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H.R. 547, THE ADVANCED FUELS INFRASTRUCTURE RESEARCH AND DEVELOPMENT ACT

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

COMMITTEE ON SCIENCE AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

JANUARY 30, 2007

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H.R. 547, THE ADVANCED FUELS INFRASTRUCTURE RESEARCH AND DEVELOPMENT ACT

TUESDAY, JANUARY 30, 2007

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC.

The Subcommittee met, pursuant to call, at 2:10 p.m., in Room 2318 of the Rayburn House Office Building, Hon. Nick Lampson [Chairman of the Subcommittee] presiding.

BART GORDON, TENNESSEE
CHAIRMAN

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SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

Hearing on

H.R. 547, the Advanced Fuels Infrastructure Research and Development Act

January 30, 2007
2:00 PM – 4:00 PM
2318 Rayburn House Office Building

WITNESS LIST

John Eichberger
Vice President, Government Relations
National Association of Convenience Stores

Richard Kassel
Senior Attorney and Director of the Clean Fuels and Vehicles Project
Natural Resources Defense Council

Bob Dinneen
President & CEO
Renewable Fuels Association

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HEARING CHARTER

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT
COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

H.R. 547, the Advanced Fuels Infrastructure Research and Development Act

TUESDAY, JANUARY 30, 2007
2:00 P.M.–4:00 P.M.
2318 RAYBURN HOUSE OFFICE BUILDING

Purpose

On Tuesday, January 30, 2007 the Subcommittee on Energy and Environment of the Committee on Science and Technology will hold a hearing to receive testimony on H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act.*

H.R. 547 directs the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST) to initiate a research, development, and demonstration program to make alternative bio-based fuels more compatible with present-day infrastructure. H.R. 547 also directs these agencies to develop technologies and methods to provide low-cost, portable, and accurate measurements of sulfur in fuels, and to develop a physical properties database and Standards Reference Materials for alternative fuels.

Science and Technology Committee Chairman Bart Gordon introduced H.R. 547 on January 18, 2007. This bill was originally introduced in the 109th Congress as H.R. 5658. The language from H.R. 5658 was included as Section 17 of H.R. 5656, the *Energy Research, Development, Demonstration and Commercial Application Act of 2006,* which was later passed by the House under suspension of the rules as H.R. 6203.

To date, H.R. 547 is expressly endorsed by the following organizations:

- National Association of Convenience Stores (NACS)
- Renewable Fuels Association (RFA)
- Society of Independent Gas Marketers of America (SIGMA)
- National Association of Truck Stop Owners (NATSO)
- Coalition of E–85 Retailers
- Petroleum Marketers Association of America (PMAA)

The hearing will seek to address the following questions related H.R. 547:

1. What infrastructure challenges currently hinder wide scale marketplace distribution of alternative fuels?
2. What are the limitations in the current testing equipment and protocols for verification of the sulfur content of diesel fuel?

Witnesses

- **Mr. John Eichberger** is the Vice President of the National Association of Convenience Stores (NACS) and will also testify on behalf of the Society of Independent Gasoline Marketers of America (SIGMA).
- **Mr. Bob Dinneen** is the President and CEO of the Renewable Fuels Association, the trade association for the U.S. ethanol industry and advocate for the increased production and use of fuel ethanol.
- **Mr. Richard Kassel** is the Senior Attorney and Director of the Clean Fuels and Vehicles Project at the Natural Resources Defense Council which advocates for cleaner diesel fuels and increased use of bio-based alternative fuels.

Background

Alternative Fuels and Infrastructure

Rising oil prices and concern about our nation's dependence upon foreign fuel sources have increased interest in diversifying our fuel supply through the development of alternative, domestic sources of fuel.

The development and production of alternative bio-based fuels is increasing and there is great interest in expanding the use of these fuels. There are approximately 101 ethanol refineries online today, with many more in various stages of planning. However, due largely to ethanol's hydrophilic properties, ethanol is not compatible with the existing distribution pipeline infrastructure. Therefore it must be transported by tanker truck and rail, making long-distance shipping extremely expensive.

According to the National Ethanol Vehicle Coalition there are already approximately six million E–85-compatible Fuel Flexible Vehicles (FFV) on American roads, with auto manufacturers adding several new FFV models to their product lines. The Department of Energy counts over 900 stations to date selling E–85, concentrated primarily in the Upper Midwest. While the number of stations is expanding, it is still less than one percent of the approximately 167,000 retail fuel outlets in the U.S. For example, despite being the Nation's largest auto market, California currently has one public E–85 station. The lack of service stations selling E–85 means that in the near-term a very small proportion of compatible vehicles will actually utilize E–85.

Ethanol is currently blended with approximately 40 percent of the Nation's fuel supply, mostly at concentrations of approximately 10 percent of the fuel by volume. It is at higher concentrations of ethanol, such as in E–85, where technical issues arise. Alternative fuels like E–85 and biodiesel have different physical and chemical properties that make them incompatible with existing transportation, distribution, and retail infrastructure. These fuels may be associated with a variety of technical issues relating to corrosion of tank and pipeline materials, increased sediment build-up, filter clogging, electrical conductivity, water and microbial contamination, varying flow rates, and thermal and oxidative instability. Unfortunately, even with federal assistance grants, the cost of replacing or building new infrastructure is simply not feasible for many fuel retailers and distributors, most of whom are small businesses.

Evidence suggests that it may be possible to develop additives and blendstocks that would avoid the need for expensive modification and replacement of existing infrastructure. It may also be possible to develop safer and less destructive infrastructure refurbishment methods and technologies. H.R. 547 directs the Secretary of Energy, in consultation with the National Institute of Standards and Technology to develop additives, blendstocks, technologies and methods to address these concerns.

Ultra-Low Sulfur Diesel (ULSD)

In 2000 the U.S. Environmental Protection Agency (EPA) instituted a program to lower the emissions of diesel fuels by approximately 95 percent. Federal regulations mandated that after an initial phase-in period, beginning June 1, 2006, all diesel fuel refined and sold in the U.S. must be Ultra-Low Sulfur Diesel (ULSD). ULSD is diesel fuel containing less than 15 parts per million (ppm) of sulfur.

Prior to this time retailers sold Low Sulfur Diesel (LSD) containing up to 500 ppm of sulfur. The reduction in the sulfur content of diesel fuel served to mitigate the acid rain-causing effects of sulfur compounds and also allowed for the introduction in 2007 of advanced diesel engine technologies that would otherwise foul with high concentrations of sulfur. These new engine technologies reduce the emissions of particulate matter and nitrogen oxides, or NO_X, which exacerbate respiratory ailments and react with oxygen to produce ozone. This allows for the introduction of a wide range of clean diesel trucks and passenger vehicles into the U.S. market.

ULSD introduction also presented some challenges at various points of the distribution chain. As ULSD moves from the refinery through the pipelines, tanks, trucks and related infrastructure it can absorb residual sulfur left by other, high-sulfur fuel products. Products such as Low Sulfur Diesel with up to 500 ppm sulfur, Jet Fuel with 3,000 ppm, and even Heating Oil with up to 5,000 ppm may be moved through the same infrastructure as ULSD. The fuel industry feared that this contamination would result in diesel fuel arriving at fueling stations with sulfur contents that exceeded 15 ppm, thus exposing "downstream" retailers and distributors to liability for sale of non-compliant fuels. Current protocols and equipment for verifying the sulfur content of fuel are expensive and inaccessible to fuel retailers and others along the distribution chain. While the transition to ULSD has gone smoothly by most all accounts, the development of less expensive and more robust

testing methods would enable more frequent testing of fuel sulfur content to assure that regulated limits are not exceeded and to quickly identify any contamination problems that may occur along the distribution chain.

The need for advances in testing equipment is not limited to ULSD. Evolution in sulfur analysis technologies may lead to advances in testing for other fuel contaminants. For instance, current standards for biodiesel (ASTM standard D6751) lay out the critical specifications and set limits for manufacturers on maximum allowed concentrations for various contaminants, including sulfur. The biodiesel industry is pushing for strict adherence to these specifications. Because of the low concentrations and narrow tolerances needed to meet these standards, the measurements are difficult to perform accurately, especially in the smaller production facilities that tend to characterize the biofuels industry.

Further steps that can be taken to improve measurement accuracy for diesel fuels involve working with analytical instrument manufacturers and commercial suppliers of calibration materials to transfer the inherent accuracy of Standard Reference Materials developed by NIST to working calibration standards used for field testing instrumentation. Section 4 of H.R. 547 directs DOE and NIST to develop these portable, low cost, and accurate technologies for testing sulfur content of diesel fuels, and begin demonstrations of such technologies within one year.

Standard Reference Materials (SRMs)

NIST prepares SRMs for three main purposes: (1) to help develop accurate methods of analysis; (2) to calibrate measurement systems used to facilitate exchange of goods, institute quality control, determine performance characteristics, or measure a property at the state-of-the-art limit; and (3) to ensure the long-term adequacy and integrity of measurement quality assurance programs.

Industry, academia, and government use NIST SRMs to facilitate commerce and trade and to advance research and development. For example, State governments use SRMs for fuels to certify station pumps and other dispensing equipment.

Market acceptance of any fuel requires a reliable supply of the fuel that consistently meets certain specifications needed to ensure quality and compatibility with engines and infrastructure. Section 5 of H.R. 547 directs NIST to compile a database of physical properties for alternative fuels, and use these data to develop Standard Reference Materials (SRMs) such as those NIST develops for conventional fuels.

Section-by-Section Description of H.R. 547

Section 1. Short Title

The Advanced Fuels Research and Development Act

Section 2. Findings

The Nation should have a diverse fuel supply which includes alternative fuels, but incompatibility of some fuels with existing infrastructure presents significant and costly barriers to market penetration. Fuel additives or other technologies may allow such alternative fuels to be distributed and dispensed in existing infrastructure. Fuel retailers and distributors do not have ready access to technologies that verify fuels are in compliance with federal regulations for diesel fuels.

Section 3. Alternative Fuel and ULSD Infrastructure and Additives Research and Development.

Directs the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST) to conduct research and development, demonstration and commercial application of additives for bio-based alternative fuels (and ULSD) to address infrastructure compatibility issues such as: corrosion of infrastructure materials, dislodging of storage tank sediment, water and microbial contamination, increased emissions, temperature-sensitivity. The program should also investigate various methods for infrastructure refurbishment and cleaning, and other infrastructure-related problems as identified by DOE and NIST.

Section 4. Sulfur Testing for Diesel Fuels

Directs the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST) to conduct research, development, demonstration and commercial application of portable, low cost, and accurate technologies for testing sulfur content of diesel fuels, and begin demonstrations of such technologies within one year.

Section 5. Standard Reference Materials and Data Base Development

Instructs the National Institute of Standards and Technologies (NIST) to collect data on the physical properties of various alternative fuels, and develop the Standard Reference Materials (SRM) such as are available for conventional petroleum-based fuels.

Chairman LAMPSON. Good afternoon. This is the first hearing of the Subcommittee on Energy and Environment.

I would like to take the opportunity to welcome all our new Members. Representative Inglis, I look forward to working with you over the next two years, and I will call this meeting to order, and tell you that our hearing this afternoon is on H.R. 547, the *Advanced Fuel Infrastructure Research and Development Act,* introduced by Chairman Gordon.

Energy is on everyone's mind these days. The price of fuels has been rising, and awareness of the extent to which we are dependent upon foreign sources of oil has grown. At the same time, in an effort to reduce emissions of air pollution, we are also transitioning to cleaner burning fuels. The good news is that we have developed and are continuing to develop alternative fuels, and cleaner burning versions of our current petroleum-based fuels. But it is not enough simply to develop these new alternatives. We also must ensure the availability of infrastructure and equipment for transporting, distributing, and utilizing these new fuels at a reasonable cost.

And that is where H.R. 547 comes in. This bill authorizes research programs to address two specific issues. The first will seek cost-effective methods for making our current fuel distribution system compatible with biofuels. The second will initiate a program to develop less expensive, easier to use testing methods and equipment for verifying the sulfur level of fuels. I understand from recent reports that transition to new Ultra-Low Sulfur Diesel fuel mandated by the Environmental Protection Agency, is going well. I believe several of our witnesses will speak to that, to that effort briefly this afternoon.

And I look forward to hearing the views of our panel of witnesses on H.R. 547, and I thank all of you for participating today. And now, I will yield my remaining time to the author of this—is he not here yet? Okay.

Let us—I will hold on to that, and at this time, I would like to recognize our distinguished Ranking Member, Mr. Inglis, of South Carolina, for his opening statement.

[The prepared statement of Chairman Lampson follows:]

PREPARED STATEMENT OF CHAIRMAN NICK LAMPSON

Good afternoon.

This is the first hearing of the Subcommittee on Energy and Environment. I would like to take this opportunity to welcome all of our Members. Rep. Inglis, I look forward to working with you over the next two years.

Our hearing this afternoon is on H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act,* introduced by Chairman Gordon.

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I look forward to hearing the views of our panel of witnesses on H.R. 547, and I thank all of you for participating today.

Mr. INGLIS. Thank you, Chairman Lampson, and thank you to the witnesses for appearing.

Now, since this is my first time to speak as the Ranking Member of the Energy Subcommittee, I would say this. I am very grateful for the opportunity to be at this subcommittee. There are other people, including, I see down here, Mr. Bartlett, who probably could do an even better job as the Ranking Member, and then, we have got Vernon Ehlers, and some other people. That hasn't caused me to want to give up the slot, however, I would point out, but in any event, I am grateful for the opportunity to be here, and Chairman Lampson, I would say to you that this is a remarkable opportunity we have, I think, as Republicans and Democrats, to work together to accomplish good things for the country.

The President says he is for alternative energy. He called on us to take action in the State of the Union. Democrats are clearly for alternative energy. A good number of Republicans are concerned about this, and so, there is no reason not to take action, and so, I am very excited about serving with you, and I think that the other Members of—on our side of the panel are also vitally interested in this topic. It is—we have opportunities in alternative energy to win the triple play, to create jobs with new technologies, to clean the air, and then, third, and maybe of more—most general application for everybody in the country, to improve the national security of the United States.

So, it really is the triple play opportunity for us, in this Congress, and so, I am excited about that, and hope that we can work together to move ideas forward that will help advance this cause, of breaking our addiction to oil, and finding new sources of energy.

And this bill before us certainly fits that bill, and so, I am very happy that we are having this hearing, and I join in support of this bill put forward by the Chairman, and there are some interesting questions for our panelists today, and I look forward to those, and I look forward to working with you in making this a very productive Congress.

[The prepared statement of Mr. Inglis follows:]

PREPARED STATEMENT OF REPRESENTATIVE BOB INGLIS

Thank you, Mr. Chair, for your remarks. I am excited to be working with you as we seek to tackle the energy and environmental challenges in the first Energy and Environment Subcommittee hearing of the 110th Congress.

I am pleased to see the Subcommittee addressing this legislation early in the Congress. The promise of fuels of the future to reduce our dependence on foreign oil is one that both Republicans and Democrats support. Americans don't care which party gets the credit; they want to see solutions.

I am also excited about the possibilities to improve our energy security, create jobs by retooling the car, and clean the air through a hydrogen economy. The scope of the challenge requires many solutions. America will benefit from the successes of its inventors, scientists and engineers. The government can help by harnessing the energy of its citizens through funding basic research. During my tenure on the Budget Committee ('93–'98), I learned the difference between simple spending and thoughtful investing. Investing in the research and development of fuels of the fu-

ture makes sense. If we invest wisely, we can find economic growth through innovation.

We can reap the benefits of biodiesel made from renewable agricultural products instead of buying it from foreign oil companies in unstable countries—and produce less pollution.

A Department of Energy study showed that the production and use of biodiesel, compared to petroleum diesel, resulted in a 78.5 percent reduction in carbon dioxide emissions. For every unit of energy needed to produce a gallon of biodiesel, we gain 3.24 units of energy, giving it a positive energy balance.

I understand that biodiesel is chemically and physically different than petroleum based diesel. These differences present some problems of compatibility with the existing infrastructure. I hope that the witnesses today can help us better understand this challenge and how H.R. 547 can help address other challenges related to moving Ultra-Low Sulfur Diesel through our existing infrastructure.

I commend the Chairman of the Science Committee, Mr. Gordon, for introducing this bill and taking quick steps to further its passage. H.R. 547 is an example of a clear step that will both improve energy security and help clean the air.

Democrats are for alternative energy; Republicans are for alternative energy. Congress is ready; the President is ready. So let's hear from the witnesses how we may best begin.

Chairman LAMPSON. Thank you very much, Mr. Inglis.

I totally agree. I think there is a magnificent opportunity for us here, and I look forward to working with all of you, and there are some awfully bright people on this subcommittee, so I hope that neither of us is intimidated by their knowledge. But I think that we will grow because of what they bring to this committee.

I will, at this time, in the interest of time, ask unanimous consent that all additional opening statements, with the exception of Mr. Gordon when he comes, submitted by Subcommittee Members, be included in the record.

Without objection, so ordered.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Thank you Mr. Lampson.

I am happy to be with the Subcommittee today to discuss my bill H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act.*

I appreciate the witnesses providing testimony on the bill. I would also like to thank the many groups that are supporting this legislation. Your endorsements will be included in the record.

When I took the reigns of this committee I made a promise that this would be a Committee of "Good Ideas" and "Consensus." We are here to solve problems.

This bill is a prime example of how we can identify problems big and small, and leverage the resources and expertise of the Committee to develop creative ways to bridge technological gaps through research and development.

It is clear that fueling our country solely on conventional fuels threatens our economic well-being and environmental health. The public wants and deserves clean and reliable fuel choices.

But, if this country is serious about reducing our dependence on foreign oil, we need to get serious about mobilizing the infrastructure necessary to distribute and dispense the newest generation of fuels.

For a number of reasons alternative fuels such as ethanol and biodiesel are often incompatible with many components of the present-day infrastructure.

Fuel distributors and retailers are left to bear the considerable burden and cost of refurbishing, replacing, or constructing entirely new infrastructure if they want (or are ever required) to carry such fuels.

At $30,000 to $200,000 per station, a nationwide change in infrastructure could cost $5 to $30 billion.

Instead, my bill instructs the Department of Energy and the National Institute of Standards and Technology to research fuel additives and other technologies that could mitigate many of these problems, and make bio-based fuels more compatible with the country's petroleum-based infrastructure.

In addition, the bill addresses potential challenges as suppliers transition to significantly cleaner fuels by instructing DOE and NIST to develop portable, low-cost, and accurate methods suppliers can use to test sulfur content in fuels.

Since infrastructure is used for various fuel products with sulfur content ranging from 15 to 5000 ppm, there is a concern that distributors and retailers may sell fuel with levels of sulfur beyond what is safe for the newest generation of highway diesel engines.

It should be noted that this section is not meant to interfere with the role of the Environmental Protection Agency in what has been a very successful market transition to Ultra Low Sulfur Diesel. It simply seeks to provide easier access to testing and verification for all participants. I encourage DOE and NIST to coordinate these activities with EPA.

I hope this bill also illustrates that solving problems does not require years of wrangling over major omnibus legislation that in the end fails to meet everyone's expectations.

Here we took a good idea, turned it into a good bill, and with the support of our Members we will pass it out of Committee tomorrow and send it to the Floor next week.

I look forward to hearing testimony. Thank you.

Chairman LAMPSON. It is my pleasure to introduce the excellent panel of witnesses that we have with us this afternoon. Mr. John Eichberger is the Vice President of the National Association of Convenience Stores, NACS. This afternoon, he is also testifying on behalf of the Society of Independent Gasoline Marketers of America. Mr. Richard Kassel is the Senior Attorney and Director of the Clean Fuels and Vehicles Project at the National Resources Defense Council; and Mr. Bob Dinneen is the President and CEO of the Renewable Fuels Association, the trade association representing the U.S. ethanol industry.

I want to welcome each and every one of you. You will each have five minutes for your spoken testimony. Your written testimony will be included in the record if you choose to submit anything in the record for the hearing.

And when all three of you have completed your testimony, we will begin with questions. Each Member will have five minutes to question the panel.

Mr. Eichberger, would you please begin.

STATEMENT OF MR. JOHN EICHBERGER, VICE PRESIDENT, GOVERNMENT RELATIONS, NATIONAL ASSOCIATION OF CONVENIENCE STORES

Mr. EICHBERGER. Mr. Chairman, Ranking Member Inglis, Members of the Committee, thank you very much for inviting me here to testify. My name is John Eichberger. I am Vice President, Government Relations, for the National Association of Convenience Stores, also known as NACS.

On behalf of the convenience and petroleum retailing industry, which sells approximately 80 percent of the motor fuels in the Nation, I appear today in support of H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act.*

This legislation comes at an appropriate time. Today, the motor fuels industry is experiencing a significant transition to the next generation of fuels, and as Congress contemplates policies to accelerate this transition, H.R. 547 represents a welcome effort to address two of the many challenges facing the retailers.

With regards to alternative fuel, let me be clear. Petroleum retailers don't really care which fuels they sell, provided there is suf-

ficient supply and consumer demand for those products. However, converting to new fuels can present challenges to many retailers. For some, converting to a fuel like E–85 or B–100 can be relatively simple. If they are fortunate, all of the equipment at their facility is already certified as compatible with these fuels. And all they need to do is simply make sure—begin the transition to those new fuels.

Other retailers, however, are not as fortunate. Much of the equipment commonly found at a retail location is not certified for use with these fuels, typically because of concerns with corrosion and material degradation. Such equipment must be replaced, and in some cases, at significant cost. Sample invoices on the Department of Energy's website range from about $17,000 to $60,000 per location. But NACS' members inform us that if they had to replace the entire tank system, costs can be significantly higher. To put this in perspective, in 2005, the convenience stores reported an average pretax profit of only $42,000 per location.

Compounding this issue is the fact that Underwriters Laboratories last fall suspended certification for all dispensers to sell E–85, due to concerns about corrosion. While many E–85 retailers continue to operate under agreements with local officials, this does not absolve them from any potential liability associated with a release from one of these non-certified dispensers. Until UL decides to certify dispensers for E–85 sales, the number of retailers interested in converting to E–85 will be greatly diminished.

Clearly, equipment compatibility is a serious issue. The research in H.R. 547, if successful, will hopefully address these challenges in a more cost-effective way, and mitigate the significant barrier to entry. But I must caution this committee and the Congress that resolving the issue of incompatibility alone will not result in automatic widespread availability of alternative fuels. Retailers must assess the impact of alternate fuel on their overall business model.

For example, is there sufficient demand to justify replacing a gasoline or diesel fuel dispenser with an alternative fuel? Does the retailer have a tank available to convert to alternative fuel, or the physical space to install an additional tank? Are supplies in the market sufficient to enable the alternative fuel to compete for price-sensitive customers with gasoline? And most importantly, will switching to an alternative fuel increase or decrease customer traffic inside the store, where the retailer makes most of their money?

Mr. Chairman, these are real issues. Yes, H.R. 547 could substantially improve the economic calculations for retailers, but installation decisions will be based upon a balancing of various market forces involved, and Congress should be sensitive to these issues.

With regards to Ultra-Low Sulfur Diesel, NACS strongly supports research to develop an accurate and affordable sulfur test. So far, the transition to ULSD has gone relatively smoothly, much more so than anybody could have anticipated. However, consistent compliance is critical. Drivers must be able to rely upon the integrity of ULSD, and retailers face fines up to $32,500 if they are found to violate the 15 parts per million sulfur standard. If a retailer is found violating 15 ppm, the regulations provide them a three part defense. One, they must demonstrate that the ULSD de-

livered to their location was certified by their distributor as compliant. They must demonstrate that the contamination was not caused by their actions. And third, they must demonstrate that they have implemented a credible quality assurance program to ensure continued compliance.

This third defense is the primary challenge. The only way to completely ensure continued compliance is to test every batch. However, there is no accurate, prompt—no accurate way to measure sulfur and get prompt results. Right now, you have to take a sample, send it to a lab, and wait 48 hours for a response. It is impractical to hold a load of diesel aside until those results come back. Therefore, currently, quality assurance programs are based upon a specific process of inventory management supported by evidentiary testing results. They figure out what they need to do to manage inventory, and test early on to see if it is working, then they continue that process throughout the system.

While this is a defensible method to ensure compliance, it is not perfect. H.R. 547 seeks to develop an accurate and affordable sulfur test. If successful, retailers and others throughout the distribution system will be able to conduct quality assurance tests more frequently, thereby increasing the confidence of their customers that all ULSD meets the sulfur level, the 15 parts per million.

Mr. Chairman, these conclude my remarks, and I look forward to your questions.

[The prepared statement of Mr. Eichberger follows:]

PREPARED STATEMENT OF JOHN EICHBERGER

Mr. Chairman, Ranking Member Inglis, and Members of the Committee. My name is John Eichberger and I am Vice President of Government Relations for the National Association of Convenience Stores (NACS).

NACS is an international trade association comprised of 2,200 retail member companies representing an industry with more than 140,000 retail locations. In 2005, the convenience and petroleum retailing industry employed more than 1.5 million workers and sold nearly 80 percent of the motor fuels consumed in the United States.

The motor fuels industry is currently experiencing a significant transition to the next generation of fuels. As Congress contemplates policies to promote this transition, it must also understand that there are many complicated challenges facing retailers and the distributors that serve them that must be overcome before the market can efficiently offer these new fuels to consumers.

H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act,* initiates federal research and development projects to help the petroleum industry overcome some of these hurdles in the most cost efficient manner, thereby facilitating the smooth transition to these the new fuels. NACS supports the goals of this legislation and, today, I would like to comment on the two primary provisions independently.

Alternative Fuels

Clearly, the political momentum to bring alternative fuels to market is strong and growing. I cannot stress enough that petroleum retailers are agnostic regarding the type of fuels they sell, provided there is sufficient supply and consumer demand for those products. As supply and demand increase for alternative fuels via market forces and government programs, however, there remain significant hurdles inhibiting their smooth introduction to market. H.R. 547 seeks to address one of these challenges—the incompatibility of certain fuels with existing storage and distribution infrastructure.

Compatibility Issues

This issue of incompatibility carries with it potentially high costs to retailers seeking to convert their facilities to dispense these alternative fuels. A retailer must be

able to determine precisely what equipment is involved in his system and for which fuels that equipment is certified.

Some reports have indicated that certain components commonly found in storage and dispensing infrastructure may be incompatible with fuels like E–85 and B–100. These may include components made with aluminum, brass, copper and zinc or containing various elastomers, thermoplastics, thermosets, ceramics, pipe dope and organic coatings. Such metal components could be vulnerable to corrosion when in consistent contact with these fuels, while non-metal components could be subject to swelling, degradation, softening, embrittlement and delamination.[1]

However, there remains a considerable amount of uncertainty regarding the extent to which these materials may be vulnerable and retailers cannot make broad assumptions regarding the compatibility of their equipment.

In an effort to address the confusion that exists with regard to compatibility, the Petroleum Equipment Institute has provided on its web site a list of equipment certified by the manufacturer and listed by a laboratory for compatibility with certain fuel types.[2] Retailers must work with their equipment suppliers to determine specifically what equipment must be replaced and what is already compatible with the fuel they are considering. In some cases, retailers may find it necessary to replace their entire system at significant expense.

Underwriters Laboratories Inc. (UL) is the definitive resource to certify equipment as compatible. On October 5, 2006, UL suspended certification of all dispensers for compatibility with fuels containing greater than 15 percent alcohol. UL cited as the reason for this suspension: "Research indicates that the presence of high concentrations of ethanol or other alcohols within blended fuels makes these fuels significantly more corrosive. This may result in the fuel chemically degrading the materials used in fuel-dispenser components, and may ultimately affect the dispenser's ability to contain the fuel."

As of this month, despite the assistance of a technical conference and receipt of various supporting documents, UL has been unable to resolve its concerns and is preparing to conduct its own round of testing later this year.[3]

This is an important issue for retailers. Most jurisdictions require equipment to be UL certified before a retailer can put it into operation. Given the current state of non-approval by UL, many retailers who have already installed E–85 fueling systems continue to operate under agreements with local officials. While this may satisfy local operating requirements, it does not absolve retailers of potential liability associated with a petroleum or alternative fuels release caused by one of these dispensers. Therefore, the continued deliberations at Underwriters Laboratories and the rapid resolution of this issue is of critical importance to retailers.

Clearly, compatibility between alternative fuels and existing infrastructure is a serious issue that can cost retailers thousands of dollars.

The Department of Energy has posted on its web site invoices for the installation of E–85 compatible equipment. Some of the prices quoted on that site are $35,274, $15,383, $57,922, $27,321, and $24,105. These costs are significant, especially when one considers that the average pre-tax profit for a convenience store in 2005 was only $42,000.[4]

This is one of the primary reasons the petroleum retail industry is slow to adopt these alternative fuels. The legislation under consideration today, however, if successful, will hopefully address the equipment compatibility challenges in a more cost efficient way and mitigate this significant barrier to entry. For that reason, NACS supports this part of the legislation.

Other Hurdles to Installation

However, I must caution this Committee, and the entire Congress, that the issue of incompatibility is only one of the hurdles that impede an individual retailer's decision to install E–85. Consequently, resolving that issue alone will not automatically result in widespread availability. While other Congressional Committees will determine federal policy and government programs regarding alternative fuel availability, I would like share with you the other considerations facing retailers because I believe it is pertinent to Congress' broad consideration of the alternative fuels issue.

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[1] "PEI/NACS 2006 Alternative Fuels and Material Compatibility," Presentation by Edward W. English, II, Fuel Quality Services, Inc. *http://www.pei.org/pdf/EdEnglish.pdf*

[2] Petroleum Equipment Institute, *http://www.pei.org/altfuels/ByFuel.asp*

[3] "Progress Update on E–85 Fuel-Dispensing Equipment Requirements—January 2007," Underwriters Laboratories Inc. *www.ul.com/regulators/E-85up.cfm*

[4] U.S. Department of Energy, *http://www.eere.energy.gov/afdc/E-85toolkit/cost.html*

First, while I will acknowledge that the auto manufacturers are increasing their production of flexible fuel vehicles equipped to run on E–85, the number of these vehicles currently on the road remains relatively small and the number of drivers who know their vehicles are specially equipped is even smaller. This means a retailer must carefully evaluate the level of demand for E–85 in his operating market to determine if it makes business sense to dedicate a dispenser to sell the product. The typical convenience store operates four multi-pump dispensers, each providing two fueling positions. If E–85 is sold from one of these dispensers, gasoline customer throughput capacity is reduced by 25 percent due to the reduction in fueling positions. Unless there is strong demand for E–85, this could substantially affect the retailer's overall business model.

Secondly, not every retail location can accommodate an E–85 storage tank. Many facilities maintain only two underground storage tanks—one for premium unleaded and one for regular unleaded. Mid-grade often is produced by mixing the two at the dispenser. To install E–85, the retailer must either install a third tank, which may not be physically possible depending upon the size of the facility, or replace one of these two gasoline tanks. Clearly, this is not a viable option.

Retailers with additional tanks, perhaps containing diesel fuel, must make a decision to replace that product with the alternative fuel. Again, this is a decision that will have direct implications for the company's business model.

Third, retailers must be cognizant of the price sensitivity of the consumer. The retail gasoline marketplace is the most competitive in the Nation—large price signs on the corner empower consumers to shop by price without ever leaving their vehicles. And they do.

According to consumer polling just completed this month, NACS found that two-thirds of consumers shop by price and more than one in four will go out of their way—such as turn left across a busy intersection—to save one penny per gallon. Given the fact that E–85 provides the consumers with approximately 25 percent fewer miles per gallon, a retailer must be able to sell it at a substantial discount compared to gasoline in order to satisfy the consumers' economic interest. NACS members who do offer E–85 report that when the alternative fuel is priced similar to gasoline they experience a significant drop in gallons sold. Therefore, retailers must assess the availability of E–85 in their market and the variable price relationship of that product to gasoline. Often, there is a favorable price differential because of government incentive programs, but sometimes there is not. This issue must be taken into consideration.

My final point on alternative fuels is to applaud Congress for its interest in assisting retailers to overcome the hurdles presented by these new fuels, but to make sure that Congress understands the complexities of the issue. Section 3 of H.R. 547 could substantially improve the economic calculations for retailers, but installation decisions will be based upon a balancing of the various market factors involved.

Diesel Sulfur

With regards to Section 4, "Sulfur Testing for Diesel Fuels," NACS again supports the research program to develop an affordable and reliable testing method to ensure compliance with federal regulations.

In December 2000, the Environmental Protection Agency (EPA) promulgated rules requiring a 97 percent reduction in the sulfur content of on-road diesel fuel. Phase-in of that program began in June 2006 and, effective October 15, 2006, any retailer claiming to sell Ultra-Low Sulfur Diesel, or ULSD, must ensure that its sulfur level does not exceed 15 parts per million. The engine manufacturers report that sulfur levels above that limit could damage emissions and engine technology of model year 2007 and later vehicles. If inspectors find that the USLD does in fact exceed this sulfur limitation, a retailer can be subject to fines up to $32,500 per violation, as established by the *Clean Air Act.*

If found in violation of the sulfur limitation, the regulations provide the retailer with a three-part defense. First, a retailer must demonstrate through product transfer documents that all ULSD delivered to the facility was certified as compliant by the distributor. Second, a retailer must be able to demonstrate that contamination of the product was not caused by the retailer. And third, a retailer must have its own credible quality assurance program designed to ensure compliance with the sulfur limitation.

This third defense is the primary challenge. The only way to completely ensure continued compliance is to test every batch. Unfortunately, testing must be conducted in a laboratory, is expensive and may take 48 hours to return results. Consequently, it is not practical for a retailer to hold a load of ULSD aside until confirmation of such test results. Therefore, retailers are left to design a quality assurance program based upon a specific process of inventory management supported by

evidentiary testing results. While this is a defensible method to ensure quality, it is not perfect.

NACS has been concerned for many years that there exists no reliable, affordable sulfur test for retailers to use on a more frequent basis to ensure regulatory compliance. H.R. 547 seeks to develop such a test. If successful, retailers and others throughout the distribution system will have the ability to conduct quality assurance tests more frequently, thereby increasing the confidence of their customers that the product sold as ULSD does indeed meet the sulfur limit of 15 parts per million.

Conclusion

Mr. Chairman, these conclude my remarks. On behalf of the member companies of NACS, I thank you for your efforts to address these specific retailer challenges and I appreciate the opportunity to share our views on this legislation. I would be happy to answer any questions my testimony may have raised.

BIOGRAPHY FOR JOHN EICHBERGER

John Eichberger is Vice President of Government Relations for the National Association of Convenience Stores (NACS) where he oversees the association's government relations activities, represents the convenience and petroleum retailing industry before Congress, the Administration and the media, and directs the Association's petroleum related activities. Eichberger joined the association in 2000 as Director of Motor Fuels and was named to his current position in 2006.

NACS is an international trade association representing more than 2,200 retail member companies and more than 1,700 companies that supply the convenience and petroleum retailing industry. NACS represents an industry operating more than 140,000 retail locations, of which more than 112,000 sell motor fuels. In 2005, the industry employed more than 1.5 million workers and sold 80 percent of the Nation's gasoline and diesel fuel.

Prior to joining NACS, Eichberger served as a legislative assistant for Representative Greg Ganske (R–IA) where he advised the Congressman on such issues as those relating to energy, environment and agricultural policy.

Chairman LAMPSON. Thank you, Mr. Eichberger, and now, we will go to Mr. Kassel.

STATEMENT OF MR. RICHARD KASSEL, SENIOR ATTORNEY AND DIRECTOR OF THE CLEAN FUELS AND VEHICLES PROJECT, NATURAL RESOURCES DEFENSE COUNCIL

Mr. KASSEL. Thank you, Mr. Chairman, Ranking Member Inglis, and Members of the Committee. My name is Richard Kassel, and I am very pleased to testify today on H.R. 547.

I am a Senior Attorney at the Natural Resources Defense Council, where I direct our Clean Fuels and Vehicles Project. I also advise EPA, as a member of its Clean Air Act Advisory Committee and its Mobile Sources Technical Review Subcommittee, so I am familiar with all the issues that are at hand here.

NRDC is a national nonprofit environmental organization. We represent more than 1.2 million members and online activists nationwide. It is no secret our continuing reliance on gasoline and diesel for our transportation needs contributes to a wide range of important environmental and energy concerns, including air pollution, a wide range of public health impacts, oil dependency, and of course, global warming.

H.R. 547 can help improve the transition to two groups of fuels that can help in all these, Ultra-Low Sulfur Diesel, or ULSD, and biofuels. I am going to first address the ULSD issue, and that is where I will spend most of my time. Diesel pollution is, of course, a serious problem that affects all Americans, but luckily, it is a solvable problem. And thanks to EPA's groundbreaking Highway Diesel Rule, and its upcoming Nonroad Diesel Rule, we actually

have the regulatory structure in place now to solve the problem. And over time, as today's diesels are replaced by the new engines that meet these standards, more than 20,000 premature deaths will be eliminated every year nationwide, more than $140 billion in annual health costs as well.

ULSD fuel is the key to achieving these pollution benefits. Just as—there is an analogy here. Just as it was critical to remove lead from gasoline to get cleaner cars two decades ago, it is now critical to remove sulfur from diesel fuel to get cleaner trucks, buses, farm equipment, industrial equipment, and so on today.

Now, H.R. 547 is going to help improve the transition to ULSD. To paraphrase Mr. Gordon's written comments that were in the back of the room, it is a good idea, worthy of consensus.

But it is important also to note that the transition is, as already has been mentioned, going smoothly. Just this month, EPA reported that 90 percent or more of the ULSD in the system is already Ultra-Low Sulfur Diesel. That is why engine makers and car manufacturers are jumping over each other to announce their new product offerings that will meet the new pollution standards. They wouldn't do this if they thought that fuel availability would be a serious issue that would last.

Of course, that doesn't mean that there are no bumps whatsoever. Over the past few years, many stakeholders raised concerns about possible sulfur contamination in the pipeline system. EPA listened to those concerns, and in response, last year, for example, raised the sulfur tolerance limits to give industry a little bit more breathing room during this transition phase. It was a good step.

Here is what appears to be happening now. Because of concerns about mis-fueling at the retail level, service stations are not putting the appropriate ULSD label on the pumps. And indeed, EPA reported last week that 76 percent of the pumps they surveyed did not have ULSD labels. But we know from the same report that 90 percent of the fuel is, in fact, ULSD. So, there is no availability issue, but there is clearly a labeling issue. It is a serious issue, and it needs to be addressed, and addressed swiftly.

Now, that said, it makes sense to create a faster and simpler way of accurately monitoring and verifying the sulfur level of the fuel that is being sold. So, we support H.R. 547, but we also strongly urge the Subcommittee to make one change, to add EPA as part of the intergovernmental team that will implement this bill. After all, EPA is the agency that is charged with overseeing with the implementation of ULSD. It is the agency that is charged under the *Clean Air Act* with maintaining fuel quality. For lots of different reasons, EPA is involved in fuel quality at every step in the process, and they should be part of this team as well.

Now, allow me, if I may, to just spend a moment on the alternative fuels provisions of this bill. Developing methods and technologies and procedures to increase the compatibility of bio-based alternative fuels with our nation's conventional fuel distribution system makes sense. It is another good idea worthy of consensus. Biofuels will never replace petroleum at the level we need to get energy independence and address global warming if the biofuels have to be trucked from the biorefinery to the retail outlet.

There is also—so addressing that issue is important. But there is another issue here as well. Not all alternative fuels are alike. Some offer significant lifecycle emissions reductions in global warming pollutants, for example, cellulosic ethanol, while others can be worse than, or in the best case, roughly equivalent to gasoline, coal to liquids fuels would be the example there. So, it is critical that we pursue biofuels in a way that not only helps on energy security, but it also reduces global warming pollution. And likewise, it is critical that the future of biofuels strategies address other environmental issues that will come up, forestry issues, land use issues, and so on.

Now, H.R. 547 can't solve all of the challenges, or address all of the challenges of our future bio-economy, but it can help. It can help in two ways: first, by adding EPA to the alternative fuel provisions as well; and second, by clearly defining the various fuels provisions in the bills. Right now, there are four different fuels provisions in it. And clearly defining those, so that the research is moving towards fuels that are sustainable, not just for energy security, but for global warming, for the forestry and land use issues, and others.

Thank you very much for the opportunity to testify.

[The prepared statement of Mr. Kassel follows:]

PREPARED STATEMENT OF RICHARD KASSEL

My name is Richard Kassel, and I am pleased to testify on H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act.*

I am a Senior Attorney at the Natural Resources Defense Council (NRDC), where I direct NRDC's Clean Fuels and Vehicles Project. My expertise includes developing clean diesel and alternative fuel programs for large urban bus and truck fleets, as well as federal advocacy on EPA's various diesel and renewable fuels programs over the past fifteen years. In addition to my NRDC fuels and vehicles work, I currently advise the U.S. Environmental Protection Agency as a member of its Clean Air Act Advisory Committee and its Mobile Sources Technical Review Subcommittee, and have served on numerous technical advisory committees on fuels and vehicles issues in the United States and around the world.

NRDC is a national, nonprofit organization of scientists, lawyers, and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online advocates nationwide, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing. Most relevant to today's hearing, NRDC's Clean Fuels and Vehicles Project has been in the forefront of research and advocacy to reduce diesel pollution, petroleum dependency, and global warming, and to increase the use of bio-based alternative fuels and clean diesel technologies, for many years.

Thank you for the opportunity to testify.

Introduction: The Importance of Transitioning to Ultra-Low Sulfur Diesel Fuel and Biofuels

America's continuing reliance on gasoline and diesel fuel for its transportation needs contributes to a range of critically important environmental and energy concerns. H.R. 547 will help transition the Nation to cleaner, more sustainable fuels in two key areas.

H.R. 547 and the Ultra-Low Sulfur Diesel Fuel Transition

H.R. 547 can help transition the Nation to the Ultra-Low Sulfur Diesel ("ULSD") fuel that is critical to reducing diesel pollution nationwide.

More than 150 million people live in areas that fail to meet EPA's health standards for ozone and/or particulate matter, in part due to emissions from today's dirty diesel vehicles.[1] In cities and towns throughout the Nation, dirty trucks, buses, construction equipment and other diesel engines contribute a disproportionately large share of the particulate matter (PM) that triggers asthma attacks, bronchitis, and

[1] American Lung Association, *State of the Air: 2006.*

roughly 25,000 premature deaths every year. In addition, more than 35 percent of the nitrogen oxides (NO_X) emissions that are key ozone precursors come from diesel engines.[2]

Thanks to EPA's landmark Highway Diesel Rule,[3] more than 90 percent of the health impacts from today's dirty diesel trucks and buses will be eliminated over the next two decades, as today's engines are replaced by new engines that meet the Rule's stringent emission standards for PM and NO_X.

The health benefits of implementing EPA's diesel programs successfully will be enormous. When all of today's engines have been replaced by new engines that meet the standards set in the Highway Diesel Rule, which EPA estimates will occur in 2030, more than 8,300 premature deaths, 1.5 million lost work days, and $66 billion in net health and other costs will be eliminated every year.[4] Combined with EPA's Nonroad Diesel Rule, the combination of ULSD and new engines that meet the standards of these two rules will eliminate more than 20,000 premature deaths, tens of thousands of child asthma emergencies and other respiratory illnesses, and more than $140 billion in health costs every year in 2030.[5]

ULSD fuel is the key to achieving these pollution reductions and public health benefits. Today's modern diesel engines are equipped with extremely sophisticated catalysts and filters that can reduce harmful PM and NO_X by more than 90 percent. However, all of these emission control technologies are extremely sensitive to the sulfur levels of the fuel. Indeed, higher-than-expected sulfur levels can impair—and even disable—these technologies. Just as it was critical to eliminate leaded gasoline to enable the use of effective catalytic converters two decades ago, it is now critical to use ULSD fuel to enable the effective use of today's diesel emission control technologies.

It is important to note that the transition to ULSD is, in fact, running smoothly. Since mid-October, at least 80 percent of the Nation's highway diesel fuel has been required to be ULSD, pursuant to the Highway Diesel Rule. In fact, EPA has reported that more than 90 percent of the highway diesel fuel is already ULSD.[6] Consequently, the heavy-duty engine industry has moved forward with its 2007 offerings, all of which require ULSD.

NRDC shares EPA and industry concern about the lack of ULSD labels at many service stations around the Nation.[7] However, there is a big difference between a labeling issue and an availability issue. The evidence is now clear that ULSD is widely available, in excess of the minimum required by the Highway Diesel Rule.

With ULSD now in the marketplace, many car makers have announced plans, with great fanfare, to introduce clean, fuel-efficient diesel cars, light trucks, and sport-utility vehicles to the Nation's showrooms next year. Indeed, these diesel vehicles were the centerpiece of last week's Washington Auto Show and similar shows around the Nation over the past few months. All of these diesel vehicles will require ULSD to operate cleanly and effectively. Car makers would not be so excited about their potential to sell new diesel passenger vehicle models next year if they had any concerns about the retail availability of the ULSD fuel that these vehicles will require.

Moreover, EPA has developed effective mechanisms to ensure that diesel fuel that leaves the refinery gates as ULSD arrives at the terminal and the retail seller as ULSD. These mechanisms have evolved since 2001, in large part due to EPA's ongoing dialogue with stakeholders throughout the refining, distribution, and retailing industries. For example, last year, EPA provided a temporary increase in the sulfur testing tolerance, as well as an amended ULSD tracking system in response to industry concerns.[8] While we understand that the same retailers would prefer a simpler system of verification and monitoring and we support R&D programs that are designed to create methods and technologies for such a system, we also think that it is important to note that the current ULSD transition has been a smooth one so far.

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[2] U.S. Dept. of Energy, *Transportation Energy Data Book,* Volume 25, Tables 12.4, 12.5 (2006).

[3] 66 Federal Register 5001 *et seq.* (January 18, 2001).

[4] *Id.* at 5005.

[5] See 69 Federal Register 38957 *et seq.* (June 29, 2004) for Nonroad Diesel Rule benefits.

[6] *Inside EPA,* "EPA Speeds Enforcement of Diesel Fuel Labels Due to Industry Concern," January 26, 2007.

[7] The January 26, 2007 *Inside EPA* article reported that EPA has found that 76 percent of the diesel fuel labels have not been updated yet.

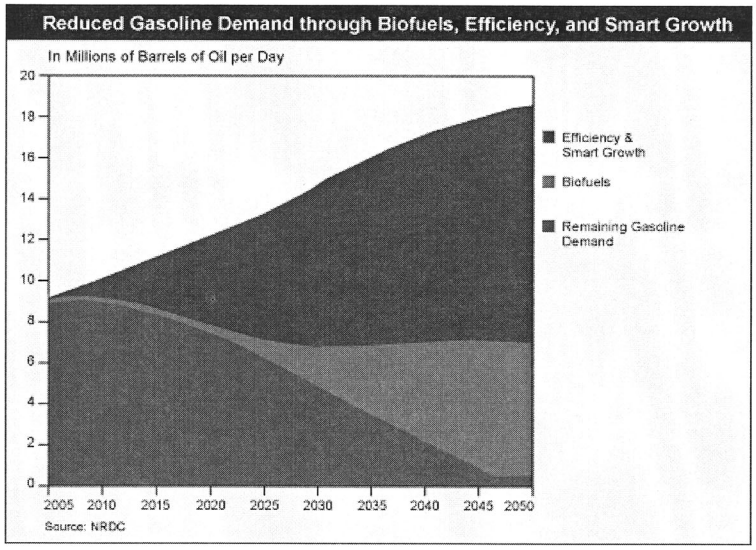
[8] See EPA420–F–06–033, April 2006. "Direct Final Rule and Notice of Proposed Rule-making for Amendments to the Nonroad and Highway Diesel Fuel Regulations." Also Available at: *www.epa.gov//otaq/regs/fuels/diesel/420f06033.htm*

H.R. 547 and the Biofuels Transition

H.R. 547 can help transition the Nation to biofuels that will help end our dependence on oil, and that can reduce global warming pollution as well.

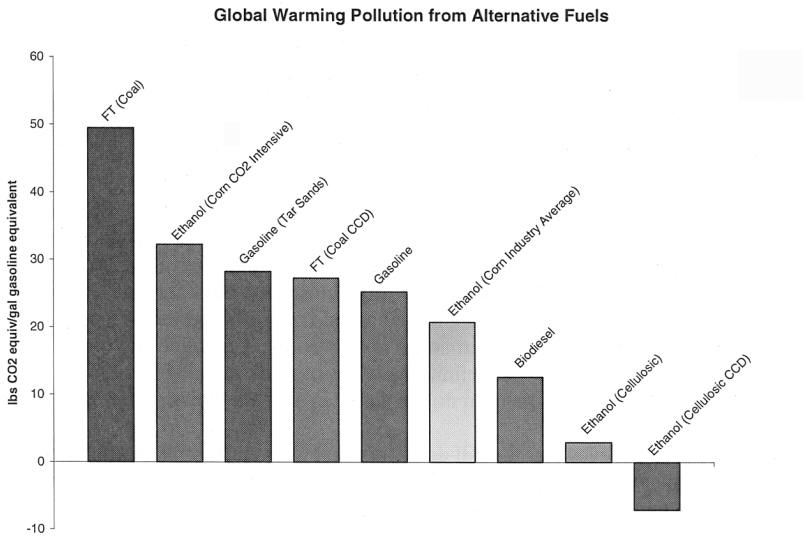
It is well-known that the Nation remains dependent on oil for its transportation needs, most of which comes from some of the world's most unstable and/or unfriendly nations. And, it is equally well-known that this oil dependence contributes greatly to the ever-growing greenhouse gas emissions that contribute to global warming.

A comprehensive strategy that combines increased vehicle efficiency with increased use of biofuels can reduce virtually all of our projected gasoline demand in 2050, as illustrated in the graph below.



However, not all "alternative fuels" are alike. Some offer significant life cycle emissions reductions in global warming pollutants (e.g., cellulosic ethanol), while others can be worse than (or, in the best case, roughly equivalent to) gasoline (e.g., coal-to-liquid fuels), as the chart below shows.[9] Thus, it is critical that Congress and the President pursue oil savings in a way that also produces global warming pollution savings.

[9] NRDC research based on published materials from multiple sources.



In sum, it is critically important that EPA's Highway Diesel Rule is implemented successfully, and it is critically important that Congress and the President take action to ensure that the Nation ends its dependence on oil in a way that simultaneously reduces global warming pollution. H.R. 547 can play a meaningful role in succeeding in both efforts.

NRDC Supports H.R. 547 with Modifications

With minor modifications, H.R. 547 can play a meaningful role towards ensuring the effective transition to ULSD, and towards ensuring that increased biofuels are effectively incorporated into the Nation's fuel infrastructure and transportation systems. However, the modifications that NRDC proposes are critically important to the ultimate success of the bill, and to our support.

First, it is critical to add EPA as part of the team that will implement H.R. 547. Currently, the bill directs the Secretary of Energy, in consultation with the National Institute of Standards and Technology only, to carry out an effective program of research, development, demonstration and commercial application of materials to be added to alternative bio-based fuels and ULSD, and to seek portable, low-cost and accurate ULSD testing methods and technologies, to make each of these fuels more compatible with our existing fuel storage and delivery infrastructure. However, EPA is the agency charged with implementing the Highway Diesel Rule and the Renewable Fuel Standard. EPA is the agency with responsibilities under the *Clean Air Act,* as amended, and the *Energy Policy Act of 2005* to create effective programs to monitor fuel quality throughout the system. Indeed, for the past six years, EPA has worked closely with industry and other stakeholders to ensure that the ULSD that comes out of the Nation's refineries arrives at the pump as ULSD. And, as noted above, EPA has managed the transition to ULSD successfully. While further R&D efforts may provide added benefits to the ongoing ULSD transition, NRDC believes strongly that those efforts will be most successful if EPA is a designated member of the inter-governmental team that oversees this work and implements H.R. 547.

Second, many terms in H.R. 547 have to be defined clearly. While ULSD is an accepted term already, phrases like "advanced fuels," "bio-based fuels," "alternative bio-based fuels," and "alternative fuels" are used seemingly interchangeably throughout the bill.[10] Given our concerns about energy security paths that would not reduce global warming pollution, about the potential increased use of coal-to-liquid fuels, and about the wide range of current and potential alternatives to con-

[10] It is worth noting that "Low Sulfur Diesel" is not defined in the bill either. Presumably, this term refers to diesel fuel containing no more than 500 parts-per-million sulfur. In the final bill, NRDC encourages the Subcommittee to clearly define both Low Sulfur Diesel and ULSD.

ventional gasoline and diesel fuel under consideration, clarifying these definitions is critical. As noted above, NRDC does not support energy security policies that do not simultaneously address global warming.

Last, NRDC believes that the bill draft provided to us earlier this month would benefit from some minor text editing. We have provided these edits to committee staff, and include those that are not reflected in our prior two paragraphs here:

- Page 2, line 7: delete "newer."
- Page 2, line 10: insert "potentially" before "placing."
- Page 2, line 21–25: after "sale" in line 25, insert "if not transported properly" and replace "can" with "may" in line 21.
- Page 3, line 14: replace "and" with "or."

Conclusion:

Certainly, the Nation would benefit from programs that help ensure the smooth transition to ULSD and an increased use of biofuels. H.R. 547 appears to be a meaningful step towards both of these important steps. However, NRDC strongly urges the Subcommittee to make the modifications suggested herein before moving this bill forward.

Thank you for the opportunity to testify today.

BIOGRAPHY FOR RICHARD KASSEL

RICH KASSEL is a senior attorney at the Natural Resources Defense Council and directs NRDC's Clean Vehicles and Fuels Project. He is an internationally-recognized expert on diesel and other fuel and vehicle pollution issues.

Highlights of Mr. Kassel's projects include:

- Working with the U.S. Environmental Protection Agency to help develop and implement EPA's Highway Diesel and Nonroad Diesel Rules. When all of today's engines have been replaced by new engines that meet EPA's new standards, more than 20,000 premature deaths and $150 billion in health costs will be eliminated annually.
- Working with the Pataki Administration and the Metropolitan Transportation Authority to create a "Clean Fuel Bus Program" for the New York City Transit bus fleet, the largest fleet in North America. As a result of this program, particulate matter (PM) emissions from the MTA buses are 97 percent lower than they were in 1995, and the program is a model for fleets worldwide.
- Working with U.S. EPA, the United Nations Environment Program, and a range of industry and other stakeholders to create the Partnership for Clean Fuels and Vehicles in 2002. The Partnership works in developing countries around the world to eliminate leaded gasoline where it is still used, and to help countries develop plans to reduce diesel and other vehicle pollution.
- Working with local and global vehicle experts to create clean vehicle pollution plans for Mexico and Brazil that combine clean fuel standards, more stringent emission regulations and accelerated "retirement and retrofit" programs to reduce air pollution in Mexico City and Sao Paolo.

Mr. Kassel is a member of many technical advisory committees. These include EPA's Clean Air Act Advisory Committee, its Mobile Sources Technical Review Subcommittee, its Clean Diesel and Retrofit Work Group and its former Clean Diesel Implementation Review Panel; the Health Effects Institute's Special Committee on Emerging Technologies and the Steering Committee for HEI's Advanced Collaborative Emissions Study; and others.

* * *

NRDC is a national, non-profit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online advocates, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing. More information is available at NRDC's web site, *http://www.nrdc.org/*

Chairman LAMPSON. Thank you for being here. Mr. Dinneen.

STATEMENT OF MR. BOB DINNEEN, PRESIDENT AND CEO, RENEWABLE FUELS ASSOCIATION

Mr. DINNEEN. Thank you very much, Mr. Chairman. Thank you for the invitation, Mr. Chairman and Members of the Committee.

On behalf of the members of the Renewable Fuels Association, which is the national trade association representing the U.S. ethanol industry, I want to express my strong support for H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act.* This bill and this committee's continued commitment to expanding the technical foundation for a more robust renewable energy industry in this country will be critical to breaking this nation's addiction to oil.

Already, the U.S. ethanol industry is making great strides and dramatically reducing our dependence on imported petroleum. There are today 111 biorefineries in operation across the country that are processing more than 1.8 billion bushels of grain into approximately 5.4 billion gallons of high quality, high octane renewable ethanol. Ethanol has indeed become a ubiquitous component of the U.S. motor fuel market. Today, it is blended in 46 percent of our nation's fuel. It is blended literally from coast to coast and border to border. Every single gallon of gasoline sold in California is blended with ethanol. Every single gallon of gasoline sold in the great city of New York is blended with ethanol. It is no longer just a niche Midwest market. It is a national fuel, and it is continuing to grow.

Indeed, ethanol is providing perhaps the most significant tool that we have today to reduce our dependence on imported oil. Just since the year 2000, 30 percent of the increase in gasoline demand in this country has been met by ethanol. To take a shorter timeframe, look at just last year, when gasoline demand increased about a billion gallons, ethanol production and use in this country increased well more than a billion gallons. We satisfied about 110, 115 percent of our increase in gasoline consumption last year. That is gasoline that we don't have to import. That is helping to break that addiction to oil already.

The U.S. ethanol industry already today is contributing significantly to this nation's energy and economic security. The five billion gallons of ethanol that were produced last year added $41 billion to gross output, created 160,000 jobs, contributed $2.7 billion in increased tax revenue to the Federal Government, and reduced oil imports by 170 million barrels, a value of some $11 billion. But the ethanol industry is continuing to grow. There are today 78 ethanol biorefineries under construction. That is steel on the ground, people on the site, the facilities going up, including, Mr. Chairman, five in the great state of Texas. Indeed, there are as many plants under construction in Texas as there are in Illinois. And plants are going up outside the traditional Midwest. There are plants under construction in Arizona, in New Mexico, in Idaho. There are plants in the Northeast, the Southeast. We are becoming a national production center as well, which is important to understand, as we look to some of these infrastructure issues.

Yes, today, ethanol is not shipped by pipeline. That is not, then, a hindrance at all to ethanol marketing, because we have created a virtual pipeline, not just by trucks. Most ethanol today is shipped

by rail and by barge, and we are able to get ethanol anywhere in the country where it needs to be, cheaper than if we were to put our product on a barge, send it down the river to Houston, where we would load it up on the pipeline, where then it would go. We can get there faster and quicker. And when you think about homeland security issues, the way that ethanol is distributed is probably a lot safer, and as the ethanol industry continues to grow in the way that it is all across the country, it will provide a great number of opportunities as well.

The point, though, is that the ethanol industry, which is today largely a blend component with gasoline, as we grow, we are going to saturate that blend market. We have a 140 billion gallon gasoline market in this country. We will saturate 10 percent ethanol blends in that market probably some time in 2008 or 2009. But we have got to grow beyond that. We are going to grow with new feedstocks as well, and once you have cellulosic ethanol production, and there is not an ethanol company that I represent that doesn't have a very aggressive cellulose to ethanol research program, the opportunities for ethanol are going to expand exponentially. We will need markets beyond just the additive market.

E–85 represents a tremendous opportunity, but that E–85 market is not yet mature. It is not yet there. There are some six million E–85 vehicles on the road today, and that is terrific, but there needs to be a lot more to encourage Mr. Eichberger's members to put in the infrastructure necessary to create the refueling infrastructure. The commitments by Ford and General Motors to produce as much as 50 percent of their vehicles as flexible fuel vehicles that could utilize E–85 by 2012 is terrific. That would get you about four million additional E–85 vehicles beginning in that year, perhaps as many as 35 total—35 million total on the road by 2017. It is a great start, but we need to do more than that. With a greater demand for E–85, the infrastructure will follow.

Bills like this, H.R. 547, that will allow that infrastructure to grow, and to understand the issues associated with that growth, will be a critical important step in finally breaking that addiction to oil, and again, I appreciate the opportunity to testify.

[The prepared statement of Mr. Dinneen follows:]

PREPARED STATEMENT OF BOB DINNEEN

Good afternoon, Mr. Chairman and Members of the Subcommittee. My name is Bob Dinneen and I am president of the Renewable Fuels Association, the national trade association representing the U.S. ethanol industry.

This is an important and timely hearing, and I am pleased to be here to discuss the growth in the domestic ethanol industry, and the increasingly important role of continued research and development of infrastructure for our nation's biofuels industry. The rapid growth of our domestic ethanol industry since the passage of the *Energy Policy Act of 2005* (EPAct) had led to the growth of ethanol's virtual pipeline. The continued expansion of the industry will require greater development of infrastructure in many areas around the country. Research into the feasibility of transporting ethanol by pipeline from the Midwest to the East and West coasts, such as the provisions outlined in H.R. 547, will also be important.

The ethanol industry today is on the cutting edge of technology, pursuing new processes, new energy sources and new feedstocks that will make tomorrow's ethanol industry unrecognizable from today's. Ethanol companies are already utilizing cold starch fermentation, corn fractionation, and corn oil extraction. Companies are pursuing more sustainable energy sources, including biomass gasification and methane digesters. And there is not an ethanol company represented by the RFA that does not have a cellulose-to-ethanol research program.

The Science and Technology Committee can have an important role in accelerating these efforts by promoting and targeting research and development funds appropriately. The U.S. ethanol industry has identified several areas where new research can advance the renewable energy agenda further:

- Increase utilization of co-products and development of new co-products;
- Development of harvesting equipment, and tools to streamline the transportation and storage of cellulose feedstocks;
- Improve energy efficiency and reduce energy consumption; and,
- Improve cellulose feedstock conversion technologies.

Support through research to build upon the industry's advancements in technologies will be critical to the future growth of the biofuels industry. Programs authorized by EPAct, such as the cellulose ethanol loan guarantee programs (Title XV and Title XVII) and biorefinery grant program (Section 932(d)), to accelerate the commercialization of cellulose ethanol must be fully funded.

Background

Today's ethanol industry consists of 111 biorefineries located in 19 different states with the capacity to process more than 1.8 billion bushels of grain into 5.4 billion gallons of high octane, clean burning motor fuel, and more than 12 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 an essential component of the U.S. motor fuel market. Today, ethanol is blended in more than 46 percent of the Nation's fuel, and is sold virtually from coast to coast and border to border. The almost five 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,[1] the approximately five billion gallons of ethanol produced in 2006 resulted in the following impacts:

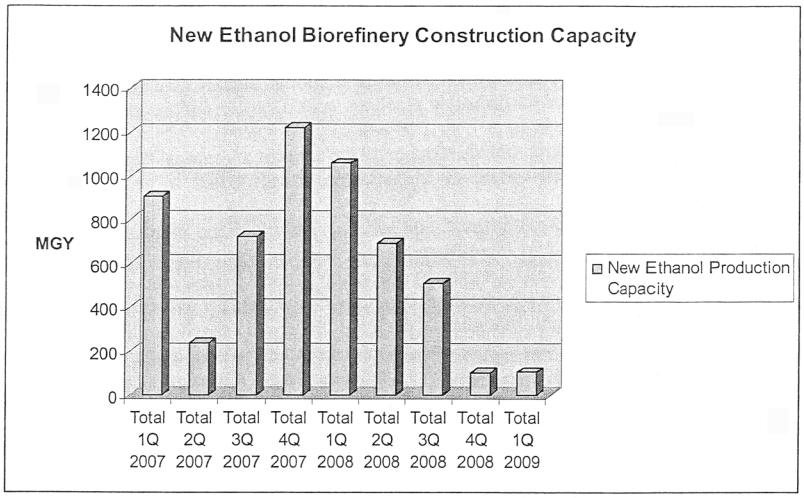
- Added $41.1 billion to gross output;
- Created 160,231 jobs in all sectors of the economy;
- Increased economic activity and new jobs from ethanol increased household income by $6.7 billion, money that flows directly into consumers' pockets;
- Contributed $2.7 billion of tax revenue for the Federal Government and $2.3 billion for State and local governments; and,
- Reduced oil imports by 170 million barrels of oil, valued at $11.2 billion.

In addition to providing a growing and reliable domestic market for American farmers, the ethanol industry also provides the opportunity for farmers to enjoy some of the value added to their commodity by further processing. Farmer-owned ethanol plants account for half of the U.S. fuel ethanol plants and almost 40 percent of industry capacity.

This dynamic and growing industry is also empowering more of America to have a vital role in our nation's infrastructure. If a farmer in Des Moines doesn't want to invest in the local co-op, he can choose to invest in a publicly traded ethanol company through the stock market. As can a school teacher in Boston, or a receptionist in Seattle. Americans coast-to-coast have the opportunity to invest in our domestic energy industry, and not just in ethanol, but biodiesel and bio-products. U.S. agriculture is evolving in very important ways, and rural America is primed to take advantage of these opportunities.

There are currently 78 biorefineries under construction. With seven existing biorefineries expanding, the industry expects more than six billion gallons of new production capacity to be in operation by the end of 2009. The following is our best estimate of when this new production will come online.

[1] *Contribution of the Ethanol Industry to the Economy of the United States,* Dr. John Urbanchuk, Director, LECG, LLC, December, 2006.



Infrastructure

The existing motor fuel pipeline system was built by the Federal Government to accommodate an oil and gas industry producing in the Gulf Coast. To utilize the existing pipeline system, ethanol producers would have to ship ethanol first to the Gulf Coast to load up on a pipeline. It would be much more cost effective to instead ship the ethanol directly to the markets that demand the fuel.

Thus, over the past several years, the ethanol industry has worked to expand a "Virtual Pipeline" through aggressive use of the rail system, barge and truck traffic. As a result, we can move product quickly to those areas where it is needed. Many ethanol plants have the capability to load unit trains of ethanol for shipment to ethanol terminals in key markets. Unit trains are quickly becoming the norm, not the exception, which was not the case just a few years ago. Railroad companies are working with our industry to develop infrastructure to meet future demand for ethanol. The biofuels industry is working closely with terminal operators and refiners to identify ethanol storage facilities and install blending equipment. We will continue to grow the necessary infrastructure to make sure that in any market we need to ship ethanol there is rail access at gasoline terminals, and that those terminals are able to take unit trains.

Incidentally, the existing oil and gas pipeline system itself is filled to near capacity today. The fact that ethanol does not have to be shipped on those pipelines, because the ethanol industry can get our product to the markets where it needs to go with the "Virtual Pipeline," means that consumers are able to get 10 percent more volume shipped to their area on existing pipelines that is helping to hold down the cost of gasoline.

That said, many stakeholders in the biofuels industry are beginning to look at the practical issues involved with shipping ethanol via a dedicated pipeline. Shipping ethanol in pipelines is done today in Brazil, and it has been done at times in the U.S. as well, in dedicated pipelines. If the marketplace demands it, as it does in Brazil, and there is enough ethanol demand to warrant the investment in the infrastructure for dedicated pipelines, such a system will develop in the U.S.

The Renewable Fuels Association has also supported the concept of regional "corridors" that concentrate the E–85 markets first where the infrastructure already exists.

Ethanol today is largely a blend component with gasoline, adding octane, displacing toxics and helping refiners 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. As rapidly as ethanol production is expanding, it is possible the industry will saturate the existing blend market before a meaningful E–85 market develops. In such a case, it would be most beneficial to allow refiners to blend ethanol in greater volumes, e.g., 15 or 20 percent. The

ethanol industry today is engaged in testing on higher blend levels of ethanol, beyond E–10. There is evidence to suggest that today's vehicle fleet could use higher blends. An initial round of testing is underway, and more test programs will be needed. Moving to higher blend levels with our current vehicle fleet would have a significant positive impact on the U.S. ethanol market, without needing to install new fuel pumps and wait for a vehicle fleet to turn over in the next few decades. It might also allow for a smoother transition to E–85 by growing the infrastructure more steadily.

Research & Development, Deployment and Commercialization of New Technologies

The Department of Energy's Advanced Energy Initiative has set a goal of making cellulosic ethanol costs competitive by 2012. Funding for additional research in cutting-edge methods of producing ethanol from corn stover, wheat straw, rice straw, wood chips and switch grass—to name just a few—will play a critical role in the Initiative's success or failure.

The most effective way to speed the commercialization of cellulose ethanol is to fully fund the programs enacted in the *Energy Policy Act of 2005* (EPAct) for research and development for cellulosic ethanol. The technology exists to process ethanol from cellulose feedstocks; however, commercialization of cellulosic ethanol remains a question of economics. The capital investment necessary to build cellulosic ethanol facilities remain about five times that of grain-based facilities. Those costs will, of course, come down once the first handful of cellulosic facilities are built, the bugs in those "first mover" facilities are worked out, and the technology continues to advance. The enzymes involved in the cellulosic ethanol process also remain a significant cost, as well. While there has been a tremendous amount of progress over the past few years to bring the cost of those enzymes down, it is still a significant cost relative to processing grain-based ethanol.

Increasing funding for such EPAct programs as the federal loan guarantee program for cellulose-based biorefineries, and the biorefinery grant program would do more to advance the commercialization of cellulose ethanol in a shorter period of time than to enact any of the cellulose-related legislation proposed since EPAct as enacted. Funding for EPAct programs like the bioenergy program for biofuels and bioproducts would encourage industry and university partnerships to develop price competitive biochemical and thermo chemical conversion technologies from lignocellulosic feedstock and enzyme-based processing systems.

As Flexible Fuel Vehicle (FFV) production is ramped up, it is important to encourage the use of the most efficient technologies. Some FFVs today experience a reduction in mileage when ethanol is used because of the differences in BTU content compared to gasoline. But the debt can be easily addressed through continued research and development. For example, General Motors has introduced a turbo-charged SAAB that experiences no reduction in fuel efficiency when E–85 is used. There is also technology being development that utilizes "variable compression ratio engines" that would adjust the compression ratio depending on the fuel used. Thus, if the car's computer system recognized E–85 was being used, it would adjust the compression ratio to take full advantage of ethanol's properties. This technology could dramatically improve E–85 economics by eliminating or substantially reducing the mileage penalty associated with existing FFV technology.

Conclusion

The 109th Congress enacted several polices that clearly put our nation on a new path toward greater energy diversity and national security. Additional and more focused research and development programs, and increased funding levels for EPAct 2005 programs, will be critical to the rapid deployment and commercialization of new technologies for biofuels. Infrastructure will need to continue to expand and advance as the biofuels market does. The continued commitment of this committee, the introduction of legislation such as H.R. 547, and the 110th Congress will all contribute to ensuring America's future energy security.

Thank you.

BIOGRAPHY FOR BOB DINNEEN

Bob Dinneen is the President and CEO of the Renewable Fuels Association (RFA), the national trade association for the U.S. ethanol industry. As such, he is the ethanol industry's lead lobbyist before the Congress and Administration.

Mr. Dinneen joined the RFA in 1988 as Legislative Director, and became President in July of 2001. In this capacity he has led the Association's effort to build coalitions with the industry's petroleum customers as well as transportation and envi-

ronmental groups in order to provide for marketplace growth for the industry. These coalitions have resulted in an historic Renewable Fuels Standard (RFS) fuels agreement and passage of the Volumetric Ethanol Excise Tax Credit (VEETC).

Mr. Dinneen has presented testimony before the Congress and federal agencies on numerous occasions, and represented the ethanol industry's interests at State, national and international forums.

Prior to joining the RFA, Mr. Dinneen worked on Capitol Hill for various Members of Congress and Congressional Committees. Mr. Dinneen graduated from the Catholic University of America with a Bachelor's Degree in Political Science.

DISCUSSION

Chairman LAMPSON. Thank you very much, all of you, for coming. It is a tremendously interesting subject, and one that hopefully we will be able to move quickly enough to make a difference for all of us.

ETHANOL TRANSPORTATION COSTS

Let me start with the questioning at this time, and I would like to first ask Mr. Dinneen, you mentioned that because ethanol can't be shipped by standard pipeline like conventional fuels, the industry is developing a virtual pipeline that consists of rail, barge, and truck shipping, which is considerably more expensive.

What proportion of the market price for ethanol is attributable to transportation and distribution, and how does this compare to traditional fuels?

Mr. DINNEEN. Well, Mr. Chairman, I am not sure I would agree with a couple premises to the question.

First of all, it is true ethanol is not shipped by pipeline today, but it is not true that it cannot be shipped by pipeline. Ethanol is shipped all over Brazil via pipeline, in multiple product pipelines. It has been shipped in this country as well in dedicated pipelines, and will be again, if the marketplace demands it. In Brazil, 40 percent of their motor fuel is ethanol, so there is a tremendous need for pipeline shipments. In this country, while five billion gallons of ethanol produced last year is a tremendous amount, it is still less than three percent of the total motor fuels in this country, and so, there really isn't a marketplace pull for, or the necessity for pipeline shipments.

But we have created, as you say, the virtual pipeline. The cost is maybe $0.14 to get ethanol from the Midwest to either coast, but the cost of shipping that same product via pipeline would be darn close to that anyway. So, there really isn't an increased cost associated with that, and the marketplace would figure those issues out. The real issue is, is the market going to develop such that a pipeline is necessary. There have been bills that have been introduced to study that issue, and determine whether or not it would make sense, but quite frankly, if you have got significant ethanol production in all regions of the country, which it looks like you are going to have, because there are plants in the Northeast, there are plants in the Northwest, then you may have the product close enough to the markets, where significant pipelines aren't really going to be practical.

But I think there are a number of issues you need to look at.

Chairman LAMPSON. Okay. We are trying to—at this point, you can't really say, or project a specific savings by doing the research

necessary to get to a point where we can use those pipelines. Correct?

Mr. DINNEEN. Correct.

Chairman LAMPSON. Okay. You also mentioned unit trains in your testimony. Does ethanol require specialized or dedicated train cars, trucks and barges dedicated only to that?

Mr. DINNEEN. No. Any chemical tank can accommodate fuel ethanol.

Chairman LAMPSON. Okay. What is the industry-wide cost estimate for producing or procuring this type of virtual pipeline, and why is this more cost-effective than a conventional pipeline system?

Mr. DINNEEN. As I said, I mean the marketplace, I think, is going to develop, as we see, where the production is, and maybe an actual pipeline will be useful. But if you have got plants located all across the country, where is the pipeline going to be, and how do you get it onto the pipeline? It is not the situation you have got with the oil industry, where you have concentration in the Gulf Coast, and you know, ready access to the pipeline system.

It may be that over time, when you are talking about 30, 40, 50, 60 billion gallons of ethanol, that a pipeline will, indeed, make sense, but I am not sure that that is clear at this point.

Chairman LAMPSON. Thank you.

CURRENT SUBSIDIES AND TAX INCENTIVES

Mr. Eichberger, there are currently some 150,000 fuel retailers in the U.S., with approximately 1,000, or less than one percent selling E–85. How effective are current subsidies and tax incentives in helping retailers transition to alternative fuels, and what are the shortcomings?

Mr. EICHBERGER. The current subsidies are helpful. A lot of our retailers who have installed the E–85 have done so with the help of the tax credits that are in the system right now. Anything that is going to help offset the cost of installation is going to be helpful. However, as I mentioned in my testimony, there are so many other factors involved, and Mr. Dinneen mentioned what is the level of demand? How many vehicles can run on these—on this fuel, and how many drivers of those vehicles know they can?

There are other bills that have been considered in Congress, to take CAFE credits, and make those into some sort of grant program through the Clean Cities Initiative. We have been supportive of those as well. This legislation, I think, if successful, will make all those incentive programs, perhaps, obsolete. If we can get to a point where E–85 and B–100 and other alternative fuels can be put directly into the existing storage tank infrastructure without the costly renovations, you are going to remove that barrier to entry. And then, we are going to be dealing with the market-based forces, demand, supply, and cost competitiveness.

BIODIESEL FUEL QUALITY CONCERNS

Chairman LAMPSON. One of the things that I have been looking at and trying to consider within the language of this particular bill has to do with no sulfur biodiesel. Is that adequately addressed

within the language of this bill, because most of it speaks to Ultra-Low or Low Sulfur Diesel, which is petrodiesel?

Anybody there.

Mr. EICHBERGER. I don't have an answer for that.

Mr. KASSEL. The biodiesel that is being sold, whether it is in a low blend, a B–2 or B–5, or a higher blend, B–20, still, in each case, it is being sold in a setting where the bulk of the fuel is convention diesel. So, it is the sulfur level of that piece of it, that 80 to 98 percent, that is really critical, if the goal is to make sure the package of the blended fuel is low enough in sulfur to be compatible with the new emission controls.

I think the bigger issue that has come up on this issue of biodiesel and sulfur levels, and the new technologies and the new standards, is the extent to which the blended biodiesel itself is creating other issues that may, I am not going to say impair, but perhaps create challenges, or—for some of the new technologies. Some of the engine companies have been saying that they are concerned about warranty issues with biodiesel blends that are over, say, a B–20. Now, if you had a full 100 percent biodiesel fuel, the sulfur level would have to be low enough that there would be other fuel quality issues that would come about. It is not particularly a big issue. Nobody is running B–100 in any significant way, and I don't think anybody is projecting it, although I have a feeling Mr. Dinneen will correct me if I am wrong about that.

But I think the big issue here is that I don't think sulfur, per se, is an issue going forward for biofuel, for biodiesel.

Chairman LAMPSON. Okay.

Mr. DINNEEN. The Renewable Fuels Association represents ethanol producers, so biodiesel is not in my wheelhouse. However, I am unaware that there is any sulfur content whatsoever in biodiesel, and in fact, one of the reasons biodiesel is being used in blends today is to help refiners meet the Low Sulfur Diesel requirements, so I think if you move forward, and you create additional opportunities for biodiesel, it will have a benefit in terms of sulfur.

Chairman LAMPSON. Hence my question. And I yield, now, to Mr. Inglis.

ETHANOL INFRASTRUCTURE CONCERNS

Mr. INGLIS. Thank you, Mr. Chairman.

Tell me, what is it that makes ethanol tough on equipment?

Mr. DINNEEN. Congressman, I don't think the ethanol used today, in 10 percent blends, there are no technical issues, fully warranted by all auto manufacturers. It is—the infrastructure is there. There are some questions about if you move to higher level blends, E–85, whether or not there are some corrosive issues there, because of the alcohol. However, I should note that there are 1,000 E–85 pumps across the country, many of which have been there for, have been out there for close to ten years or more now, and there has never once been an incident of failure. And while Underwriters Laboratories has recently indicated that it wants to certify those pumps, and do some research to do so, it has been clear that it—they have not heard of any incidences.

So, we are confident that E–85 will be compatible with the existing infrastructure, and we are working with UL and other stake-

holders to get them the comfort level that they need to again certify those pumps. The manufacturers of the pumps themselves are willing to certify each of the individual components of the pumps, but they just want UL to certify that also.

Mr. EICHBERGER. Clearly, there is an interest in getting the E–85 dispensers certified by UL. Retailers across the Nation who want to do E–85 need to have that for liability reasons. Some of the concerns with higher concentrations of ethanol are its corrosive properties. Metal can corrode, and when they corrode, they can spring leaks. That is why so much equipment has to be replaced when you are converting to a new system. If your equipment has not been certified as compatible, you run the risk of corrosion, or nonmetal items possibly degrading and cracking and swelling, and losing your fittings, and that is the issue.

Mr. INGLIS. Because there is something more—maybe Mr. Bartlett can explain this to me later—is why it is that ethanol is more corrosive. There is something about it, I guess, that is more corrosive than gasoline. When is it mixed? Right now, it is by barge and by whatever, but when does it actually get mixed? At the terminal?

Mr. DINNEEN. It is blended with gasoline at the gasoline terminal, so for this area, for example, the—Newington is the gasoline terminal that services virtually all of the Washington metropolitan area, and there will be tanks filled with gasoline. There will be a tank with ethanol there as well. A truck will pull up, and if he wants to blend—if he is going to an Exxon station or a Shell station, he puts in a card, and if it is going to be ethanol blended, as it would be in this area, he is drawing fuel from both tanks, and in inline blending systems, the truck is then filled at that point, and the blending occurs at that point.

Mr. INGLIS. So, the gasoline comes to the terminal by pipeline, and the ethanol comes by truck or barge, or some way to get there.

Mr. DINNEEN. Yes.

FUEL ADDITIVES

Mr. INGLIS. And when—we are now requiring this as an additive, right? We have replaced MBE, is it? Help me remember what we did there?

Mr. EICHBERGER. With the reform of the gasoline program, which is required in the most polluted cities, you have to use—prior to the Energy Bill, you had to use a two percent weight of oxygen. That could be accomplished by using methyl tertiary butyl ether, MTBE, or ethanol. The majority of the Nation used MTBE, because it could be blended at the refinery, was cheaper for the refiners to obtain, because they produced it, shipped in the pipeline directly to retail.

With the Energy Bill and the elimination of the oxygen requirement, and the liability concerns associated with MTBE, the refining industry decided they are not going to use MTBE any more and switched to ethanol. Now, that there was a major transition, and now almost every gallon of RFG in the Nation has a 5.7 percent, I think, Bob, of ethanol in it.

Now, there is the opportunity to start producing a non-oxygenated RFG, but that is still pretty much in its infancy. So, that was the issue of the transition there.

Mr. INGLIS. And so, this travels through the pipeline with that level of ethanol in it, right?

Mr. EICHBERGER. No.

Mr. INGLIS. No?

Mr. EICHBERGER. Even with RFG, it is blended at the terminal.

Mr. INGLIS. Okay. So——

Mr. EICHBERGER. All ethanol is shipped via rail, barge, or truck.

Mr. INGLIS. And as to the Ultra-Low Sulfur Diesel, as I understand it, that would pass through the same pipeline that, say, gasoline and Jet A is passing through, right?

Mr. EICHBERGER. Right.

Mr. INGLIS. And that—help me understand. I think I know that you put this thing called a pig, right, in there, then you push—it separates the product?

Mr. EICHBERGER. Not necessarily. Actually, the products are butted up against each other just through viscosity barriers. So, you will have gasoline and diesel, jet fuel, right up against each other. Because the pipelines change size throughout the system, you can't necessarily put a pig in there. Some places you can, but traditionally we are not using pigs. When they are butted up against each other, and they come in the terminal for—offloaded from the pipeline, certain cuts are made, what is called transmix, where the two products have been blended together, that is pulled out and put into whichever fuel is allowed to accept it, and that is how it is distributed.

So, the reason there was so much concern about contamination of ULSD going through the pipeline is you have jet fuel going through, with about 3,000 parts per million sulfur. How do you sequence the product in the pipeline to make sure that Ultra-Low Sulfur Diesel is protected? We have been very successful, and that has happened. ULSD has come through the pipeline with very little contamination, and when it gets down to retail, we have a pretty good shot of getting clean product.

Mr. INGLIS. Mr. Chairman.

Chairman LAMPSON. Thank you very much. I will yield five minutes to the gentlelady from California, Ms. Woolsey.

ETHANOL SOURCE CONCERNS

Ms. WOOLSEY. Thank you, Mr. Chairman.

In my district, the demand for ethanol has resulted in a scarcity and a dramatic rise in the price of corn, which has had quite an effect, a huge effect, actually, on the local family dairies in my area. They can't afford feed, I mean, and they are really feeling it.

So, Mr. Dinneen, ethanol can't be the only advanced fuel technology, so what other fuels are we looking at that you would project will be in our future?

Mr. DINNEEN. Well, two comments. I think first of all, with respect to the price of corn, the marketplace just recently got the signal to dramatically expand corn acres, and I believe that most analysts expect eight to ten million acres planted in corn this year, which will have a beneficial impact on corn prices.

When you produce ethanol from grain today, we are only using the starch, and what is left behind is a very high value, high protein feed grain that is then used for dairy markets, poultry mar-

kets, and other feed uses. But the industry certainly understands that we can't grow to the levels that people want us to grow, and that we want to grow, on grain alone. And indeed, that is why we are working so hard on cellulosic ethanol technologies. There, as I indicated, there is not an ethanol plant that I represent that doesn't have a very aggressive cellulose to ethanol research program, because they already have cellulose coming into the plant, and indeed, there will be pilot plants opening up shortly, that will be producing ethanol from a variety of different feedstocks, and if the Energy Bill's loan guarantee programs are authorized and appropriated in this continuing resolution, I think you will see a couple of companies begin to construct commercial scale cellulosic ethanol plants. We are on the cusp of seeing that technology commercialized, and it is a very exciting time in the industry.

Ms. WOOLSEY. Well, thank you for that, and so, then, Mr. Eichberger, as we, the markets grow, and regions specialize in different crops, cellulosic, grains, sugar, for ethanol production, as an automobile drives across the country and fills their tank, will every tank be able to take any one of these kinds of fuels? I mean, or will——

Mr. EICHBERGER. If it is used as an additive to the gasoline, yes. Ethanol is ethanol is ethanol. If you are talking about higher concentrations like E–85, no. Only flexible fuel vehicles, specially formulated, can run on that product. But if a typical gasoline—car is running across the Nation, they can fill up anywhere they want with regard—without concern whether or not it is a corn-fed ethanol, cellulosic ethanol, or sugar.

Ms. WOOLSEY. Mr. Kassel, you looked like you wanted to respond to that.

Mr. KASSEL. I did. I wanted to make two brief points. One is with respect to the corn question that you raised. I think it—there is an analogy that I think is useful, and that what has to happen in the ethanol, and more broadly, biofuels world is analogous to what happened in the food production world roughly 100 years ago.

Because of Kellogg and C.W. Post and others, they were able to dramatically increase the yield per acre. You know that, I am sure, from your farming constituents.

Ms. WOOLSEY. I thought you were going to say because I am that old that I remember it.

Mr. KASSEL. No, no, absolutely not. Absolutely not. But a similar phenomenon has to happen, and is starting to happen, in the biofuels world, where the research is going into cellulosic ethanol, and how to increase the crop yields, and to use more of the plant, so we can use the full plant, the nonfood part of the plant. Because ultimately, if we are going to meet the goals, 35 billion gallons a year, that were laid out in the State of the Union last week, or other very aggressive goals to wean ourselves off oil, and to curb global warming pollution, we have to be able to provide biofuels in a way that is environmentally sustainable. We don't want to replace concerns about petroleum with concerns about how we are using land. Are we taking product from the food chain and putting it into the fuel chain? Are we taking—is the Amazon rainforest becoming biofuels? We don't want any of that to happen. That is why

the type of research that Mr. Dinneen is talking about is so important, and I think it is so exciting as well.

The second point that I wanted to make goes to the driver in a few years driving across country. If Congress and the President put into place an energy savings and global warming package that really gets us off our current pathway, and there are different proposals going around, of course, to start to do that, and if we merge that into what is coming out of Detroit and Japan, Germany, and the other car producing countries, we can start to see a future where people are driving different kind of cars based on what their needs are, and there will be people who drive long distances on the highway, they have a 70 mile commute on an interstate to get to work, and they will choose a very clean, high efficiency diesel car. Somebody else, who drives in the urban setting, stop and go driving, who is also concerned about fuel prices, is also concerned about global warming, will choose a hybrid. Somebody else will choose a flexible fuel vehicle, and they will be driving with E–85, and I think if we forecast out 10 or 15 years from now, it will be like other consumer products that we use, that there will be much more of a mix, much more of a marriage, if I may, between the type of driving we are doing and the type of car and fuel we are choosing, and that will create synergies that will address the different issues that you have raised, and that are really—underlie why this bill makes sense.

Chairman LAMPSON. Thank you very much. The gentlelady's time has expired. My friend from Texas, Ralph Hall from Rockwall, the Ranking Member on the Science Committee. Five minutes.

EPA INVOLVEMENT

Mr. HALL. I thank you, Mr. Lampson. And I am sorry I haven't been here to hear your testimony. I have read it, or had some of it read to me. I—Mr. Kassel, I want to ask you something about—you have recommended, I understand, that H.R. 547 be amended to include the Environmental Protection Agency as part of the programs in the bill, and other representations in conjunction with that. And I would ask some other information from Mr. Dinneen and Mr. Eichberger, but before I do, let me just say to you and to the Chairman, Chairman Lampson, with whom I have known a long, long time, and worked with him before. We were both Democrats together a long time ago, and I have high regard for him, and I have high regard for Bart Gordon, and for the Members that are in the majority today, and it is their bill, and I am a co-sponsor on it, and I think Mr. Inglis is also a co-sponsor on it. So, this bill has—is going to pass, and—but as you know, the bill before us today was included in H.R. 6203, which was Representative Judy Biggert's bill. It was passed by the House last Congress by a voice vote under suspension of the rules. Now, H.R. 6203 contained a lot of provisions that we really wanted in this bill, but this is Mr. Gordon's bill, and this is Mr. Lampson's bill, and they are in control of this committee, and they are in control of the House, and it is good legislation, but—and we didn't insist, and I didn't come up here with a bunch of amendments to send up to cause them to vote no on some things that they really would want to vote yes on, but they don't want to slow this bill down. And I am not going to be

a part of slowing the bill down, because I am for the bill. I want it to get out, get through the House, get to the Senate, and get to the President, who will sign it.

But we—it contained provisions to promote research and development in areas such as biofuels, hydrogen, solar, wind, plug-in hybrids, energy efficient buildings, and coal gasification, and we think all these things were good, and the same people on the other side of the docket were on those bills, too. And I am just hoping, Mr. Chairman, that later, as we can put those bills together, we can work together to pick these things up, and pass them, too.

I understand, at the end of the Hundred Hours, that you want to get a bill, and you want to get it to the Floor, get it passed, without being burdened down with a bunch of amendments, and we are not sending those up just to make somebody look bad, or make them vote on them. We are hoping that this committee is successful, and we hope Bart Gordon is successful, because he is a decent guy, and a good leader. And our purpose is going to be to pass legislation, not to get even with anybody.

As the Ranking Member for the Republican Party, I want to make that statement, and I think it is something that we can all live with later on down the road.

So, my question to Mr. Dinneen and Mr. Eichberger, is if the EPA should be included in H.R. 547, and is there an amendment to that effect? None. Tell me about your reason for wanting to include it. Are you in the same position I am in, that it is also good, and would be good in this, but you are not asking them to slow the bill down? You want it to whistle on through.

Mr. KASSEL. We don't want to slow this bill down. We think it is important to do the kind of research and development that is in this bill. We just offer that suggestion as a way to make it a smoother implementation going forward. EPA is the agency which is responsible under the *Clean Air Act* and the *Energy Policy Act of 2005* with implementing the key regulations that govern the way fuel is moved through the system, whether it is Ultra-Low Sulfur Diesel fuel or the renewable fuel standard that EPA will finalize fairly soon.

I understand that there is an intention across the board that people hope that DOE and NIST will collaborate with EPA, and that is great. If that can be memorialized in the bill, that is even better. But we certainly don't want to slow it down, and so, I hope that this suggestion won't slow it down.

Mr. HALL. And the R&D proposals that I set forth, that were in the other bill, supported by the present Chairman and Chairman of this subcommittee, are good legislation for the future.

Mr. KASSEL. Well, I will be honest and say and admit that I don't remember the specifics of H.R. 6203, and exactly what was in it, but certainly NRDC is extremely involved in advancing policies that increase the use of wind, solar, and other forms of alternative, and we would be happy to take a look at——

Mr. HALL. Well, let me quickly ask Mr. Dinneen and Mr. Eichberger. My time has expired, so on expired time, could you give me a short answer as to your opinion of the proposal that I have made?

Mr. EICHBERGER. Mr. Hall, I mean, our focus on the bill is can the research be successful to provide these bridges for retailers, and if the EPA is involved, we have no problem with that?

Mr. DINNEEN. Yes and yes.

Mr. HALL. I yield back my time. Thank you, Mr. Chairman.

Chairman LAMPSON. Thank you, Mr. Hall. Next, we have five minutes from Mr. McNerney from California.

ULTRA-LOW SULFUR DIESEL COSTS

Mr. MCNERNEY. I need to learn how to use a microphone, with the assistance of Lynn Woolsey. Thank you, Mr. Chairman.

I think this is a really great first step, H.R. 547. In my district, we have a particular problem with diesel pollution, and so, I am really thrilled to see us move to the Ultra-Low Sulfur Diesel, and I am concerned about the mixing of diesel with—Low Sulfur Diesel with higher forms of diesel, particularly in our area, but you have sort of addressed those questions already. And I am wondering, what are we going to see in terms of cost effect for the consumer for the Ultra-Low Sulfur Diesel in the long run, as opposed to the higher forms of diesel?

Mr. KASSEL. Right now, the incremental cost is running a little higher than expected, comparing to—there was a report that just came out in the last week or so, that did a comparison of Ultra-Low Sulfur Diesel compared to, say, regular gasoline. I suppose the authors of that report were looking at a future car market that would be bifurcated between gasoline and diesel, showed about a $0.20 to $0.30 gap between regular diesel and Ultra-Low Sulfur Diesel. Now, I don't know that that is really the right comparison, because it is a little bit of apples and oranges.

When the rule was first promulgated by EPA, they suggested a cost increment of about $0.04 to $0.05 a gallon between standard 500 part per million sulfur and Ultra-Low Sulfur Diesel, and over time, my guess is that is probably about right. We will see.

You know, when you look at fuel prices, the incremental costs of the desulfurization is a small piece. The real issue is the price of a barrel of oil and the refinery margins. Those are the two big pieces. The ultra-low sulfur component is going to be relatively small.

DIESEL PERFORMANCE

Mr. MCNERNEY. Well, the high performance diesels are an improvement, both in terms of emissions and in terms of performance. They get more, maybe 30 percent more performance per gallon than gasoline. So, do you see this as something that is going to incentivize private vehicles to be using diesel technology, diesel fuels?

Mr. KASSEL. Absolutely. There is no question about it. The—if you had a chance to go to the Washington Auto Show last week, there were car companies that were—many car companies pushing and pushing their diesel vehicles. Daimler had a huge announcement, where they announced that they had the first pickup truck that was going to meet not the 2007 pollution standards, but the

2010 standards already. So, the question of can you make a diesel clean has now been answered definitively, and the answer is yes.

So, then the question is will people buy a diesel car? And I think the answer to that is that for the driver who is concerned about fuel prices, and who wants to do what they can ahead of time, when they buy their car, to reduce the hit of higher fuel prices in the future, they are going to look at these diesel cars. They are also going to look at hybrids. They are going to look at a range of vehicles. And that is all good news. We are really entering a new era of cleaner cars, more fuel efficient cars, and I think that is all for the good.

Mr. EICHBERGER. Congressman, the auto industry was strongly behind the Ultra-Low Sulfur Diesel regulations, in support of it from the beginning, and one of the theories is, I mean, if you get higher fuel economy with a diesel engine, and you start putting that into your fleet, you have just improved your ability to comply with CAFE standards, so I would suspect that as ULSD becomes more prevalent, and all the kinks are worked out, you are going to see a lot more automakers start to turn towards diesel engines for their passenger vehicles.

Mr. MCNERNEY. One other question is, and I don't understand this very clearly, is the relation between Ultra-Low Sulfur Diesel and biodiesel. Are they mixable with any problems, or what are the sort of issues that we are looking at in that——

Mr. EICHBERGER. For the most part, there aren't too many issues, as long as the biodiesel is ultra-low sulfur as well. There were some early concerns, when I spoke to the Bio Board a couple years ago, that some used food oils, that if there were onions in there, you may have some trace sulfur level in there, so that was an early concern, but in terms of compatibility, as long as they are both ultra-low sulfur, you shouldn't have a problem.

There are some concerns with high concentrations of biodiesel in colder climates that you can get a gelling effect in the product. What has happened is during those colder months, the suppliers of biodiesel at the retail level have just reduced the percentage of biodiesel as a component of diesel fuel that they are selling.

Mr. MCNERNEY. Thank you. Are there any other issues regarding diesel, promoting diesel in this bill, that we should be aware of, or amendments that you would recommend?

Mr. EICHBERGER. I don't know of any amendments I would recommend. I would comment that Mr. Kassel earlier commented that 90 percent of the fuel, diesel fuel, is Ultra-Low Sulfur Diesel. And just to clarify, that is 90 percent of the diesel fuel being produced at the refinery is Ultra-Low Sulfur Diesel. As I mentioned earlier, when it goes to the pipeline, and you start cutting batches, you do have some downgrading, so not all of the Ultra-Low Sulfur Diesel being produced is making it to retail, which is causing some slow—a little bit of slowness, in terms of the conversion of some retail locations.

Mr. MCNERNEY. I yield.

Chairman LAMPSON. Thank you very much, Mr. McNerney, and now, Mr. Roscoe Bartlett from Maryland. Five minutes.

Mr. BARTLETT. Thank you very much.

Chairman LAMPSON. I should have said Dr. Bartlett, excuse me.

Mr. BARTLETT. Sir?

Chairman LAMPSON. I should have said Dr. Bartlett. Pardon me.

MORE ETHANOL PRODUCTION CONCERNS

Mr. BARTLETT. There are obviously three reasons for being interested in alternatives. One is the environment, which has been a major focus here. A second is the national security interest. We are getting far too much of our fuels from, as the President says, from people who don't even like us. And the third one, which I think is the most dominant one, that is, that the oil just may not be here, if you believe in peak oil.

Anybody who has listened to any of my 21, now, full hour speeches on the floor of the Congress knows that there is no bigger supporter of alternatives in the country than Roscoe Bartlett, but just a word of caution, please. We need to be realistic, or we will lose the American people. My colleague, who was my Ranking Member when I chaired this subcommittee several Congresses ago, Ms. Woolsey, mentioned that corn had gone up. From September to December, it almost doubled in price, and then, as you said, gee, that is an easy fix, we will just plant more acres of corn. Sir, all the land that should be planted in corn is now planted in corn. And what is going to happen is that land is going to be taken out of agricultural preserve, and it is going to be farmed, and corn is one of the greediest crops we have. It is the one of the worst for erosion. It is certainly one of the worst for sucking up nutrients out of the soil, and for the relatively small impact we have on the environment, because each gallon of ethanol, if you are really good, each gallon of ethanol will represent at least three-fourths of a gallon of fossil fuel in producing it—said it represents more than a gallon of fossil fuel in producing it. But let us say that you can be good enough to have only three-fourths of a gallon, which means that the small improvement you get in air quality may be overridden by the big decrement you are going to have in land, because if you plant more acres in corn, you have more acres in corn, it is going to be land that shouldn't be farmed, that is now not being farmed, because of agricultural preserve, and you are going to have a lot of erosion.

I took your numbers, sir, five billion barrels of ethanol, gallons of ethanol last year, and 170—that saved 170 million barrels of oil. So, I multiplied the 170 million barrels of oil by 42 gallons per barrel, and I got seven billion. How in the heck can five billion gallons of ethanol save seven billion gallons of oil? It can't, of course. And the reality is that—the reality is even if you had those figures in sync, that each gallon of ethanol saves only three-fourths of a gallon of fossil fuel. You are really recycling fossil fuels, in large measure, when you are burning ethanol, are you not?

See, my—I am a huge fan of renewables, but we have got to be honest with the American people. We face a really, really big crisis here, a big challenge, and this bill doesn't even—I am going to vote for it, because it is a little better than nothing, but it doesn't even nibble at the margins of the problem. You are going to get a relatively small improvement in air quality at a big decrement in land quality, if you plant more of our land in corn. And by the way, almost half the energy in producing a bushel of corn comes from the

natural gas. An enormously important feedstock for a big petrochemical industry, and all of our nitrogen fertilizer today comes from natural gas, and almost half of the energy that goes into producing corn comes from the natural gas.

I just want to be realistic with the American people. Making more ethanol is not going to solve our problem. We are not Brazil, thank you. They have far fewer cars. They have sugar cane, which is a better harvester of sunlight than we. We brag that we have a very efficient agriculture, because one man sits on a 150 horsepower tractor and feeds 50 people here and a bunch of others around the world. In terms of energy in, and energy out, we may have one of the least efficient agricultures in the world, because we have an incredible amount of energy that goes in, for some crops, ten calories in and one calorie out. It is better than that for corn, thank goodness. But if you look at all the energy constraint, don't you think that the American people will support us better if we were really honest with them?

Mr. DINNEEN. Congressman, I agree with you, and I think we have been honest with the American people.

Mr. BARTLETT. You know, a couple of you guys were just not honest. You do not save 170 million barrels of oil with five billion gallons of ethanol. It is silly.

Mr. DINNEEN. I will get to the analysis, and we can go through the numbers.

Mr. BARTLETT. You don't save even a fourth of that, sir.

Mr. DINNEEN. Congressman, I will go through the numbers with you, with the economist that did that analysis. And we will see where the differences——

Mr. BARTLETT. The economist did not count costs that he didn't know, I suspect. Go ahead.

Mr. DINNEEN. The point is, Congressman, I think the fact of the matter is, we have never told the American people that ethanol is the answer. It is part of the answer, and we need to do a lot more. We have not said that ethanol can replace all of gasoline. We have not said that you are going to use all of the Nation's corn crop to produce ethanol. We have said that there are limitations to what you can produce from grain. According to the National Corn Growers, they think you can get as much as 15 billion gallons. Beyond that, you would have a detrimental impact on feed prices, and they don't want to go there, and neither does our industry. That is why our industry is working so hard on a range of technologies, new processes and new feedstocks.

And I think the great thing about what is happening today, Congressman, is that you get a lot of new capital coming into the industry, and a lot of new intellectual capital coming into the industry. And the industry is going to be unrecognizable five years from now. Congressman, there are plants that are looking at biomass gasification to run those facilities. That would certainly improve the energy balance numbers. You have companies in Texas that are locating the ethanol facilities at feedlots, that are feeding the distillers dried grains directly to the cattle on the lot, capturing the methane from the feedlot to run the facility, and it is a very integrated process. That is the future of this industry. And it is not just grain, it is not just today's technology, but if you aren't doing

everything that you possibly can to make sure that there are markets for these alternative fuels, you are not going to get a future where you have got cellulosic ethanol, and you have got more sustainable processes.

I mean, nobody here has done more than you, Congressman, and I commend you for all that you have done to raise awareness about the dangers of our dependence on imported oil, and the risks that we, as a nation, face when we are looking at peak oil. I am not sure I have seen all 21, but I have seen, you know, 15 or 16 of them.

Mr. BARTLETT. Thank you.

Mr. DINNEEN. And they are not just entertaining, they are educational. And I try to get my teenagers to come and sit down, and say look at this guy. He is talking about the future. We are part of the future. We are not the entire answer, but we are part of it.

Mr. BARTLETT. A second round, Mr. Chairman.

Chairman LAMPSON. We will talk about it in a minute. Thank you both. Mr. Diaz-Balart from Florida, five minutes.

ETHANOL INFRASTRUCTURE AND ENVIRONMENTAL IMPACTS IN BRAZIL

Mr. DIAZ-BALART. Thank you very much, Mr. Chairman. A very, very interesting hearing.

A little while ago, somebody mentioned Brazil as a country. They use sugar, is that correct?

Mr. DINNEEN. Correct.

Mr. DIAZ-BALART. As their energy. Can you give me an idea of what are some of the environmental issues that Brazil has found that—with creating ethanol from sugar, number one, and number two is, are those issues that can be dealt with here, and number two is, where are we as far as cost, for developing ethanol from sugar in the United States versus corn, and is that something that could, as the market progresses, could improve—could progress to help solve the issue of some of the things that we have heard about corn?

Mr. DINNEEN. Brazil has built a tremendous ethanol industry through 30 years of tax incentives, government mandates, infrastructure, development, tariffs, and a range of—debt forgiveness, a range of programs. And I say that, commending them, because they have made a real investment in their ethanol industry, and today, a combination of ethanol production and increased oil production, Brazil is energy independent, and I think that that is terrific.

We can't replicate the Brazilian model here for a whole host of reasons, some of them having to do with our labor market, some of them having to do with our climate, some of them having to do with our population and our industry. But I think it is a model to look at to see what can be done, in terms—if there is real commitment to renewable fuels, and to alternative fuels. There are environmental consequences from Brazilian production. They don't have the emissions control at the plant that we have. They don't have the kind of controls that EPA places on our facilities, and those might be some issues. They don't have some of the labor standards that we certainly have, and—but I say that in terms of what is going on at the plant. In terms of emissions at the—when used as a fuel, their experience is going to be the same as ours,

because as Mr. Eichberger said, ethanol is ethanol is ethanol, no matter the feedstock, and ethanol is going to help reduce emissions by the vehicles.

Brazil has built a heck of an industry, in part, because they have incentivized consumers to purchase flexible fuel vehicles. And about 50 percent of the vehicles in Brazil today are flexible fuel vehicles that can run on E–85. The other 50 percent of those vehicles are running on a blend of between 20 and 25 percent ethanol, a level that changes, and the government sets it, but it has been a very successful model.

Mr. KASSEL. Yeah, if I can just add a couple of thoughts. I think what we can learn from the Brazilian experience is two things. First of all, setting a goal for energy independence is something that is achievable, if the country actually gets to work to actually do it. And they set that goal, and the combination of their domestic production and their ethanol production has allowed them to achieve it. It didn't happen overnight, but it did happen.

Second, the thing that we can learn from the Brazilian experience is the importance of the infrastructure. If you go to a service station in San Paulo, you see gasoline and you see ethanol. You also see diesel. But you see the gasoline, you see the ethanol. Consumers make a choice if they have the flex fuel vehicle, based on the price. Which one are they going to buy today? And the prices fluctuate, and the consumption patterns fluctuate, but the key thing is that the infrastructure is there. So, we can sell all the E–85 vehicles we want, but if there is not E–85 tanks at the service stations, then we are not going to be able to maximize what we can do with ethanol.

I think there are two things, though, that we can also learn from Brazil that are not so good. The first is the land use and forestry issues. Now, the first time I looked at the Brazilian situation, somebody said to me, oh, there is no rainforest issue there. There is no rainforest. Look at the map, and this is not a map of Brazil, but I will use it. They said the rainforest is over here, and the sugar production is over here. Oh, that sounds pretty good. But then, I asked where is the cattle? And the cattle is over here next to the rainforest. What is actually happening? The sugar is pushing the cattle north. The cattle is moving into the rainforest. So, there is—so, without adequate controls, valuable rainforest is indirectly being cut down. We have got our own version of that, in terms of CRP land and forestry issues and so on. We have to make sure whatever we do with biofuels, we are taking all those into account.

The second, I think, lesson we can learn from them is they had one goal. It was energy independence. They secured it. It is great. But now, the world we know is much more complicated, and achieving energy independence, if we don't also tackle global warming, is going to be a half victory at best. If we achieve energy independence by a strategy that relies on coal to liquids that doesn't actually help, and maybe moves us backwards on global warming, that is not a victory. If we achieve energy independence by pushing and pushing and pushing on corn, but we don't get to the cellulosic, we don't advance the sugar, we don't move forward on vehicle efficiency, we don't move forward on transit, on smart growth and so on, we won't actually achieve those goals.

So, I think we, as a country, have to look at this much more synergistically, and that is part of the lesson two.

THE ETHANOL MARKET IN THE U.S.

Mr. EICHBERGER. Congressman, if I may, real quick, not on the environmental issue, but Mr. Kassel raised a good point about the cost comparison between E–85 and other products in Brazil. Let us talk about the United States for a minute. The typical American consumer reports that for one penny a gallon, they will turn left across a busy street, just to save a penny a gallon. They will drive five miles, five minutes out of their way to save a penny a gallon. When talking to E–85 retailers, they tell me that when E–85 is priced $0.20 below gasoline, they sell quite a bit. One individual told me at two locations, they were selling 12,000 gallons a month. When E–85 increased, and became on par with gasoline, his sales dropped to 500 gallons a month. That is a 97 percent reduction based upon price. Consumers want to be green, but as I have been telling people for a long time, the green in their wallets are really what is driving this, and I caution Congress, as you look at alternative fuels and renewable fuels, think about the ultimate cost to the consumer.

Moving to a new generation makes a lot of sense for a lot of reasons, but keep in mind, you all receive a lot of letters and calls from your constituents when gas prices go up. Keep that in mind as you start thinking about alternative fuel programs.

Chairman LAMPSON. Thank you very much. Votes on the current suspension had 40 minutes of debate, but it is going to—it started at 3:00, so we should have votes called at about 3:40. We have two more presenters I will call first on. Mr. Lipinski from Indiana—Illinois—I will get it out.

Mr. LIPINSKI. One of those corn states out there in the Midwest. We have a lot of corn in Illinois, yet in Chicago, I drive around and see very, very few stations that have E–85. Why is it? Is it lack of supply of ethanol, or there are other reasons? Mr. Eichberger, I think—we have—I have seen you before at the Small Business Committee, so Mr. Eichberger, what——

Mr. EICHBERGER. There are several reasons, Congressman. And Illinois, supply is probably not the driving force. You have a situation where what is—each retailer has to ask themselves what is the level of demand, in terms of how many flexible fuel vehicles are in my market, and how many of those drivers really want to buy E–85? Do my customers want to buy this product?

If they do, then it is a question is what is the cost of putting in E–85. In my testimony, I commented that the cost can range from pretty simple, if all your equipment is certified as compatible with the fuel, to pretty expensive if it is not. So, you need to make a decision on your investment of capital.

Second, you need to think about this. If you have four dispensers, and you take one of them out of service and put in E–85 in, now, you only have three gasoline dispensers. Will you continue to have as much customer traffic coming in to fill up if there are three dispensers and one E–85, as you did when you were selling nothing but gasoline, in order to get customers in your store to buy coffee,

doughnuts, or as Mr. Dinneen likes to say, beef jerky, because that is where retailers really make their profit.

The fuel is an attraction. That is what generates traffic to your store. So, all of those things combine. In Illinois, supply is probably not going to be an issue. I bet money that is not going to be your number one issue. The issue is going to be what is my competitive angle if I do this. Can I sell it at a competitive price? Will my customers continue to come, and will I continue to generate the bottom line sales I need to to stay in my business?

If all the economics add up, and I can afford the investment to bring E–85 into my station, chances are, I will make that decision. But we are still at pre-infancy in terms of demand for E–85, and that is really what is kind of dragging the heels of the industry.

Mr. DINNEEN. Congressman, if I might, there are three things that need to happen for the E–85 market to become a more meaningful component of our business. Last year, we produced five billion gallons of fuel ethanol, 50 million gallons were sold as E–85, a fraction of a fraction, because ethanol today is a blend component with gasoline, and refiners have recognized that it has value in that market.

To be a meaningful part of an alternative fuel market for E–85, you need more vehicles. There are six million, or five million vehicles on the road today capable of running on E–85. That is a big number, no question. But it is still less than three percent of the total vehicle car park in this country. And to convince John's members, Mr. Eichberger's members to put in the infrastructure necessary to refuel that, when you are telling them it is less than three percent of his potential consumers, and only a fraction of those realize that they have the vehicles, it is awfully hard.

With more vehicles, and with the commitment of Ford and General Motors and Chrysler to dramatically increase their flexible fuel production, I think that there will be more vehicles coming, and over time, a more meaningful market will develop.

The second thing you need is a wider infrastructure. I do believe that the infrastructure will follow the marketplace. There are 1,000 stations out there today, and that is a good one. We ought to concentrate those stations where there is going to be a significant market, and where we can build the E–85 market significantly. In Minnesota, there are about 500 E–85 stations, and it is the most meaningful E–85 market in the entire country.

But the third thing that you also need, you need more ethanol. And you can't get to a meaningful E–85 market with grain-derived ethanol. You have got to have cellulosic ethanol, so that you can be talking about the kind of volumes that could actually satisfy the demand for ethanol coming from 20 or 30 or 40 million vehicles that could be on the road in five or ten years. So, I mean, you need all three of those.

I might also add, however, that the E–85 technology that is out there today is not really taking advantage of the properties of ethanol. There is a mileage penalty. That impacts the economics that Mr. Eichberger's members are so concerned with.

Mr. LIPINSKI. What is the mileage penalty? Numbers——

Mr. DINNEEN. About 20 or 25 percent. I mean, it is certainly significant. And with the technology that the automakers are using

today, you are always going to have that. But there are, on the horizon, some technology. General Motors has the Saab 9–5, that has a turbocharged engine, that realizes no mileage penalty when ethanol is used. And that would dramatically improve the economics. So one of the things that we would like to see is that the flexible fuel technology that you are incentivizing auto manufacturers, to optimize the vehicle to look at fuel performance and fuel economy issues. Because it impacts, ultimately, the economics of the fuel that will build the bigger market.

Mr. LIPINSKI. Thank you.

Chairman LAMPSON. I thank the gentleman. Now, we will call on the former Chairman of this committee, Judy Biggert from Indiana. Illinois, I am sorry. I did that again.

CELLULOSIC ETHANOL R&D

Ms. BIGGERT. I think it is looks like it is going to fade. Thank you very much, Mr. Chairman.

My first question is for Mr. Dinneen. You said that all of your member companies are doing some degree of research on cellulosic ethanol, materials to make that. Can you tell us a little bit about their research efforts?

Mr. DINNEEN. Sure. I don't think—any of this is not public knowledge, but a company in your state, Archer-Daniels-Midland, is looking at producing ethanol from fiber that is already coming into the plant, and they believe that if they are able to convert that fiber, which is a cellulosic material, they could increase their yields by 15 percent. Another one of my member companies, the Broin Companies, has announced that they are going to build a facility in Emmetsburg, Iowa that will produce ethanol from corn stover. There is another ethanol company I represent, Abengoa, they have got plants in Nebraska and New Mexico and Kansas, and they are building a pilot plant in Europe today to produce ethanol from wheat straw and grain. So, I mean there are a number of companies. There is a company, Iogen, a Canadian firm, looking to produce ethanol from wheat straw. There is a California company, BlueFire, that is looking to produce ethanol from municipal solid waste in California. So, I mean, it is happening all across the country. Just popping into my head, New York, Northeast Biofuels, is looking to produce ethanol from woody biomass.

The future of ethanol is going to be founded on grain, because it is been building the industry, but the structure is going to be different technologies, different feedstocks, and it is a very exciting future.

Ms. BIGGERT. The—so much of what has been talked about is sugar cane, which I thought was really difficult—would be for the United States, because we don't have the soil to grow it. So that—are there other—are there greater promise for some of these others, that—over other ones, or is that still in the research effort?

Mr. DINNEEN. It takes 13 pounds of sugar to produce a gallon of ethanol, and at the U.S. sugar price of $0.22 a pound, the economics of that just aren't very attractive.

But there are opportunities with sugar processing, because you have byproducts from the sugar process that—the gas, that could

also be utilized in the processing of ethanol, and there is actually a company in Hawaii that is looking to do just that.

Ms. BIGGERT. I see.

Mr. DINNEEN. So, you may have some synergistic——

Ms. BIGGERT. It is the one place that it seems to grow.

Mr. DINNEEN. Potentially, yeah. But for the most part, the climate in this country isn't that conducive to sugar.

Ms. BIGGERT. Are federal cellulosic research efforts helpful to the companies that are doing this?

Mr. DINNEEN. Yes, if they are indeed, you know, fully funded.

Ms. BIGGERT. Yeah. I think—are the member companies working with DOE?

Mr. DINNEEN. Department of Energy and the Department of Agriculture have been terrific in working with the industry on a variety of cellulosic research programs.

Ms. BIGGERT. Does the cellulosic ethanol or materials have—create the same ethanol as from corn. I mean, once it gets to be that, it doesn't——

Mr. DINNEEN. At the end of the day, as Mr. Eichberger said, ethanol is ethanol is ethanol.

Ms. BIGGERT. Okay. Does cellulosic ethanol require less water to produce than from corn?

Mr. DINNEEN. I am not sure anybody knows yet, because the technology is varied, and is yet not proven.

Ms. BIGGERT. Would that be important?

Mr. DINNEEN. Oh, sure. Absolutely. All these resource issues are important. And not just for the cellulosic industry. I mean, the existing grain ethanol industry is always looking for process improvements to reduce not just energy inputs, but water inputs as well.

ETHANOL FUEL AVAILABILITY

Ms. BIGGERT. Well, also coming from Illinois, and I don't see too many stations in the metropolitan Chicago area, but there certainly are in southern Illinois, where it seems to be used quite a bit, but—question for Mr. Eichberger, another factor I would think that affects the availability of fuels like E–85 is because most all of the—most petroleum distributors don't want to put E–85 in—under their canopy because, first of all, their suppliers don't make it, and won't guarantee it. Do you think that is a factor?

Mr. EICHBERGER. That is an issue. Think about this. If you sign a contract, and keep in mind, 95 percent of all retail locations are independently owned and operated, not affiliated with the refining company. If you sign a contract with a supplier to sell their brand and they put their canopies up, you have to honor that brand. It is just like if you are a fast food restaurant and sign a contract with Coke. You can't sell Pepsi through a Coke dispenser, so you—a lot of retailers can go to a supplier, and get special consideration to put in an E–85 dispenser, but really, the primary factor that comes into a retailer's decision is what will it do to my bottom line? Take into consideration my costs of investment, take into consideration what is it going to do to my customer traffic?

Ms. BIGGERT. Well, how do we overcome this factor, then?

Mr. EICHBERGER. The marketplace factor?

Ms. BIGGERT. Well, I—no, I think with the distributors not wanting to put it under the canopy in the first place. Are we going to have to create a whole new distributor of E–85, or a new gas station, or ethanol station, or whatever?

Mr. EICHBERGER. No, I don't think there are very many retailers out there who have actually been told absolutely no by their supplier. If they want to put in E–85, they can talk to their supplier, and possibly renegotiate the contract to allow it to happen. And that is the reason there are 1,000 retailers out there that have E–85. They are either privately branded, or they are branded with the supplier, but there is some room to work with their supplier to do this, but you have to talk to them. If you have a contract to sell their brand of product, and in order to get out of that contract, you need to renegotiate the terms of that contract.

Ms. BIGGERT. Which I think might be a factor that makes it difficult, and why we are not seeing more of them, but thank you, Mr. Chairman. I yield back.

Chairman LAMPSON. You are welcome. Thank you very much. Before you go, Mr. Bartlett, let me—I am going to give each—the privilege of the Chair is going to give each—Mr. Bartlett and Mr. McNerney one minute to wrap this thing up, and if you all will forgive me for doing a second round today, but I think we are going to have opportunity.

Let me let Mr. McNerney go first.

MORE ON CELLULOSIC ETHANOL R&D

Mr. MCNERNEY. Thanks for your indulgence, Mr. Chair, and Ranking Member.

During the State of the Union, the President sort of held out for a long-term hope, and I want to be a part of that hope, but the promise of cellulosic ethanol looks to me like something that we are not really that close to yet, and what I am hoping is that H.R. 547 will help us get there.

Now, in your opinion, how far does this get us? I mean, is it true that in cellulosic ethanol, you need specific technology for each kind of crop, or—I mean, there is a lot of questions in my mind about how viable this is, in sort of a ten year timeframe, or are we actually closer than I am afraid that we are not?

Mr. DINNEEN. Congressman, I think we are a lot closer to having cellulosic ethanol commercialized than anybody realizes, and it may be a variety of technologies. I mean, you could have enzymatic conversion of biomass. You could have acid hydrolysis. You could have gasification. Those are essentially the three different types of technologies, and there are a number of companies looking at all three with different approaches, and we don't know who is going to be the first to crack the code, but it is inconceivable to me, with the amount of government and private effort that is going into this that it will not happen very soon.

Chairman LAMPSON. Thank you, Mr. Dinneen. Mr. Bartlett. Dr. Bartlett.

MORE ETHANOL SOURCE CONCERNS

Mr. BARTLETT. Thank you very much. Fifty years ago this year, Hyman Rickover gave a very interesting talk, I think in Minnesota, to a group of physicians. I think there is a link on our website to that. In there, he made two cautions.

One was when you are going to the bio-world to get fuels, and he predicted we would be here today, by the way, you are going to the bio-world to get fuels, note that you are going to be competing with either food—we are already doing that with corn, the price has doubled, because we are competing with animal food. Or for the cellulosic ethanol, you are going to be competing with the requirement to return organic material to soils. Our topsoils are today not increasing in quantity and quality, so I am having a little trouble understanding how we are going to rob our topsoils of all of this enormous amount of biomass to make cellulosic ethanol.

We will get some, sir, from things that end up in the landfill, but be very careful that you are not mining our topsoils, and pulling off of them—corn stover, I notice you mentioned, you know, that now generally is returned to the soils to keep erosion down next year, and to provide till thin soils, which holds moisture and holds nutrients for the plant. We are going to get something from cellulosic ethanol, but nothing near what most exponents of this indicate we will get.

Mr. DINNEEN. Congressman, those are certainly issues that we are indeed looking at. Those people that have talked about corn stover, for example, aren't talking about taking the entire plant. They are talking about taking a third of the stover, and returning the rest of it to the soil. Farmers need that material for the nutrients that it provides, and they are not going to kill the golden goose. So, the industry is very, very interested in those issues. And some of the cellulosic material that could ultimately be converted would be municipal solid waste. So, I mean there are opportunities, and the marketplace will ultimately determine what makes the most sense, but I believe that ethanol is not the total answer, but it is a part of the answer.

Chairman LAMPSON. Well, I want to thank all of you for appearing before this subcommittee this afternoon.

Based upon the testimony of this hearing, and the letters of endorsement for this legislation, I believe that our subcommittee is comfortable with this legislation moving to consideration by Full Committee tomorrow morning.

I understand the bill is likely to be scheduled for consideration by the House during the week of February 5 under a rule.

So, at this time, I would also ask unanimous consent to have letters of endorsement and other extraneous materials related to H.R. 547 included in the record. *[The information appears in the Appendix.]*

Chairman LAMPSON. Without objection, so ordered.

This hearing is adjourned. Thank you all very much.

[Whereupon, at 3:36 p.m., the Subcommittee was adjourned.]

Appendix:

Additional Material for the Record

I

110TH CONGRESS
1ST SESSION

H. R. 547

To facilitate the development of markets for alternative fuels and Ultra Low Sulfur Diesel fuel through research, development, and demonstration and data collection.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 18, 2007

Mr. GORDON of Tennessee introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To facilitate the development of markets for alternative fuels and Ultra Low Sulfur Diesel fuel through research, development, and demonstration and data collection.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Advanced Fuels Infrastructure Research and Development Act".

SEC. 2. FINDINGS.

The Congress finds that—

(1) in order to lessen United States dependence on foreign sources of petroleum, and decrease de-

mand for petroleum in the transportation sector, the Nation must diversify its fuel supply to include domestically produced alternative biobased fuels;

(2) while ethanol has been successful in the market place as a fuel additive, newer biobased fuels may present unique challenges that may render the fuels incompatible with the current fuel transportation and delivery infrastructure, placing the burden of costly refurbishment and construction on fuel distributors and retailers;

(3) chemical additives to the fuels may mitigate the negative impacts of some biobased fuels on existing infrastructure and preclude costly retrofitting or installation of new biobased fuel compatible infrastructure and transportation systems;

(4) in order to mitigate air pollution and comply with Federal mandates, Ultra Low Sulfur Diesel fuel was introduced into the marketplace in 2006;

(5) fuel labeled Ultra Low Sulfur Diesel can accumulate more than the statutory limit of 15 parts per million of sulfur when transported through multiple pipelines, tanks, and trucks to the final point of sale; and

(6) fuel distributors and retailers may inadvertently take delivery of fuel labeled Ultra Low Sulfur

Diesel with more than 15 parts per million of sulfur without a practical means of verifying sulfur content.

SEC. 3. ALTERNATIVE FUEL AND ULSD INFRASTRUCTURE AND ADDITIVES RESEARCH AND DEVELOPMENT.

The Secretary of Energy (in this Act referred to as the "Secretary") , in consultation with the National Institute of Standards and Technology, shall carry out a program of research, development, demonstration, and commercial application of materials to be added to alternative biobased fuels and Ultra Low Sulfur Diesel fuels to make them more compatible with existing infrastructure used to store and deliver petroleum-based fuels to the point of final sale. The program shall address—

(1) materials to prevent or mitigate—

(A) corrosion of metal, plastic, rubber, cork, fiberglass, glues, or any other material used in pipes and storage tanks;

(B) dissolving of storage tank sediments;

(C) clogging of filters;

(D) contamination from water or other adulterants or pollutants;

(E) poor flow properties related to low temperatures;

(F) oxidative and thermal instability in long-term storage and use;

(G) increased volatile emissions;

(H) microbial contamination;

(I) problems associated with electrical conductivity; and

(J) increased nitrogen oxide emissions;

(2) alternatives to conventional methods for refurbishment and cleaning of gasoline and diesel tanks, including tank lining applications; and

(3) other problems as identified by the Secretary in consultation with the National Institute of Standards and Technology.

SEC. 4. SULFUR TESTING FOR DIESEL FUELS.

(a) PROGRAM.—The Secretary, in consultation with the National Institute of Standards and Technology, shall carry out a research, development, and demonstration program on portable, low-cost, and accurate methods and technologies for testing of sulfur content in fuel, including Ultra Low Sulfur Diesel and Low Sulfur Diesel.

(b) SCHEDULE OF DEMONSTRATIONS.—Not later than 1 year after the date of enactment of this Act, the Secretary shall begin demonstrations of technologies under subsection (a).

SEC. 5. STANDARD REFERENCE MATERIALS AND DATA BASE DEVELOPMENT.

Not later than 6 months after the date of enactment of this Act, the National Institute of Standards and Technology shall develop a physical properties data base and standard reference materials for alternative fuels. Such data base and standard reference materials shall be maintained and updated as appropriate as additional alternative fuels become available.

○

Endorsements

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January 19, 2007

The Honorable Bart Gordon
Chairman
Committee on Science and Technology
U.S. House of Representatives
2320 Rayburn House Office Building
Washington, D.C. 20515

Re: **SIGMA Support for H.R. 547**

Dear Chairman Gordon:

The Society of Independent Gasoline Marketers of America ("SIGMA") thanks you for the leadership you have consistently shown in support of the nation's motor fuels marketers. SIGMA also supports your efforts in H.R. 547 to address some of the technical challenges that face the industry as it seeks to accommodate alternative fuels and ultra low sulfur diesel.

SIGMA is an association of more than 240 independent motor fuel marketers operating in all 50 states. Last year SIGMA members sold more than 58 billion gallons of motor fuel, representing more than 30 percent of all motor fuels sold in the United States in 2005. SIGMA members supply more than 35,000 retail outlets across the nation and employ more than 350,000 workers nationwide.

Specifically, SIGMA is encouraged by provisions in H.R. 547 that would direct important research into two specific areas: (1) the incompatibility, without significant investment, of E-85 and other alternative fuels with existing retail motor fuel dispenser and underground storage tank systems, such as those caused by the highly corrosive nature of high concentrations of ethanol in a motor fuel; and (2) the absence of an accurate, affordable, and reliable test for diesel fuel sulfur levels that can be used by marketers to insure retail compliance with the ultra low sulfur diesel fuel program. Successful results from these two research projects will facilitate, respectively, the spread of E-85 marketing at retail outlets and the phase-in of ultra low sulfur diesel fuel across the country.

STEPTOE & JOHNSON LLP

The Honorable Bart Gordon
January 19, 2007
Page 2

Again, SIGMA thanks you for your leadership on these important marketer issues. Please let us know how we can assist you in moving this legislation forward in the future.

Sincerely,

R. TIMOTHY COLUMBUS

Counsel for the Society of Independent Gasoline Marketers of America

RTC:caw

Chairman Bart Gordon
The House Committee on Science and Technology
2320 Rayburn Building
Washington, D.C. 20515

Tuesday, January 30, 2007

RE: HR 547, The Advanced Fuels Infrastructure Research and Development Act

Chairman Gordon,

We are writing in support of the above mentioned bill currently in your Committee. Taking care of our environment, reducing our Nation's dependence on foreign oil, and improving opportunities here at home are important national goals. X-Ray Optical Systems (XOS) supports that mission. I will share a brief background of XOS, our involvement in the sulfur in fuels initiatives, and our support of HR 547.

Founded in 1990, XOS is the world leader in multiple x-ray technologies. X-rays are used for laboratory analysis by essentially every industry that uses materials. XOS is now the leader on leveraging x-ray optics to move x-ray material analysis out of the lab and into the field. It is quite analogous to visible light applications. Pinhole cameras work, but lenses are required for high performance photography. Many applications like movie projection, eye surgery, CD and DVD players, and supermarket checkout scanners require optics to function at all.

The Federal Government has provided valuable support for XOS to develop the optics and analyzers sold today. XOS has been good stewards with this support. For example, the Department of Defense tracks commercialization history of SBIR Phase II projects with all Federal Agencies. For the last two years, XOS has been ranked 90% or better for commercializing technologies developed as part of their projects as compared to all other firms receiving Phase II funding. It is an incredible accomplishment and represents the best of the public-private partnership.

Based on the synthesis of several x-ray analysis oriented SBIR's, a DOE steel analyzer project and an NSF semiconductor project, XOS launched a project to develop an analyzer to assist refiners and pipeline companies meet new EPA requirements for ultra low sulfur diesel (ULSD), reducing the allowable sulfur in diesel levels from 500 ppm (1998 standard) to 15 ppm (2006 standard). These analyzers are reliable, simple to use, and cost effective. Currently, XOS is the leader for sulfur monitoring in North America for the petroleum refinery and pipeline industries with > 80% market share for benchtop ULSD analyzers.

There are other options for the industry. These include traditional wavelength dispersive x-ray fluorescence (WDXRF) and ultraviolet fluorescence (UVF). WDXRF as described by ASTM D-2622 is a laboratory based, spectrographic technique. The UVF technique, described by ASTM D-5453, requires pyrolyzing the sample to obtain the sulfur signature. The XOS monochromatic wavelength dispersive x-ray fluorescence method was compared to alternatives

X-Ray Optical Systems, Inc. ■ 15 Tech Valley Drive ■ East Greenbush, New York 12061
Phone 518.880.1500 ■ Fax 518.880.1510 ■ www.xos.com

in an independent EPA round robin test. The XOS method, described by ASTM standard test method D-7039, was recognized by the EPA as a capable test method to meet the new regulations[1]. The line of bench-top and on-line sulfur analyzers has found widespread acceptance by major petroleum refiners and pipeline companies[2].

It is important for maintaining the intended environmental benefit to ensure that all fuels utilized in automotive and truck engines are certified to the ULSD standard. Sulfur can not only introduce SO_x to the environment, but may also cause the catalytic converter to pass through abnormal levels of CO and NO_x as well[3]. We support the Committee's efforts to enhance oversight of ULSD fuel quality, and examine monitoring of additional fuel options, including bio-diesel, ethanol, kerosene, and other fuel additives. The fuel monitoring and certification can be extended to the consumer pump. These same XOS analyzers can be engineered for use at point-of-sale.

The XOS sulfur analyzers used today at refineries and pipelines in North America perform fast measurements with sensitivities < 1 ppm in order to control the production and distribution processes. With a sustained engineering effort, XOS could in a one year time frame meet the retailers' need for portable, more cost effective, simple to operate, EPA compliant analyzers with sufficient sensitivity for distribution and retail operations.

The proposed Bill, HR 547, The Advanced Fuels Infrastructure Research and Development Act, will support the EPA standards and advance full implementation of the new 15 ppm standard. The health benefits are enormous.[4] XOS supports this legislation and believes it can be done in the timeframe and cost the petroleum industry and the country needs.

Sincerely,

David Gibson
President
X-Ray Optical Systems, Inc.

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[1] Federal Register, Vol. 71, No. 63, page 16496, part D., Monday, April 3, 2006

[2] Statistical Comparison of Sulfur in Motor Gasoline, Aviation Gasoline & Diesel Using ASTM D5453 and ASTM D7039, Alberta Research Council of Canada, Project GO-2005-1026.

[3] "Sulfur Poisoning and Desulfation of the Lean NOx Trap", J. Li, et al, Ford Research Laboratories, SAE Technical Paper Series, 2001-01-2503.

[4] "Once this action is fully implemented, 2.6 million tons of smog-causing nitrogen oxide emissions will be reduced each year. Soot or particulate matter will be reduced by 110,000 tons a year. An estimated 8,300 premature deaths, 5,500 cases of chronic bronchitis and 17,600 cases of acute bronchitis in children will also be prevented annually. It is also estimated to help avoid more than 360,000 asthma attacks and 386,000 cases of respiratory symptoms in asthmatic children every year. In addition, 1.5 million lost work days, 7,100 hospital visits and 2,400 emergency room visits for asthma will be prevented." http://www.epa.gov/otaq/diesel.htm, as viewed 4/25/06

E85 85% Ethanol **Coalition of E85 Retailers**

January 26, 2007

The Honorable Bart Gordon
Chairman
Committee on Science
2304 Rayburn House Office Building
U.S. House of Representatives
Washington, D.C. 20515

Re: CER Support for H.R. 547

Dear Mr. Chairman:

The Coalition of E85 Retailers ("CER") thanks you for the leadership you have consistently shown in support of the nation's marketers of clean renewable motor fuels. CER welcomes the introduction of H.R. 547, the "Advanced Fuels Infrastructure Research and Development Act," and supports its enactment. H.R. 547 will address some of the technical challenges that face the industry as it seeks to accommodate consumer demand for new renewable fuels such as E85.

CER is a coalition of motor fuel marketers that currently sell E85 (a motor fuel mixture of 15% gasoline and 85% ethanol for use in flexible fuel vehicles) to the public and private fleets at retail outlets and private cardlocks. CER members are at the vanguard of the spread of E85 use by consumers across the nation. They have taken the lead in response to consumer demand for E85 by installing E85 dispensers at their retail outlets and cardlocks. As a group, CER members are the most experienced E85 retailers in the country and have the most knowledge regarding the challenges and opportunities that come with marketing E85.

Specifically, CER is encouraged by provisions in H.R. 547 that would direct important research into the incompatibility, without significant investment, of E85 and other alternative fuels with existing retail motor fuel dispenser and underground storage tank systems, such as those caused by the highly corrosive nature of high concentrations of ethanol in a motor fuel. Successful results from this research project will facilitate the spread of E85 marketing at retail outlets across the country.

Please let CER know how we can assist you in moving this legislation forward in the future.

Sincerely yours,

Gregory M. Scott
Counsel

3050 K Street, NW | Suite 400 | Washington, D.C. 20007
Counsel: Greg Scott

nasm
Working with marketers to grow the Shell brand

National Association of Shell Marketers
6551 Loisdale Court, Suite 100
Springfield, VA 22150
P: (703) 922-9784
F: (703) 971-9526
www.nasmonline.com

January 29, 2007

The Honorable Bart Gordon
Chairman
House Committee on Science and Technology
2320 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Gordon:

NASM supports the nation's gradual move to alternative forms of energy, and we support H.R. 547, the *Advanced Fuels Infrastructure Research and Development Act*. We support the mandate in the Act for a National Institute of Standards and Technology (NIST) study which would focus on materials and testing. We further suggest that a National Academy of Science (NAS) study be conducted that would analyze impacts throughout the petroleum network.

The nation's petroleum distribution network involves a vast number of firms that vary greatly in size and scope of operations which include exploration for crude oil, product production, refining, ransportation, terminaling, trading, wholesale distribution and retail sale to the customer. The complexity of this infrastructure demands that careful research, planning and coordination take place with the involvement of all stakeholders. Mandates that require re-tooling of segments of this supply chain without coordination can result in failed, unnecessary false-starts and wasted resources. Uncoordinated implementation of untested technologies which are not demanded by market conditions could result in economic hardships, increased foreign reliance, and negative environmental impacts.

The vast majority of wholesale petroleum marketers are small businesses, often family-owned, which engage in fair business practices and are partners in the communities in which they operate. The majority of petroleum marketers are independent, and are not simply extensions of major oil companies. The interests of small businesses, such as petroleum marketers, are often forgotten in discussions relative to alternative energy. Extensive capital investments may be needed to switch to alternate forms of fuel. Marketers are unable to expend resources on experimental technologies which the market does not demand.

NASM recommends that the National Academy of Science (NAS) be encouraged to convene a study to investigate alternative energy sources that focus on reasonable, cost-effective alternatives which are compatible with existing infrastructure (similar to the current NAS study, *Assessment of Resource Needs for Development of Fuel Cell and Hydrogen Technology*, in progress). The study should go beyond evaluation of materials and testing methods, and consider the entire impact of various forms of alternative energy.

Chairman of the Board: David Adcox, Hohenwald, TN • **1st Vice Chairman:** Gary Garrison, Plainview, TX • **2nd Vice Chairman:** Joe C. Morris, Jr., Ridgeland, MS
Treasurer: Garry Gray, Milford, VA • **Corporate Secretary:** Steve Kirkham, Kingston, TN • **President:** Tom West, Springfield, VA
Executive Director: Darrell Smith • **Legal Counsel:** Taylor & Powell, LLC • **Manager, Membership & Administrative Services:** Jennifer Richards

The National Association of Shell Marketers (NASM) represents nearly 300 wholesale marketers and retailers in virtually every state in the U.S., and over 100 suppliers of goods and services to the industry. NASM supports alternative energy efforts that 1) support U.S. job growth and economic stability; 2) decrease reliance on foreign sources of energy; and 3) promote environmental conservation and stewardship. NASM supports these efforts if they are driven by sound research and respects the needs of small business.

Sincerely,

Darrell K. Smith

Darrell K. Smith
Executive Director

NACS®

January 17, 2007

The Honorable Bart Gordon
Chairman
House Committee on Science and Technology
2320 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Chairman:

On behalf of the 2,200 retail member companies of the National Association of Convenience Stores (NACS), I write to thank you for your continued leadership on behalf of the nation's convenience and petroleum retailers. Your legislation, the Advanced Fuels Infrastructure Research and Development Act, will make it more cost effective for retailers to offer their customers certain alternative fuels and to ensure that ultra low sulfur diesel fuel complies with federal regulations.

The introduction of alternative fuels and ultra low sulfur diesel fuel have presented retailers with certain challenges that could interfere with the smooth transition to these new products. Some of the alternative fuels entering the supply system are incompatible with existing storage and distribution infrastructure. For example, because of its corrosive properties E-85 cannot be stored in all underground storage tanks nor sold through all motor fuel dispensers. This places a costly burden upon retailers who would like to offer this alternative fuel to their customers.

In addition, although the transition to ultra low sulfur diesel fuel over the past year has been relatively smooth, there remains no accurate, affordable and reliable method for measuring the sulfur level in diesel fuel at the retail level of trade and other points in the distribution system. If such a testing mechanism were available, retailers would be better able to ensure the product they sell is compliant with the 15 parts per million sulfur level required by model year 2007 and later diesel engines.

The research projects initiated by the Advanced Fuels Infrastructure Research and Development Act seek to develop affordable solutions to these challenges. If successful, the bill will help facilitate the spread of alternative fuels throughout the nation and increase the confidence of retailers and their customers that ultra low sulfur diesel fuel is compliant with federal regulations.

Thank you for your efforts on behalf of the nation's convenience and petroleum retailers. Please let us know how we may be of assistance on this and other issues.

Sincerely,

John Eichberger
Vice President, Government Relations

The Association for Convenience & Petroleum Retailing

1600 Duke Street ■ Alexandria, VA 22314-3436, USA ■ (703) 684-3600 ■ Fax (703) 836-4564 ■ www.nacsonline.com

January 25, 2007

The Honorable Bart Gordon
Chairman
House Science and Technology Committee
U.S. House of Representatives
Washington, D.C. 20515
ATTN: Alisa Ferguson

Dear Chairman Gordon:

NATSO, Inc. would like to express our strong support for H.R. 547, legislation you introduced to facilitate the development of markets for alternative fuels and Ultra Low Sulfur Diesel (ULSD) fuel through research, development, and demonstration and data collection. As you know, this legislation represents a step forward in addressing some of the infrastructure and testing concerns expressed by many truckstop owners and operators with regard to the use of ULSD.

As you know, NATSO, Inc. is a national trade association that represents over 900 travel plazas and truckstops nationwide. The U.S. travel plaza and truckstop industry employs over 144,400 individuals and sells 75-80 percent of the diesel fuel sold in the United States. Most NATSO members are located within close proximity of the National Highway System. A typical travel plaza or truckstop sells gasoline and diesel fuel; lubricants and additives; operates fast food and/or full-service restaurants; sells convenience items; offers free extended stay parking; and might offer truck repair and a host of other services.

As the national representative of the travel plaza and truckstop industry, NATSO routinely comments on matters affecting truckstops and travel plazas, providing its expertise and understanding of the industry. Thus, we wanted to extend a letter of support to you in effort to assist you in moving this legislation forward.

NATSO concurs with you that newer biobased fuels present unique challenges that may render the fuels incompatible with the current fuel transportation and delivery infrastructure, placing the burden of costly refurbishment and construction on fuel distributors and retailers. In addition, we strive to ensure that the product we carry is compatible with federal and state requirements. As you mention in your findings, some biobased fuels can negatively impact existing infrastructure and cause costly retrofitting or the installation of new biobased fuel compatible infrastructure and transportation systems. There is obvious cause for concern from our industry because of those costs being frequently overlooked.

In addition, we have seen cases where the fuel labeled as ULSD can accumulate more than the statutory limit of 15 parts per million of sulfur when transported through multiple pipelines, tanks, and

trucks to the final point of sale and want to mitigate problems that are not caused by our sector of the industry. Your bill offers us a unique opportunity to verify the sulfur content of this fuel in order to protect consumers and ourselves from liability from co-mingling of the product prior to its retail sale.

NATSO supports your efforts to establish a testing program and to have the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST) carry out a program of research, development, demonstration, and commercial application of materials. This would help ensure that alternative biobased fuels and ULSD fuels are more compatible with existing infrastructure used to store and deliver petroleum-based fuels to the point of final sale.

Please know that NATSO supports H.R. 547 and stands ready to assist you in any manner you deem appropriate. Thank you for your consideration of the fuel retailing concerns on this important issue.

Sincerely,

Sarah Dodge

Sarah R. Dodge
Vice-President of Government Affairs

26 January 2007

The Honorable Bart Gordon
Chairman
House Committee on Science and Technology
2320 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Gordon,

On behalf of the Petroleum Marketers Association of America (PMAA) I would like to convey our support for HR 547, the Advanced Fuels Infrastructure Research and Development Act. This important legislation speaks directly to the concerns that petroleum marketers and retailers are having regarding making alternative fuels available to consumers.

PMAA is a national federation of 45 state and regional trade associations who collectively represent over 8,000 petroleum marketing companies. These companies are independent businesses and market a wide variety of products including gasoline, diesel, heating oil, lubricants, jet fuel, kerosene and propane. Our members own over 60,000 gas station/convenience stores and supply motor fuels to an additional 40,000 retail locations. PMAA members market over 80% of the heating oil in the U.S. and directly supply bulk motor fuels, heating oil and lubricants to entities such as farms, fleets and government agencies.

Our members are supportive of efforts to further develop and integrate alternative fuels into our existing fuel streams and, given the volatility in the world oil market, it is clear that we must develop as many home-grown sources of fuel as we can. Ethanol and biodiesel have proven to be extremely popular and effective additives to gasoline and diesel. In some rural areas E85 is beginning to gain popularity (when it is priced properly).

While each of these fuels provides myriad economic and environmental benefits, they are not without their unique challenges. One challenge is fuel quality. In 2006 the National Biodiesel Board estimated that 40% of the biodiesel produced in the United States did not meet ASTM specifications. Off-specification biodiesel leads to poor engine performance, higher emissions, difficulty starting engines in cold weather, and clogged

fuel filters and injection nozzles, among other problems. There must be a better system in place to ensure uniform fuel quality for biodiesel.

A second obstacle facing the further proliferation of alternative fuels is product availability. Because ethanol is hydrophilic, it cannot be shipped via existing pipelines. There are only a limited number of available tank trucks and rail cars to ship ethanol, therefore areas not near ethanol production facilities are more susceptible to price and supply problems. Adding to this problem is that most of the ethanol produced in this country is distilled from corn. We are already witnessing an increase in grain and livestock prices as well as a decrease in the amount of available farm land due to the rapidly rising demand for corn.

A third obstacle is the price of new equipment for fuels like E85. Because ethanol is highly corrosive, special storage tanks, piping and dispensing equipment are required. Such projects are an extremely costly and laborious undertaking. Estimates for the total cost of new E85 can range as high as $150,000 per retail location. Even more importantly, there is no E85 dispenser that has been certified by Underwriters Laboratories (UL).

We also applaud this legislation for encouraging the development of a low-cost means for testing the quality of Ultra Low Sulfur Diesel (ULSD). Despite some industry concerns, the shift from 500-ppm Low Sulfur Diesel to 15-ppm ULSD has gone extremely smoothly. The Environmental Protection Agency (EPA) now estimates that over 90% of on-road diesel is now ULSD. Even though the program is running smoothly, marketers and retailers still face limited and expensive options for testing ULSD to ensure that the fuel meets the 15-ppm standard. Now that all new trucks being manufactured require ULSD, it is imperative that marketers have a simple, low-cost method of ensuring product quality.

Again, we thank you for introducing this timely legislation. We look forward to providing you with all the assistance that we can in order to help this bill become law.

Sincerely,

Dan Gilligan
President
Petroleum Marketers Association of America

cc: Marylee Booth, Tennessee Oil Marketers Association

INSTITUTE for GLOBAL ENVIRONMENTAL STRATEGIES

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April 6, 2007

The Honorable Mark Udall
The Honorable Bob Inglis
U.S. House of Representatives
Committee on Science and Technology
Suite 2320, Rayburn House Office Building
Washington, DC 20515-6301

Dear Congressman Udall and Congressman Inglis:

Thank you for the opportunity to review and comment on H.R. 906, *The Global Climate Change Research Data and Management Act of 2007*. I hope that the following comments will help to strengthen your effort to improve our national global change research efforts by reorienting the program to be a "user-driven research endeavor." As part of this review, I also solicited comments from members of the Alliance for Earth Observations, a publicly and privately funded initiative of the Institute for Global Environmental Strategies, which serves as the voice of the private sector to promote the understanding and use of Earth observations for societal and economic benefit. The general comments and recommended insertions are provided below:

General Comments

- The language could be improved to further identify, emphasize, and include private sector users (industry, Academic, and non-governmental).
- It may be helpful to note in the findings (Section 101) that Earth observation systems enable important performance measurements that help to verify that U.S. environmental policy is achieving its intent.
- It should also be noted in the findings (Section 101) that Earth observation and global change research information also provide critical business intelligence to the private sector, which impacts U.S. competitiveness.
- Although economic systems are mentioned, more emphasis on economic impact and related information needs should be further developed throughout the legislation.

- In Section 103, where the legislation directs the President to establish an interagency committee to ensure cooperation, please consider a parallel effort to establish a committee to engage the private sector to ensure that the U.S. Global Change Research Program is being responsive to the needs (societal and economic) of those outside the Federal government.
- In Section 105, (b) CONTENTS OF THE PLAN (9), it may be advantageous to define observing systems further to include space-based, aircraft, and *in situ* measurements.
- In Section 105, (d) INFORMATION MANAGEMENT, please consider inserting "integration" following "management and archiving" as this is key to giving users the capabilities necessary to apply data and information from various sources. Much work in this area has been done by the U.S. Group on Earth Observations in planning for an Integrated Earth Observation System (IEOS).
- The development of and availability of decision support tools for decision makers should also be addressed.
- In Section 109, ANNUAL REPORT, please consider adding assessment of our national Earth observing capabilities. Such an assessment on an annual basis could help to confirm current plans, identify gaps in measurements, or flag emerging needs and priorities.
- Section 302, INTERNATIONAL DISCUSSIONS (B) ENERGY RESEARCH, states that the President will direct the Secretary of State to initiate discussions with other nations leading toward an international research protocol for cooperation on the development of energy technologies. However, at no point in the legislation is there direction to the Secretary of Commerce or the Secretary of Energy to engage the U.S. energy sector in such discussions and to determine the U.S. energy sector's global change information needs.

<u>Recommended Inserts</u>

After TITLE II, Section 201 (b):

(1) As recommended by the 1998 President's Committee of Advisors on Science and Technology, all agencies of the Federal government that hold or generate data that are relevant to biodiversity and ecosystems are directed to:
   (A) make all data that they hold (those in agency databases as well as those generated by the work of both intramural and extramural individual researchers whom they support) fully accessible via the National Biological Information Infrastructure managed by the U.S. Geological Survey;
   (B) discover redundancies in the data collection routines among agencies, and eliminate duplication of effort and expenditure wherever possible by combining efforts or utilizing data collected by another agency;
   (C) coordinate software and systems development with other agencies to eliminate duplication of effort and expenditure wherever possible; and

(D) cooperate with other government agencies, scientists, and the private sector to establish and adopt data and metadata standards, authority files and thesauruses for biodiversity and ecosystem information.

Replace Section 105 (b) 2 with the following text:

(2) Define and develop a cross-agency enterprise architecture (EA) for global change research that encompasses the complete research life cycle. This architecture will link specific desired outcomes to a comprehensive set of life-cycle requirements. This is the best way to ensure that design, development, and maintenance of the data, information, products, services, models and decision support infrastructure will result in a coherent and coordinated Global Change program that is responsive to National priorities and optimizes the public investment to its fullest potential.

I hope that these comments and proposed text changes will be helpful in improving this very important legislation. If I can provide any additional information, please do not hesitate to contact me at 703-312-0824 or by email at nancy_colleton@strategies.org.

Sincerely,

Nancy Colleton
President, Institute for Global Environmental Strategies
Executive Director, Alliance for Earth Observations

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