is fully committed.

The "other biofuel"—biodiesel—is in fact an old idea just now coming into its own. At the turn of the last century, Rudolph Diesel himself originally used peanut oil to power his engines—just as Henry Ford powered his first car with ethanol—but cheap oil shelved that idea until now.

Today, however, a new price environment has changed the equation. From just 2 million gallons in 2000, biodiesel usage in the United States soared to 28 million gallons in 2004 and 91 million gallons in 2005 and is on track to double again in 2006.

Like ethanol, biodiesel is a domestic, value-added agricultural product offering exciting opportunities for investment and wealth creation in rural America. The Energy Policy Act of 2005 provided Federal tax credits for biodiesel production. USDA Rural Development supports the development of biodiesel plants, typically at the feasibility study stage, through our Business and Cooperative programs.

To be sure, biofuels are not the only potential replacement for conventional oil; tar sands, oil shale, coal liquefaction are other possibilities. Hydrogen produced from

multiple domestically available energy sources—including biomass—is a long-term option. Competitive markets will ultimately sort out the winners.

In the near- to mid-term, however, ethanol and biodiesel can have the greatest impact on reducing demand for oil. And our competitive investments at USDA Rural Development are supporting these and other technologies toward this end. Since 2001, we have invested over \$350 million in loans and grants for 650 renewable energy and energy conservation projects ranging from wind and solar to methane gas recovery to conservation. In this highly competitive arena, biofuels—ethanol and biodiesel—have won the largest funding share, accounting for 147 projects in all. The Federal investment of approximately \$107 million in these projects leveraged an additional \$624 million in private funding.

These biofuels totals are ahead of wind, anaerobic digesters, and energy efficiency projects, which are the top three runners-up. In addition, private equity investors are funding a rapidly increasing number of biofuels projects without direct Federal support, which is the truest measure of success for a Federal technology development program. Clearly, biofuels are already breaking out, moving beyond the research and development stage, and going mainstream.

To sum up, rising oil and natural gas prices—painful as they are for American consumers—are opening the door to a wide range of energy technologies that are now competitive. It is clear that a new energy economy is being born. It is also clear that, in the near- to mid-term and perhaps longer, renewable fuels and flex-fuel vehicles will play a key role in this evolution.

Let me conclude with three brief observations. First, the developments we are discussing today are fundamentally market driven. Oil exploration has plateaued while new discoveries of oil tend to be smaller, less accessible, and more expensive to develop. In fact, some experts believe that global conventional oil production is peaking and will soon begin an inexorable decline. That's the supply side.

At the same time—on the demand side—since the fall of the Berlin Wall in 1989, between 2 and 3 billion people have joined the world market system. China and India are achieving strong growth rates and have emerged as major oil importers. The world is a much more productive, prosperous—and competitive—place than it was 20 or even 10 years ago. The rising price of oil reflects these new realities. This seems unlikely to change.

Secondly, it is useful to remember that since the beginning of the industrial age, America's energy economy has not been static. From the mid-19th through the late 20th century, for example, earlier generations of Americans transitioned from animal, wind, wood, and water power to coal, oil, natural gas, and nuclear. The challenges we are facing today are neither unique—the rest of the world faces them as well—nor unprecedented. We have managed such transitions before, and we will do so again.

Finally, from the vantage point of USDA Rural Development, the emergence of a viable biofuels market represents an historic opportunity for job and wealth creation in rural America. Ethanol and biodiesel are distributed resources. Small and mid-sized producers are able to compete. We are acutely interested, therefore, in the development of investment and business models that encourage a high degree of local ownership and control.

It is indeed a privilege for us at USDA Rural Development to contribute to these initiatives. The 2002 farm bill contained—for the first time ever in a farm bill—an energy title providing for a much expanded role for USDA in biofuels, biomass, and renewable energy research, development, and commercialization.

Today, USDA is supporting the development of renewable energy technologies to reduce dependence on foreign oil and create economic opportunity in rural America. In this effort, we coordinate very closely with DOE, the Environmental Protection Agency and a number of other agencies. I frankly cannot recall this much communication and cooperation on any prior initiative. This is government at its best serving the needs of our citizens, and it reflects the commitment, leadership, and vision of President Bush on this vital issue.

The success of this effort is important for our Nation's national security and economic competitiveness. It is important to the future of the auto industry and the American way of life. And it is, as I noted earlier, an unprecedented opportunity for creating ownership, wealth, and economic opportunity in rural America.

Thank you. That concludes my prepared statement. I will be happy to address any questions you may have.