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HEARING ON THE AMERICAN ENERGY INITIATIVE

Thursday, May 5, 2011

House of Representatives,

Subcommittee on Energy and Power

Committee on Energy and Commerce

Washington, D.C.

The Subcommittee met, pursuant to call, at 9:37 a.m., in Room 2322 of the Rayburn House Office Building, Hon. Ed Whitfield [Chairman of the Subcommittee] presiding.

Members present: Representatives Whitfield, Sullivan, Shimkus, Walden, Terry, Burgess, Olson, McKinley, Gardner, Pompeo, Griffith, Barton, Rush, Inslee, Green, Capps, Doyle, and Waxman (ex officio).

Staff present: Charlotte Baker, Press Secretary; Jim Barnette; General Counsel; Maryam Brown, Chief Counsel, Energy and Power; Patrick Currier, Counsel, Energy and Power;

Garrett Golding, Legislative Analyst, Energy; Cory Hicks, Policy Coordinator, Energy and Power; Heidi King, Chief Economist; Ben Lieberman, Counsel, Energy and Power; Dave McCarthy, Chief Counsel, Environment/Economy; Alex Yergin, Legislative Clerk; Greg Dotson, Democratic Energy and Environment Staff Director; Caitlin Haberman, Democratic Policy Analyst; and Alexandra Teitz, Democratic Senior Counsel, Environment and Energy.

Mr. {Whitfield.} I would like to call this hearing to order this morning. This is our sixth of a multi-day hearing entitled the American Energy Initiative. The topic today is focusing on the challenges and opportunities for alternative transportation, fuels, and vehicles. With gasoline prices exceeding $4.00 a gallon in many parts of the country, it is timely that we look at alternatives to petroleum derived fuels for the transportation sector. Efforts to diversify away from reliance on oil for cars and trucks have been underway for a number of years and we know that it has been a goal of the U.S. Government to be less dependent upon foreign oil for many, many, many years. And so the purpose of today's hearing is to provide an overview of these alternative opportunities. We need to know where we stand today and where we would like to be in the years ahead as it relates to alternative fuels and vehicles.

Most notably we have now more than 5 years of experience with the renewable fuel standard which was first put into place in the 2005 Energy Bill and was expanded in the 2007 Energy Bill. The targets for 2011 call for 12.6 billion gallons of corn ethanol and additional amounts of other biofuels such as cellulosic ethanol, biodiesel, and algae based fuels. I should stress that many aspects of the

ethanol mandate are going very well. Nonetheless there are issues facing regulators as they translate the law into workable arrangements as well as challenges facing refiners and incorporating increasing amounts of ethanol into the existing supply chain.

Biofuels, I might add are but one of the alternative fuels in vehicles in the works. Vehicles that run on natural gas continues to make inroads especially in the heavy duty sector, propane vehicles are also seeing increased use. Progress continues on electric vehicles and even cold to liquids is another possible non-petroleum source of transportation fuel. Each alternative fuel and vehicle has its unique mix of attributes and more than one will play a constructive role it the vehicles of the future.

However, as I indicated earlier there are obstacles to overcome before new fuels and vehicles and technology can take significant market share away from petroleum. Not only must the alternative fuel in the vehicles be economically and technologically up to the task, but the fueling infrastructure must also be in place. As we are learning with ethanol, we can get there but it is not always an easy path. The good news is we have a host of alternatives that show promise and are the subject of federal research and development tax incentives and loan guarantees.

But the fact that there have been so many false starts since the federal government first got involved in alternative fuels in vehicles in the 1970's is a sobering reminder that we need to carefully review our efforts. So developing cost effective alternatives will take time and in no way should serve as a substitute for taking steps to reduce gasoline prices. We need to do both. For this reason, the American Energy Initiative will pursue efforts to unlock America's vast untapped oil potential along with other efforts.

So we also will have I think two panels of witnesses today and we look forward to the testimony to all of you and we do appreciate your taking time to be with us because your testimony will be vitally important to help us get a better understanding of where we are on this important subject. And at this time I would like to recognize the Gentleman from California, Mr. Waxman for his 5 minute opening statement.

[The prepared statement of Mr. Whitfield follows:]

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Mr. {Waxman.} Thank you very much, Mr. Chairman. You are correct that this hearing on alternative fuels in vehicles is a very timely one. With gasoline prices over $4.00 a gallon in some cities, the cost of our dependence on oil is glaringly apparent to consumers.

For decades the Energy Information Administration projected that U.S. oil consumption would grow year and year and it did. In 2005, nearly 60 percent of U.S. fuels were imported and the future looked bleak: higher oil consumption and more imports far into the future. Republicans claimed then just as they do now that the solution was to produce more oil domestically. Production has increased dramatically since that time. Our domestic crude oil production has increased by nearly 300,000 barrels a day. We have increased our crude oil production to the point that we are producing more oil today than we have at any time in the last 7 years.

And yet, gasoline prices are still climbing and the money we spend on oil abroad continues to conflict with our foreign policy goals and national security. The fact is more U.S. production is never going to be enough to appreciatively reduce global oil prices or U.S. imports of foreign oil. We use 25 percent of the world’s oil, but we only have 2 percent of the world’s oil preserves. So we could double or even

triple domestic production and it is simply not going to affect global oil prices all that much. In fact, this subcommittee has received testimony that increasing domestic production as has been proposed would increase production by just two tenths of one percent a decade from now. The effect that would have on gasoline prices would be negligible.

The key to making progress is to reduce, to focus on how much oil we use and reducing our share of global oil consumption from 25 percent can have a real impact both on global oil prices and on imports. The new motor vehicle standards promulgated by the Obama Administration illustrates the benefits of greater efficiency. These carbon pollution tailpipe stanches have had a remarkable impact. They are projected to save 1.8 billion barrels of oil. They are expected to yield net saving to consumers of roughly $130 to $180 per year and $3,000 over the life of a vehicle.

In being able to bring efficient vehicles to the market has greatly assisted domestic auto makers. General Motors had a 27 percent gain in American sales led by strong demand for its new compact sedan and more fuel efficient sport utility vehicles. Ford earned $2.5 billion last quarter, up 22 percent from last year, as its sales have shifted to more fuel efficient cars. Most remarkable is the impact of these standards on U.S. oil imports and consumption. The Energy

Information Administration now projects that we will be importing less oil in the future than we did in 2007, reversing debt gains of increasing reliance on foreign oil.

And in a fundamental and historic shift, overall U.S. consumption of oil is predicted to stop growing by requiring improvements in how efficiently we use oil, the Administration has reversed a dangerous trend. The Administration wants to build on their success with stronger standards after model year 2016. It is also working on standards for trucks and other commercial vehicles. Those standards could save even more money at the pump while further reducing our dependence on foreign oil.

At the same time we need to continue our push toward alternative fuel vehicles, whether they are plug in electric drive commuter vehicles, long haul natural gas trucks, or renewable fuels used in various vehicles. The Obama Administration has made real progress on the seemingly attractable problem. We are finally heading in the right direction. I look forward to hearing from today's witnesses about how we can continue and build on this progress. Thank you, Mr. Chairman. Yield back my time.

[The prepared statement of Mr. Waxman follows:]

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Mr. {Whitfield.} Thank you and at this time recognize the gentleman from Oklahoma, Mr. Sullivan for 5 minutes.

Mr. {Sullivan.} Thank you, Chairman Whitfield and thank you for holding this important hearing today on challenges and opportunities for alternative transportation fuels and vehicles. With the price of oil over $110 a barrel, it is vital that we look at alternative transportation options to give consumers and businesses--excuse me--options at the pump. Our national and energy security demand it. And given the fact that 69 percent of the oil consumed in America is used for transportation, two-thirds of which we import from foreign nations, we are spending $2 billion per day importing foreign oil. This is the largest transfer of wealth in the history of mankind.

The U.S. has enough natural gas reserves to last us more than 125 years. By diversifying our fleet--our vehicle fleets, heavy duty trucks, and utilizing natural gas as a transportation fuel we can significantly reduce U.S. demand for foreign oil and begin doing that immediately. Almost a month ago I introduced bipartisan legislation, The Natural Gas Act, a common sense bill that makes real world solutions to this major national security issue. Today I am proud to announce that we have over 180 cosponsors on this bill

including 22 from this committee alone.

The NAT Gas Act is designed to be a short term 5 year market driving program to allow the economies of scale to work with the production of natural gas vehicles and fueling infrastructure. The bill calls for private capital investment not by the Federal Government in the production and use of natural gas fueled vehicles. The bill is consistent with the goals of the National Energy Policy that would encourage the use of clean burning domestically produced fuel without the heavy hand of government mandates.

All told, this legislation will create over 500,000 jobs. As Congress debates energy solutions and many options are offered up, but at the end of the day these options give American consumers few real choices today. In the near term, natural gas is the best present day alternative to imported oil, one that can be put in place virtually overnight with the support of the Nation behind it. And Mr. Chairman, I yield back the balance of my time.

[The prepared statement of Mr. Sullivan follows:]

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Mr. {Whitfield.} Thank you, Mr. Sullivan. At this time I recognize the gentleman from Illinois for the purpose of making an opening statement.

Mr. {Rush.} I want to thank you, Mr. Chairman. And I want to thank the--all the guests for their participation and for being here this morning. Today's hearing is timely as prices at the pump climb to $4.00 a gallon for regular gasoline. It is extremely important that this committee identify short and long term strategies and objectives for developing alternative fuels for vehicles so 5 and 10 years from now we won't be having the same debates over rising gas prices due to unrest in the Middle East.

For far too long, we have been seeing widely fluctuating gas prices here in this country due to a lack of comprehensive policies to move us away from imported oil and petroleum. And every American--and every year or two we are back in the same place exactly doing the same thing that we find ourselves doing at this moment, discussing extremely high gas prices at the pump but no closer to solving this issue which has had such a devastating effect on the budgets of American families, both lower and middle income families who must once again choose between putting food on the table or filling up their car in order to go to work.

I look forward to today's hearing to discuss both the opportunities and the challenges that we face as we attempt to transition to alternative fuels to power our cars and to power our trucks. Americans love their cars and we love to drive, so it only makes sense that we provide direction for the American people and move our country away from its heavy dependence on foreign sources of oil. As a representative from a corn growing State of Illinois, I look forward to learning more about the impact that corn ethanol has had on the alternative fuel debate.

A few years ago it was thought that relying solely on corn ethanol was the win-win alternative to diesel and petroleum fuels. Since that time my office has met with several constituents and groups that have informed us of the impact of using corn ethanol for fuel and its subsequent effect on increased prices for feed stock and the overall fuel supply. So I am very interested to hear from the experts here today on not only the impact of corn ethanol, but also the opportunities for additional alternative fuel sources for transportation including biofuels, electricity, natural gas--liquids, and many others.

I believe if we are prudent and we work together, both sides of the aisle, we can develop a policy for alternative fuel production that would be to the benefit of all of our

constituents and the American people as a whole. Mr. Chairman, I sincerely hope that this can be an issue that we can find common ground on and we can--that we can work together on the issues for the good of this entire Nation. If we are willing to provide direction and funding to develop alternative fuel supplies, we can provide economical and practical benefits to Americans by decreasing the amount of oil we import while also eventually decreasing the price our families pay at the pump.

Mr. Chairman, however, we all understand that before we are able to enjoy the benefits that will ultimately come from alternative fuels we must first invest in research and development of these supplies. And even if we are able to come together on a comprehensive policy to develop these fuels, we must also invest in the infrastructure to support these fuels as well. So we have our work cut out for us and I am pleased today that we are taking our first step in understanding where we are and what we need to do to move forward. With that I yield back the balance of my time.

[The prepared statement of Mr. Rush follows:]

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Mr. {Whitfield.} Thank you, Mr. Rush. At this time I would like to introduce the first panel. We have with us this morning Dr. Howard K. Gruenspecht who is the Deputy Administrator of the U.S. Energy Information Administration. We have Mr. Patrick Davis who is the Program Manager for Vehicle Technologies Program at the U.S. Department of Energy. And we have Ms. Margo Oge who is the Director of the Office of Transportation and Air Quality at the U.S. Environmental Protection Agency. Thank you once again for being with us and I am going to recognize each one of you for 5 minutes for your opening statement and there is a little instrument on the table there that will show red when your time is up. So--but we do look forward to your testimony and what you have to say. So Mr. Gruenspecht, I will recognize you for your opening statement.

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^STATEMENTS OF HOWARD K. GRUENSPECHT, DEPUTY ADMINISTRATOR, U.S. ENERGY INFORMATION ADMINISTRATION; PATRICK DAVIS, PROGRAM MANAGER, VEHICLE TECHNOLOGIES PROGRAM, U.S. DEPARTMENT OF ENERGY; AND MARGO T. OGE, DIRECTOR, OFFICE OF TRANSPORTATION AND AIR QUALITY, U.S. ENVIRONMENTAL PROTECTION AGENCY

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^STATEMENT OF HOWARD K. GRUENSPECHT

} Mr. {Gruenspecht.} Mr. Chairman and members of the subcommittee, I appreciate the opportunity to appear before you today. The Energy Information Administration is a statistical and analytical agency within the Department of Energy. EIA does not promote or take positions on policy issues and has independence with respect to the information and analysis that we provide therefore, our view should not be construed as represented those of the Department or other federal agencies.

The transportation sector and petroleum use are tightly linked. In 2009, 72 percent of total U.S. petroleum use occurred in transportation while petroleum products provided about 94 percent of transportation energy. Light duty vehicles, including both passenger cars and light trucks,

accounted for 63 percent of total transportation energy use in 2009. In that year, gasoline vehicles had an 85 percent market share out of 9.8 million new light duty vehicles sold. Flex fuel vehicles that could use gasoline over 85, hybrid, electric, and diesel vehicles held 11 percent, 3 percent, and 2 percent shares respectively.

Looking forward, EIA's annual energy outlook provides projections for the U.S. energy system through 2035. Our reference case is a business as usual trend estimate using known technology and technological and demographic trends on the assumption that current laws and regulations including any applicable subset dates remain unchanged. We expect vehicles other than those that can only be fueled with gasoline to play a growing role in the reference case due to both policies and rising fuel prices. And their share would grow to 42 percent of projected sales in 2035. Flex fuel vehicles represent the largest share of those vehicles with sales of electric and hybrid vehicles that use stored electric energy also grow considerable as do sales of diesel vehicles.

Nonetheless, gasoline only vehicles maintain a projected 58 percent sales share by 2035 because they are able to incorporate technology such as lightweight materials and advanced engine and transmission components that improve fuel

economy. Although growth in the number of drivers and vehicle miles per driver results in a projected growth of 50 percent in light duty vehicle travel between 2009 and 2035, overall light duty vehicle energy use increases by only 10 percent due to improved fuel economy. And projected light duty vehicle petroleum use is about 8.2 million barrels per day in 2035; the same level as in 2009 because there is a shift away from petroleum toward other fuels in the transportation mix.

There are really four key areas of uncertainty in these projections: fuel prices, technology costs, consumer acceptance, and potential changes in policies which are your business not mine. In the high oil price case--and I know many people think oil prices are high enough, but we have one where oil prices doubled in real terms by 2035. We would expect overall light duty vehicle fuel consumption to grow by only one and a half percent by 2009 and 2035, and petroleum use in 2035 would be only 6.6 million barrels for light duty vehicles, a million and a half barrels below the current level.

Vehicle cost is another factor that will play a critical role in determining the success or failure of unconventional vehicles in the future. For example, plug in hybrid and plug in electric vehicle incremental cost is heavily dependent on

the cost of a battery. Just how much more these vehicles will cost the consumer depends on future technology breakthroughs or lack thereof which my colleagues will discuss that.

Consumer acceptance is the third critical uncertainty and I think some of the opening statements mentioned that regarding the success of unconventional vehicles. And alternative fuels as discussed in my written testimony attributes such as cost and performance as well as refueling infrastructure availability are essential to acceptance.

And finally, the future regulatory environment is also uncertain. Fuel economy standards are currently set through 2016. We do assume that they are raised at least through model year 2020 to reflect the requirements of the Energy Independence and Security Act. But additional fuel efficiency requirements that may be promulgated under existing authority could also have a very significant impact. Our annual energy outlook includes two fuel economy sensitivity cases, one assuming a three percent annual increase through 2025, the other assuming a six percent annual increase.

Again, in these cases we find sales of unconventional vehicles grow dramatically to 70 percent of total sales in the 3 percent case and nearly 90 percent of total sales in

the 6 percent case compared with 40 percent in the reference case. And in addition we would likely slow the rate of vehicles stock turnover relative to the reference case. But overall light duty vehicle energy consumption and petroleum use decline relative to their 2009 level.

This concludes my statement, Mr. Chairman, and I would be happy answer any questions you or the other members may have.

[The prepared statement of Mr. Gruenspecht follows:]

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Mr. {Whitfield.} Thank you very much. And Mr. Davis, you are recognized for 5 minutes.

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^STATEMENT OF PATRICK DAVIS

} Mr. {Davis.} Good morning Chairman Whitfield, Ranking Member Rush, and members of the subcommittee, and thank you for the opportunity to testify here today. I am Pat Davis, Program Manager of the Vehicle Technologies Program at the U.S. Department of Energy.

The transportation sector accounts for approximately two-thirds of the U.S. oil consumption. Closer, you say, thank you. Maybe two--there you go. After housing, transportation is the second biggest monthly expense for most American families. The President recently outlined a portfolio of actions which taken together could cut U.S. oil imports by a third by 2025 and these include programs that would put one million electric vehicles on the road by 2015, increase the fuel economy of our cars and trucks, and expand biofuels market and commercialized new biofuels technologies. Viewing these past, present, and future investments are critical to reducing costs for American families while reducing our dependence on oil and enhancing our national economic and environmental security.

Making our cars and trucks more efficient is one of the easiest and most direct ways to limit our petroleum

consumptions and save consumers money. And while the Department continues to work on improving existing engine technology, today I will focus on alternative fuels technologies.

As noted, the Administration's goal is to put a million electric vehicles on the road by 2015. In 2009, the U.S. had only two relatively small battery manufacturing facilities manufacturing advanced batteries for vehicles. Over the next few years, thanks to Recovery Act investments, the U.S. will be able to produce enough batteries and components to support 500,000 plug in and electric vehicles per year and simultaneously create over 6,200 jobs.

At the same time, DOE projects a drop in battery costs of 50 percent by 2013 compared to a 2009 baseline. To make electric vehicles even more affordable, the President proposes transforming the existing $7,500 tax credit into a point of sale rebate, and our fiscal year 2012 budget also proposes a new energy innovation hub, energy stored research hub, and competitive programs to encourage communities to invest in electric vehicle infrastructure.

Domestically produced biomass can provide a cost effective alternative to oil while creating business opportunities and jobs in the U.S., especially in rural areas. U.S. DOE develops programs that both increase the

current use of biomass technologies and support research development and demonstration on the next generation of biomass technology.

DOE's efforts to increase the use of biofuels have been strengthened by the expansion of the Environmental Protection Agency's Renewable Fuel Standard Program and DOE's work with EPA to understand the potential impact of E-15 on compliance with vehicle emission standards. DOE is also making investments in next generation biofuels, technologies from a variety of feed stocks such as corn stover, wood waste, algae, and other materials and we are exploring ways of converting corn and cellulose to cost competitive drop in substitutes for gasoline, diesel, or jet fuel.

Recovery Act funding also enabled us to invest in 29 integrated biorefinery projects to validate first of a kind technologies at the pilot demonstration and commercial scales which will further reduce risk to investment. These projects are expected to generate at least 170 million gallons of advance biofuels annually and bringing more commercial biorefineries online will help us meet the Nation's ambitious renewable fuel standard goals.

In summary, DOE's transportation portfolio will save consumers money, reduce our dependence on foreign oil, lower our environmental impact, and keep America on the cutting

edge of clean energy technologies enabling us to build a 21st century clean energy economy. Thank you again for the opportunity to discuss these issues and I welcome any questions you may have.

[The prepared statement of Mr. Davis follows:]

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Mr. {Whitfield.} Thank you, Mr. Davis. Ms. Oge, you are recognized for 5 minutes.

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^STATEMENT OF MARGO T. OGE

} Ms. {Oge.} Gentleman Whitfield, Ranking Member Rush, and members of the committee, good morning. I really appreciate the opportunity to appear before you today.

Biofuels can play a very important role in reducing our dependence on foreign oil decreasing greenhouse gas emissions, and improving the world economies. A year ago in compliance with the Energy Independence and Security Act, EPA finalized the Renewable Fuel Program commonly known as RFS Program. This program established an annual volume standards for renewable fuels of 36 billion gallons in 2022. This includes 21 billion gallons of advance biofuels for that timeframe.

When fully implemented, biofuels required by the RFS would displace about 13.6 billion gallons of petroleum-based gasoline in diesel fuel. That is approximately 7 percent of the expected annual gasoline and diesel consumption in 2022. This will decrease all imports by $14.5 billion and provide additional energy security of $2.6 billion annually.

It should also reduce greenhouse gas emissions by an average of 138 million metric tons of CO2 equivalent. This is approximately the emissions created by 27 million vehicles

on an annual basis. EPA strongly supports expanded use of advanced biofuels especially cellulosic biofuels. When Congress enacted ESA, it recognized that cellulosic targets are very indeed aggressive. It included provisions directing EPA to reduce the mandated levels set in the statute if cellulosic ethanol production were lower than the statutory requirements. Simply put, Congress did not require refiners to use more cellulosic ethanol than would be produced on an annual basis when they set those annual standards.

Unfortunately, the cellulosic industry is not developing as quickly as Congress anticipated and we have had to lower the cellulosic mandate for the 2011 timeframe in 2010. For 2010 and 2011, we set the cellulosic standard at about 6.5 million gallons which is substantially below the initial targets of 100 to 250 million gallons for those years. Although EPA has the discretion to reduce the total advance and total renewable fuel standards, we did not do so mainly because we expect sufficient volume of other advance biofuels would be available in 2011 time frame.

We set the standards in a very transparent rule making process based on the evaluation of the cellulosic industry including discussions, one on one discussions with each producers working with the Department of Agriculture, the Department of Energy, and the Energy Information

Administration. We intend to propose the 2012 standards early this summer and to finalize them by end of November 2011.

The biofuel sector is a dynamic one. It is important for us to evaluate and qualify new fuels where possible for use in the RFS Program, corn and advanced and cellulosic biofuels approved for the RFS include biodiesel and renewable diesel from certain feed stocks, ethanol from sugar cane, biodiesel, and renewable diesel from algae oil, ethanol and diesel from approved cellulosic feed stocks in jet fuel and heating oil from certain feed stocks.

We have also a process of evaluating new biofuels. Last year we successfully evaluated canola based biodiesel as an approved pathway. Lastly, I would like to briefly highlight steps that we have taken to remove barriers from the production of alternative fuels and vehicles in the auto sector. Essentially EPA announced a new regulation that would streamline and simplify the process by which manufacturers of clean alternative fuel conversions systems made them with said compliance where at the same time they can maintain the mission control standards required for those vehicles and engines.

In closing, EPA is currently working to successfully implement the RFS Program both by following the specific

direction established in ESA and by recognizing that the statute's strong intent is to replace conventional petroleum derived fuels with advanced biofuels. I want to say that we are currently witnessing a period of great innovation in our country with respect to the development and introduction, not just of the new fuels but also of new vehicle technologies. We at EPA strongly supports this innovation and we believe that the result in new fuels and new vehicle technologies hold a tremendous potential to reduce independence on foreign oil, save consumer dollars, and clean the environment.

Thank you for the opportunity. I look forward to your questions.

[The prepared statement of Ms. Oge follows:]

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Mr. {Whitfield.} Thank you, Ms. Oge. I will recognize myself for 5 minutes of questions. And once again we appreciate your being here. Mr. Davis, you mentioned in your testimony that by 2015, the goal was to have one million electric vehicles on the roads. How many electric vehicles are out there right or do you know?

Mr. {Davis.} Two hundred.

Mr. {Whitfield.} Two hundred.

Mr. {Davis.} Well, you know this renewable fuel standard obviously is very important and I think it is also important that we not look through rose colored glasses as we try to anticipate the future. I was reading an article--two articles recently. One was in the New York Times. This was the 1917 issue of the New York Times, front page and it said electric vehicles are the cars of the future. And then I read an article about a company in California called DC Green that was formed a few years ago to go out and remodel service stations to provide electrical outlets and so forth and they are now in bankruptcy. So I was just--would you elaborate? And it is my understanding that the Volt electric car for example costs like $42,000. So would you elaborate a little bit on why you are as optimistic as having a million cars by 2015?

Mr. {Davis.} Sure. Thank you very much for the question. First of all let me say a million vehicles by 2015 is not the end point. It is a milestone. We want to get to a million vehicles by 2015. We want to go beyond a million vehicles to get to five million, 10 million, and even tens of millions and we are really pretty confident that that milestone is obtainable. And I would suggest that the situation today is much different than in the '70s or any other previous time.

We believe that the pieces are in place to achieve this goal. First of all the Recovery Act, a battery manufacturing facilities are in place to support the widespread production, electric drive vehicles, $2 billion in batteries and electric drive component funding that was matched by industry for a total of 4 billion in manufacturing facilities that are supporting--

Mr. {Whitfield.} So how many manufacturing facilities are there out there now with on advanced battery production?

Mr. {Davis.} Well, the Recovery Act is supporting a total of 20--

Mr. {Whitfield.} Twenty.

Mr. {Davis.} --and that is an entire supply chain from the component level, annotes, cathodes, electrolytes, to cell production, the battery manufacturing and assembly, and even

to recycling. In addition to the Recovery Act projects, there is the tax incentive of $7,500. We are bringing the cost of batteries down very quickly. We are highly confident that we are going to meet our goal in 2015, the middle of this decade to get to $300 per kilowatt hour. There is the ATVM, the Advanced Technology Vehicle Manufacturing Loan Program supporting manufacturers of advanced vehicles. In addition to that the manufacturers have announced production capacities that when you look at the total production and the ramp up rates, total over one million vehicles through 2015. Now that is announced production capacity. It doesn't indicate consumer acceptance or that consumers will buy those vehicles. But we are very confident that the production capacity will be there to meet that goal.

Mr. {Whitfield.} Yeah, you also mentioned that you want to move from a $7,500 tax credit to a point of sale rebate. How would that rebate be determined?

Mr. {Davis.} Well, the--of course the details of that are still being worked out but the concept is that a consumer goes into buy a vehicle will be much more incentivized by an immediate $7,500 benefit off the cost of a vehicle versus having to pay the entire price of the vehicle with the hope--

Mr. {Whitfield.} Right.

Mr. {Davis.} --of getting $7,500 back when they do

their taxes some, you know, perhaps 12 months later.

Mr. {Whitfield.} Mr. Gruenspecht, not too long ago we heard people talking all the time about hydrogen fuel cell technology and I don't really hear a lot about that today. Or Mr. Davis, maybe I should ask you that question. What is happening on the hydrogen fuel cell technology?

Mr. {Davis.} Well, fuel cell technology office is making great progress. They reduced the cost of fuel cell systems from about $275 per kilowatt in 2002 to $51 per kilowatt today. That is a high volume production cost and their ultimate goal is $30 per kilowatt. So we are getting very close to where we need to be on cost. Infrastructure and hydrogen production is--remains the most serious challenge along with storage of hydrogen.

Mr. {Whitfield.} Okay. All right, my time is expired. Mr. Rush, I recognize you for 5 minutes.

Mr. {Rush.} Thank you, Mr. Chairman. I think I will ask Mr. Gruenspecht these questions. The Energy Security and Independence Act once passed out of Full Committee and to the House in '07 contained a renewable fuel standard with the goal of reaching 36 billion gallons of renewable fuels by the year 2022. Question is where are we? Are we currently on pace to meet that goal and if not why not? What additional steps are needed in order to make sure that we are on pace to

meet that objective?

Mr. {Gruenspecht.} Thank you for that question. I guess from the soon after passage of the Energy Independence and Security Act, EIA as part of its duty needs to put out a projection and I think in the projections issued in 2008 and since that time we have not been showing the 36 billion gallon target being met. In large part the issue involves cellulosic ethanol as well did specify my colleague that industry is coming along somewhat more slowly than had been anticipated by the framers of that legislation. There is waiver authority and in our projection that waiver authority is used to reduce that cellulosic mandate. But over time we expect the use of renewable fuels to exceed that 36 billion gallon levels. So it is really a matter of the speed with which the cellulosic ethanol or cellulosic biofuels more generally because it is not just ethanol. You can make other biofuels out of cellulosic material can be ramped up.

Mr. {Rush.} Mr. Davis, on the discussion on cellulosic biofuels, we have heard a lot of discussion about the greens and the impact that this type of alternative fuel may have some day in meeting our war on energy needs reducing our carbon footprint and decreasing the price of gas at the pump. Are there any--what are the most promising types of cellulosic biofuels currently and when will this type of

alternative fuel realistically have an impact on a commercial scale? And are there any additional policies that can help us move this process forward at a quicker pace in order to go from a good idea to a better idea to best idea to reality?

Mr. {Davis.} Well, thank you very much for your question. There is quite a lot built in there so let me just try to touch on a couple things. You know first of all, the biomass program within DUE has invested more than a billion dollars in 29 integrated biorefineries. So these are projects that are at the pilot scale, the demonstration scale, and even at the commercial scale. And we--that $1 billion dollars investment has been matched by industry with $1.7 billion and these plants in total would be able to produce about 170 million gallons annually. And these are projects that are--you know there are many different types of projects represented in those 29 biorefineries. But they represent mostly cellulosic projects converting cellulosic resources into biofuels.

I would say you mentioned what kind of other things could you do. One thing that could be done is a proposed in our budget for--to support a reverse auction which would support these commercial scale facilities becoming more cost effective in the very near term. And could enable more than 50 million gallons annual biofuel production by 2014. So

that is one thing. And I would say in general our R&D program is continuing to lower the cost of these biofuels to be directly competitive with conventional fuels in the long term.

Mr. {Whitfield.} Your time is up, yes. Mr. Sullivan you are recognized for 5 minutes.

Mr. {Sullivan.} Thank you, Mr. Chairman. And before I start my questioning I would like to ask unanimous consent to submit two statements for the record.

Mr. {Whitfield.} What are the statements?

Mr. {Sullivan.} The first one is from the American Gas Association supporting my legislation H.R. 1380 the NAT Gas Act and the natural gas vehicles in general.

Mr. {Whitfield.} Okay.

Mr. {Sullivan.} And the second is the one I would like to submit is a written statement for the record from the National Petro Chemical and Refiner's Association outlining their concerns with the renewable fuels mandate.

Mr. {Whitfield.} Without objection.

[The information follows:]

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Mr. {Sullivan.} Thank you, Mr. Chairman. Mr. Davis, in your testimony you don't make any mention of the role of natural gas vehicles--that natural gas vehicles contain our nation's transportation portfolio. I hear Secretary Chu talk about electric vehicles all the time but he hardly every mentions natural gas vehicles. This is perplexing given the massive amounts of natural gas resources that we have in this country and the fact that natural gas vehicles help reduce all types of pollution. What is DOE's position of the role of natural gas vehicles or what is their position on the role natural gas vehicles will play especially in the heavy duty market? Why don't natural gas vehicles have a primary place in DOE's strategy?

Mr. {Davis.} Thank you so much for the question, Mr. Congressman. You know actually natural gas does play an important role in our strategy. We supported natural gas vehicles and the implementation of natural gas fueling infrastructure for 17 years through our clean city program. Most recently through the Recovery Act placing thousands of natural gas vehicles on the road along with the infrastructure that supports them.

I would say that the Vehicle Technologies Program being primarily a research organization does struggle sometimes

with the fact that natural gas is a pretty mature technology. It is really more about deployment than it is about R&D. We know how to build natural gas engines. We know how to build natural gas vehicles and that is why we have concentrated our efforts on natural gas through the Clean Cities Program. The deployment arm of the Vehicle Technologies Program.

Mr. {Sullivan.} Well, again this year the Administration's budget request had no R&D funding for natural gas vehicles. Why does DOE always seem to be promoting alternative fuels of a distant future, stuff that is 15, 20, 50 years or more--years away from possibly being commercial to the exclusion of proven, cleaner, domestically available fuels and technologies like natural gas vehicles which could make a real difference tomorrow. Natural gas vehicle technology is readily available and widely used throughout Europe, South America, and Asia. There are over 12.5 million natural gas vehicles worldwide and we only have 150,000 here in the United States. Can you elaborate on that?

Mr. {Davis.} Yes, thank you for your question. While I would say that first of all in fiscal year 2010 we put in place some natural gas engine development projects and those projects are underway this year in which we leveraged $5 million in funding for a total of over $15 million in engine

development funds supporting new natural gas engines that could be used in a variety of vehicles, mainly medium duty to heavy duty type vehicles. That said, once again our effort has been focused on deployment and although you might note that in fiscal year 2012, we don't request any direct funds for R&D in natural gas, we continually support natural gas vehicles through the Clean Cities Program, our deployment arm and we will continue to do so both vehicles and infrastructure.

Mr. {Sullivan.} Thank you, Mr. Chairman. I yield back.

Mr. {Whitfield.} Thank you, Mr. Sullivan. Mr. Doyle, you are recognized for 5 minutes.

Mr. {Doyle.} Thank you, Mr. Chairman. Thanks for holding this hearing today. You know I--it seems like we repeat this cycle in this country and here in Washington decade after decade. Gasoline prices get high and there is great interest in all these alternative fuels and vehicles. And there is this great effort to move forward and then all of a sudden the OPEC ministers get together, or the speculators stop speculating, or--and gasoline prices come down, and we get lulled back in this complacency that everything is okay now and we can go back to our big SUV's and just keep putting gasoline in cars. And it is-- you just wonder how many times you let the board hit you in the face

before you duck. And we just seem to not be good at that.

We have to not only put money into R&D, but we have to sustain an effort in this country to create a situation here where we can mass produce vehicles that don't use gasoline. That is the future of the country. When I bought my first hybrid I used to complain to the Detroit people all the time why don't we have an American SUV hybrid? And why is it that other countries developed this technology before ours did? Well, I got a call one day from the Ford guy who said Ford was coming out with a Ford Escape hybrid. And I says I want one. He says well they are putting a waiting list together. So I said put my name on the list. About 7 months later I got a call that my car was here in Washington. I forgot I ordered it.

And so I went down to the dealer to pick up that car and I remember the sticker price on the car was $29,000 and I had never paid sticker for a car in my life. I didn't think that was un-American somehow and I said to the dealer how much do you want for the car? He says $29,000. And I says that is the sticker price of the car. You don't think--do I look stupid to you? I am not paying $29,000 for this car. And he said sir, he says these cars are going for not only sticker price; some dealers are selling them for sticker plus, the start of the hybrid cars.

But you know I thought I had this American hybrid car. Of course that battery came from Japan because we didn't make those batteries in the United States of America. I am glad to see we used some stimulus money and one of the factories by the way is in Pennsylvania that is doing this new battery technology. As we start to develop this battery technology, institutions like Carnegie Mellon in Pittsburgh are doing lots of research on how to make batteries that will allow cars to go further and further and further. This is the key to the future and once we can mass produce them, the cost goes down.

Everybody remembers what that first flat screen TV cost. It cost a cazillion dollars. Right now you can pick one up for practically nothing. Why? The technology gets better, people start to buy the product, they mass produce it, the price comes down. It is going to be the same with batteries in automobiles in the future once we put--but we need to build them here in this country. You have to develop an infrastructure in the United States of America that allows us to do this not just when gasoline prices are high, but to do this once and for all and finally relieve ourselves of this constant trap we fall into with these oil prices. And you know we could drill every oil well in America and that doesn't mean these oil companies are going to sell us the oil

any cheaper because it comes out of the ground in America than it does in any other place in the world. There is no discount for oil that comes out of the ground in United States of America. It is a world commodity. So we got to learn to duck. We have got to learn to start building these facilities in the United States of America. That takes commitment and R&D. We got to put money in R&D. The first thing that gets cut when we get tight budgets are the R&D budgets. That is what gets cut in this country. It is stupid. We need to not do that. We need to do more to get more of this research in there.

Let me just ask about incentives. Everybody thinks there is some magic bullet to bring gasoline prices down here in the United States in the next six months or a year. I mean it is complete fantasy that this Congress can do anything that would reduce gasoline prices in the very short term. But I do think I want to see how we can incentivize consumers to maybe drive vehicles that let them go a little bit further on that gasoline so that they get more miles for their dollar. I know we subsidize I think just three cars right now: the Chevy Volt, the Honda Civic, and the Nissan Leaf. I want to ask the three of you just to comment would the marketplace see more innovation in a wider spectrum of fuel efficient vehicles if we simply rewarded vehicles for

overall fuel savings regardless of the technology? In other words, we become technology neutral and say let's just get the most fuel efficient vehicles out there. Do you think that is a better idea? And how do we incentivize consumers in the short term over the next 3 to 5 years, say, not 6 months to a year. That is just fantasy talk here in Washington, D.C. But realistically how do we incentivize consumers to start driving more fuel efficient vehicles? And I will let all three. You can just go in order and give your opinions. You notice I ended my question just in time for the guys to answer. That is the technique here. Go ahead.

Mr. {Gruenspecht.} I feel the board hitting me in the face. No, you know I think in some sense just again casual observation. It is one of the things we don't like, but the--I think the price of gasoline is having an effect on what people buy in the way of vehicles. There are various--there are fuel economy standards as one possibility, policy instrument. Another one that has been discusses in the academic literature are fee-bates to--you know so there are a number of options that have been proposed. Again given EIA's role, I wouldn't really want to reanalyze them for you, but I don't really want to express a preference.

Mr. {Davis.} Well, thank you so much for your remarks. And thank you for East Penn Manufacturing in Pennsylvania who

is manufacturing some critical battery technology that will be excellent application to start/stop hybrids.

You know we have been doing--I personally have been doing this for 18 years. The Department has been doing it for decades to try and reduce our dependence on petroleum and raise the fuel economy of vehicles and reduce our dependence on petroleum. So pretty much most of what you said we are in violent agreement on. I would just echo my colleagues remark that you know we would be pleased to work with you on policy instruments that could less technology specific. He mentioned one fee-bates which are similar to the French Bonus Malice Program and we would be pleased to talk to you more in depth about that.

Ms. {Oge.} You ask like the million or $10 million questions. If we can stay here for the whole day and we can do a brainstorming session--but clearly gasoline prices are playing a very important role. As we are seeing right now in talking to the OEM's, small cars and most recently GM and Ford announce making profits from selling small cars something pretty unique for this companies and for the country. So gasoline price is very important. But also what is very important is the continuing development of all technologies. There is a huge opportunity to improve the conventional gasoline engine significantly. And we are

seeing that. All the OEM's that we are talking to because we are in the process of setting the new standards for 2017 to 2025 for fuel economy and greenhouse gas emissions working with the Department of Transportation in California. All the OEM's are investing and they are introducing cleaner, more efficient gasoline engines. Anywhere from reducing the size of the engine with different sizing, you know fuel injection systems, stop and start, very mild hybrids. As they introducing these technologies in the marketplace in bigger numbers including hybrids and electric supply kits, the cost will come down. So at least we at EPA we are very optimistic that the efforts that we are seeing right now in our country to improve the fuel efficiency, reducing the greenhouse gas emissions from the transportation sector as a whole--both cars and trucks, if it continues we are going to find ourselves in a tremendous place in the history of this country.

Also what I want to mention is that there is a program that EPA and DOT announced last year setting the first set of greenhouse gas standards and fuel economy standards from 2010 to 2016. By 2016 we are going to have on an average the fleet; the new fleet sold in the United States at 35.5 mpg is pretty historic. And we start seeing these new fuel efficient vehicles introduced in the marketplace today. The

program costs about $900 on an average in 2016, but the consumer because of the fuel savings will get $3,000 back for that $900 investment just in fuel savings.

Mr. {Whitfield.} Ms. Oge, thank you. Thank you. Mr. Barton, you are recognized for 5 minutes.

Mr. {Barton.} Thank you, Mr. Chairman. I want to tell my good friend Mr. Doyle when he is ready for another hybrid come see me. They make--we make the Chevy Tahoe hybrid in my district with United Auto Workers Union Employees and I will bring you down to Arlington, Texas and you can pick it out. And within the confines of the ethics rules that we operate under we will make you a deal. I will make you the best deal that it is possible for you and I to accept under the laws that we have to operate.

Mr. {Doyle.} All right.

Mr. {Barton.} And I am not opposed to the Ford, but we make the Chevy hybrid in my district and it is a good--I drive one. It is a good product. It is a good product.

We welcome our witnesses. I want to associate my remarks with Mr. Sullivan. I am a cosponsor of the natural gas bill that Mr. Sullivan is the chief sponsor of. We think it is a fuel that has some real opportunity for transportation. I want to direct my questions to the representative of the EPA. In your testimony, you talk about

the cellulosic standard which under the law that was passed several years ago was supposed to be somewhere between 100 million and 250 million gallons for this year and next year. And in a very understated way said because of the ability to actually produce that product they had to reduce it to 6.5 million gallons. To put that into perspective--just doing some back of the envelope calculations, 6.5 million gallons is about 20 minutes of fuel consumption for the United States. Twenty million--about 20 minutes. So my question, Madame, is at what point in time do you expect the cellulosic biofuels industry to become viable enough that volumes are actually commercial and substantial enough to make an impact?

Ms. {Oge.} We are also disappointed to see that the cellulosic industry was not able to meet the 250 million gallons this year. But clearly Congress did recognize that this is a new industry. That there would be uncertainties, especially the early years to meet those volumes. And it has given the authority to EPA to access that volume. And that is what we did for 2011. We are in the process of setting the cellulosic volumes for 2012. The proposal will be coming out sometime in early summer. And our evaluation we give for 2012 is based in having one on one discussions with all the major players in the cellulosic industry along with USDA and EIA. The industry's facing two major challenges right now.

One is the opportunity to raise capital to invest in this new technologies, or rather on this technological challenges to move from pilot to commercial levels. However, we remain optimistic that those levels will be met. There are some significant number of companies and significant companies in the oil industry that are investing in this area so we remain optimistic that these goals will be met.

Mr. {Barton.} Okay. I want to ask the gentleman from EIA is--what is the fuel used for transportation on a daily basis in the United States right now?

Mr. {Gruenspecht.} That is about 70 percent of overall consumptions, so 70 percent of 19--18--19 million barrels a day probably this year.

Mr. {Barton.} The number that I use is 12 million.

Mr. {Gruenspecht.} Yeah, that would be pretty good.

Mr. {Barton.} Okay.

Mr. {Gruenspecht.} Close enough.

Mr. {Barton.} Yeah, that is barrels. That is just to put in perspective we are using 12 million barrels a day cellulosic we got 6.5 million gallons last year for the whole year. So I mean the curve needs to go up fairly rapidly. I am--my time is expired, Mr. Chairman, and I yield back.

Mr. {Whitfield.} Thank you. Ms. Capps, you are recognized for 5 minutes.

Mrs. {Capps.} Thank you very much. And thank you for holding this hearing. It is a great topic and further, our witnesses. Some would argue--we hear repeatedly here in Congress that the best way to address high gasoline prices is with more offshore drilling. Mr. Gruenspecht, EIA can bring an analytic perspective of this discussion. In your recent annual energy outlook--excuse me, EIA begins with a reference case. This scenario assumes that our laws remain unchanged and that there are only conservative adjustments in our expectations regarding technology improvements and the resource base. Is this correct?

Mr. {Gruenspecht.} Correct.

Mrs. {Capps.} Close enough?

Mr. {Gruenspecht.} Close enough.

Mrs. {Capps.} However, EIA also examined a hypothetical scenario called the High OCS Resource case. This scenario assumes that offshore oil and natural gas resources in undeveloped areas of the Pacific, of the Eastern Gulf of Mexico and the Atlantic, and Alaska are much higher--would be much higher than currently expected and are developed in the coming years. This is hypothetical. This is the assumption in the High OCS Resource case also assumes that oil and gasoline resources in these areas to be three times higher than in the reference case. So far so good? Okay. If one

were a strong advocate for offshore drilling the High OCS Resource case would be just about our best case scenario. Right?

Mr. {Gruenspecht.} It would be a good scenario.

Mrs. {Capps.} It would be a good scenario. As part of your analysis of this scenario EIA examined the effects of these increased resources and the production in oil prices and their influence on oil prices. The impact appears almost negligible. In 2025, increased offshore production under this High OSC Resource case would result in oil costing $117.12 per barrel instead of $117.54 per barrel. That is a difference of $.42 per barrel or just one penny permanent resident gallon of crude oil according to this scenario as I read it. Mr. Gruenspecht, can you tell us why changes in domestic oil production tend to have such a small impact on crude oil and petroleum product prices?

Mr. {Gruenspecht.} Well, I mean I guess the fundamental point would be that the oil market is a global market. I also think that another aspect of this is that there is a lot of time involved in bringing particularly deep water resources into production so you would have a geophysical and geological evaluation; could be a couple years for a deep water prospect. You have exploratory drilling; could be up to four years for a deep water prospect. Development after a

confirmed discovery could be you know seven years. So it takes a long time to get going on these things and in fact in that case, you know If you look further out there is again a larger impact on production and a larger impact on price but it is still relatively modest. We are talking about a world market that by that time is 100 million barrels a day. It is about 88 million barrels a day now. I guess the idea is that no one measure is going to have you know a massive effect on world oil prices. I think it is really adding up a series of actions that affect both demand and supply rather than viewing actions as alternatives to each other that matter a lot. Again, I think the development of improved production technologies for either oil or for alternative fuels can lead to higher production not only in the U.S. but throughout the world because it is a global production. That matters similarly improvements in efficiency in the U.S. and you know that can be translated throughout the world--can affect on global demand. And so really you go to move both I think demand and supply if you want to have a significant impact on prices. Fuel flexibility probably helps a lot also.

Mrs. {Capps.} Thank you. Maybe just--there are only 40 seconds but if the other two of you would like to comment on this scenario and how you interpret it?

Mr. {Davis.} Actually, I think my colleague handled it

extremely well.

Mrs. {Capps.} So then I would just I guess finally I will ask one quick question. Have you translated what a penny per gallon difference in crude oil would translate for consumers at the gasoline pump?

Mr. {Gruenspecht.} I think it was more than a penny per gallon difference in crude oil.

Mrs. {Capps.} It--that a 42 cents per barrel or just one penny per gallon of crude oil in your High Resource case--OSC case.

Mr. {Gruenspecht.} If you drive 12--drive 20,000 miles a year and the vehicle gets and you know in your household the vehicle gets 20 miles per gallon on the road, you are talking about 1,000 gallons a year. So a penny per gallon would be $10.00 I imagine. That is just off the cuff. You know instant analysis is about as good as instant coffee, so maybe I will give you a better answer for the record.

Mrs. {Capps.} That is all right. That is good enough for me for now. Thank you. I will yield.

Mr. {Whitfield.} Yeah, we were really impressed with that.

Mrs. {Capps.} How fast he did it right?

Mr. {Whitfield.} We have two votes on the House floor. So we are going to recess. We will be back here about 11:10.

So and then we will resume with this panel. Thank you.

[Recess.]

Mr. {Whitfield.} We will call the hearing back to order and we will renew our questioning period for the first panel. At this time I will recognize Mr. Terry for 5 minutes.

Mr. {Terry.} All right, I appreciate that Ms. Oge. I can barely see you but on cellulosic biofuels you had mentioned in your opening statement a little bit. I couldn't get all with Joe Barton, but I was off part--very much part of those discussions when the RFP came out. And the history of the mandated sub-mandate on cellulosic was part of the food versus fuel capping corn as ethanol. And also the secondary is really to force the markets, the research, and the development into the cellulosic.

And Mr. Davis, you could help me on this so this question is really for you. As a supporter of biofuels and cellulosic fuels, it is frustrating because it doesn't seem like in the five years since that bill has passed that we have made a lot of progress. I don't see the cellulosic plants. There may be pilots out there, small pilots, but I would have expected mass production today.

So the overall question and I want to start with Ms. Oge, why aren't we there? What is the holdup? What is the problem here? It seems like we are spending money on

research, but we are not getting there. Is it the feed stock? What is our holdup?

Ms. {Oge.} Based on the discussions, you know when we set the 2011 standard for the 6.6 million gallons, our team was actually was in touch with over 100 companies that had some form or another of investments on advanced biofuels. You know from different feed stocks, different processes. This year we talked about 15 to 20 companies that they continue to have significant investments. And as I said in my testimony that I really--two things that are going on and I would dare to say it is not--something it was to have expected because indeed it is an extraordinary new industry. And there are different ways to get there as far as a commercialized volume that is cost effective and can compete with fossil fuels.

And it has to do with--notice with the feed stocks the type of feed stock. But those are the type of process they used. What we have seen and I cannot you know a lot of the information is company by company plus it is confidential. We see there are two things going on. One is that companies don’t have--some of the companies don’t have sufficient capital investment to proceed based on the original plans that they had. And second is technology challenges that companies are finding as they are doing these pilot projects,

make corrections, and then coming back to invest more and do more. So my personal view and this is completely my personal opinion is that we will be able to catch up on these volumes but it is too early to say the timeframe.

Mr. {Terry.} Okay. Well, I want to give Mr. Davis some time here to answer the question.

Mr. {Davis.} Well, actually my colleague from EPA in a really hit the highlights very well. I would just add that you know we started 29 integrated biorefineries. Those projects were initially started and some of them as early as 2007, 2008, right before the economic downturn. This is an emerging industry and what--their access to capital was very constrained in that timeframe and so what you are really seeing as we emerge from that downturn are these projects starting to get started on a more rapid basis. And we also have to recognize when you are talking about building a plant that could cost tens or even $100 million, it takes time to build that plant. Once you have the capital to do it you are still looking at a 24 month build schedule. So you know I would agree. We, like you would like to see this grow faster. And certainly the economic downturn has hurt us, but I think we are going to start picking up pretty quickly now.

Mr. {Terry.} Yeah, I would hope so because I think we are losing credibility frankly the longer it takes. I yield

back.

Mr. {Whitfield.} Thank you, Mr. Terry. Mr. McKinley, you are recognized for 5 minutes.

Mr. {McKinley.} Thank you, Mr. Chairman.

Mr. {Whitfield.} Mr. McKinley, excuse me just one minute.

Mr. {McKinley.} As a new member to Congress I have a--I have admired Mr. Doyle's comments a minute ago about the analogous groundhog day. He didn't use that term but it just--we seem to be hearing this one over the years. That is all I have ever heard. We are just--we keep working in cycles that we are going to have another gas increase and we are going to worry about it and do nothing. And then we are going to do it again in a couple of years and we will do it again. I mean, I think the technology here--excuse me, the--I thought the goal was to use less energy. We want to be energy independent, but then I think that is as admirable as it is--but that is not what this Administration is doing with the National Energy Technology Lab, he slashed the budget for fossil fuel research, the EPA's overregulation, and causing instability in the private sector.

The assertions that coal is a subsidized industry and I would ask any of you to please--all I keep hearing answers from you when I ask this question--we will get back to you.

And 120 days later no one has gotten back to me. I want to know what subsidy is going to coal. If you could please get back to me. Okay? The--so I think it is a false assertion that we have demonized our large, multi-national corporations.

We have no--as Sullivan said there is no funding here for natural gas vehicles. We don't have an energy policy. We have an environmental policy and I am just frustrated. I am frustrated that when I go home on the weekends with people talking about how the price of gasoline has gone up $2.00 a gallon in the last 2 years, I have looked at the--I read a book the other day and it talked about how we industrialized America without subsidies when Henry Ford and Auto Denzler developed not only the engine, but implemented the--that wasn't a subsidized industry. Thomas Edison developing the light and other--it wasn't subsidized. He did this all without federal subsidies. Westinghouse developing the A/C motor. No subsidies. Charles Lindbergh flew across the Atlantic Ocean with aerospace technology of the time just simply to win a prize. That--we use that of--what was it, $20,000? There was no subsidy with that.

I guess I am just skeptical that I don't think there is a real hunger here for us to solve anything. Congress seems to want and the research group just to continue the debate.

We have the technology right now to deal with coal liquefaction, gas liquefaction using natural gas vehicles, battery powered. Why don't we just stay on the ones that we are close to achieving and finish the job instead of taking on new things and diverting, dispersing our energies so that we don't accomplish anything. Or is this--we are simply just trying to have a full employment bill for researchers across this country? Why don't we just finish the job? Dr.--Mr. Gruenspecht?

Mr. {Gruenspecht.} Well, I would say that with respect to your issue about energy subsidies EIA has put out a couple of reports, three reports on that issue. I think the most recent one in response to a request from Senator Alexander that--

Mr. {McKinley.} I am sorry, could you?

Mr. {Gruenspecht.} Yes, we had put out a report on energy subsidies that we update fairly regularly so that might be of use to you now.

Mr. {McKinley.} Can you tell me one coal company that is being subsidized? Because I hear it from this side all the time and I am getting pretty irritated about it that coal is a subsidized industry. That is why we have to find something else. I would like to find one coal company that is being subsidized and everyone says they are going to get

back to me.

Mr. {Gruenspecht.} Well, I--we do not talk about specific companies, but I think you will find the information in the report responsive to your request.

Mr. {McKinley.} Okay.

Mr. {Gruenspecht.} Let me just leave it there. Thank you.

Mr. {McKinley.} The--are we on the wrong track here? What do we have to do to finish a job? Why are we continuing to take on other things instead of--if we truly want to be energy independent we know how to be energy independent, but yet we start new projects whether it is cellulosity, Biomet, whatever those are? Those are all fine. I have want to support those in a way, but why don't we just finish the job that we started with the ones that we are closest to if we really want to accomplish it instead of taking on spending new money when industry over the years has worked without these subsidies. Why are--why is--is it just simply the full employment of research? Is that what this is about? Because if it is, I just need to understand. I can play by the game, but I am getting irritated that we don't solve anything. Mr. Davis?

Mr. {Davis.} Well, appreciate your question and I also appreciate your frustration. You know this is a very

difficult problem to solve. We have 240 million vehicles on the road today. We only sell about 12 million per year. It takes 20 years to turn--

Mr. {McKinley.} Can we liquefy gas?

Mr. {Davis.} It takes 20 years--

Mr. {McKinley.} Can we liquefy gas?

Mr. {Davis.} Of course we can liquefy--

Mr. {McKinley.} I am sorry?

Mr. {Davis.} Of course we can liquefy.

Mr. {McKinley.} Why aren't we doing it?

Mr. {Davis.} So I think yes, natural gas is growing in momentum. Electric vehicles are growing in momentum.

Mr. {McKinley.} Why is there no--nothing in the budget for natural gas vehicles? I am sorry--run out of time.

Mr. {Whitfield.} Sorry, Mr. McKinley. Mr. Green, you are recognized for 5 minutes.

Mr. {Green.} Thank you, Mr. Chairman, and I don't come from a coal area, but I come from an oil and gas and we were always hit about our subsidies. But a lot of them are actually manufacturing subsidies, but Mr. Davis, the--you discussed the impact. Can you discuss the impact of E-10 and potentially higher levels of--we have on non-rogue, small, and older engines and material durability?

Mr. {Davis.} Are you specifically asking about E-10 or

E-15?

Mr. {Green.} E-15 I guess. E-10, we have E-10 now because of our smog problems. In our area we have had it since the early 90's. And typically 10 percent of our fuels--well, it was MTB, but now it is ethanol, so.

Mr. {Davis.} So as you may know, I'm sure you know the EPA recently issued a rule making that would allow sale of E-15 and I am sure our colleague from EPA can speak to that. We, in support of that rulemaking conducted a fairly large test program, a program costing about $45 million involving over 100 vehicles and over--and almost 30 models on the effects of E-15 on the long term durability of those vehicles. That data was turned over to the EPA for their consideration and their rulemaking and ultimately did lead to the positive rulemaking to allow E-15 for sale basically indicating that the effect of E-15 on those vehicles was minor, was minimal.

Mr. {Green.} Ms. Oge, the--I would like to talk about corn based ethanol and air quality. Corn production takes a lot of fuel to produce the crop, but you have to clear the fields to get the corn to produce the ethanol. And it seems like there is air quality benefits is maybe even worse than what we do using fuel from oil. The promotion of this type seems contrary to the Administration's clean air goals, but

we see that with--you know because it is an alternative, domestically produced fuel. But is it really a benefit for our air quality when you look at the corn ethanol--ethanol based on corn. Is it--you do from gasoline based on oil?

Mr. {Oge.} The law that Congress passed in 2007 has mandated 36 billion gallons of renewable fuel to be used by 2022. Also the same law requires that EPA evaluates to what extent there maybe any increases of air quality as a result of the use of the 36 billion gallons. It requires EPA to take actions to address these potential increases. As part of the--too, EPA concluded that renewable fuels, the 36 billion gallons mandate would reduce greenhouse gas emissions significantly. But also we have determined that there is some small increase in nitrogen oxides particularly in particular matter. So we are in the process right now to evaluate those increases then taking appropriate steps to address these through biofuel quality and reductions from new vehicles.

Mr. {Green.} Okay. I also have a concern as my question of Mr. Davis is the misfueling of the first few years of E-15. If you have an older car, you know to make sure that E-15 could damage your engine. Is the EPA mandating that kind of information on the pump? I know we have now on our pumps at least in the Houston area it is you

know this contains ethanol. And folks know that but what about somebody that has a 6 or 7 year old vehicle and they go up and decide they are going to fill up with an E-15? Could the damage that could happen to their engine--is there enough consumer information available?

Ms. {Oge.} Is it for me?

Mr. {Green.} Yeah, well either of you.

Ms. {Oge.} Of my colleague from the Department of Energy since we are doing this work. So you are absolutely right. Last October the agency based a significant technical data would give a waiver to 50 ethanol producers to allow E-15 to be introduced in the marketplace for 2007 in newer vehicles. In last January we give a second waiver for 2001 and newer vehicles. However, based on limited data for older cars and off road equipment as you suggested and engineering concerns that we have we are in the process of requiring labeling of pumps so we can educate the consumer about the appropriate fuel that they need to use. So there is a regulatory proposal that we are going to finalize early summer that would put those steps in place because we do recognize the importance to reduce the events of misfueling with E-15.

Mr. {Green.} Okay. Thank you, Mr. Chairman. I appreciate. I have some questions I would like to submit to

the panel.

Mr. {Whitfield.} Yeah, the record will be open for 10 days on that. Mr. Pompeo, you are recognized for 5 minutes.

Mr. {Pompeo.} Thank you, Mr. Chairman. You know it has been interesting to sit here and listen this morning to the discussion. Lots of smart people, many of whom think they know what the next great energy technology is. I don't think any of us know. I have been in Congress now for four months, a little bit more. I--full disclosure, I came from the natural gas industry. I sold the equipment to independent producers all over the world. I think natural gas holds tremendous promise. I come from a State where ethanol is very important. It has made some real progress, too, so I cannot understand for the life of me why were are here talking about all these subsidies, all these handouts, all this taxpayer money going to help these industries as if we know best which technology will ultimately be the victor.

I heard and I agree with Congressman from Oklahoma, my good friend who says natural gas could be the next great transportation fuel. I part company from him, a piece of legislation like H.R. 1380 which says to the taxpayers, you will choose that technology. I understand like no one else how important getting that next right technology is, but I think consumers will get us there. I believe these markets

will choose it. I understand that there are opportunities and challenges when you allow the market to work, but when I listen to decades and decades of folks at EPA and DOE talk about how they have got it all figured out and if we could just get one more grant. If we could just take a little bit more money from the taxpayers, we would cross that hurdle. And when you look 1380, look at its subsidies for natural gas vehicles, I hope natural gas makes it. I hope it does it in its own way with the money from the industry. And that is really where I come back to.

I heard a question or I heard you say, Mr. Davis, today talk about there being a shortage of risk capital. Did it ever occur to you that that shortage of risk capital might be a direct result if we are taxing too much? That is my question for you this morning. The under--that there is a connection between. You said DOE made investments, but DOE doesn't have any money, right? Is that correct, Mr. Davis?

Mr. {Davis.} We only have funds that are provided by Congress.

Mr. {Pompeo.} By Congress and those monies come--

Mr. {Davis.} And those come from taxpayers.

Mr. {Pompeo.} --in every case from the taxpayers, United States taxpayers.

Mr. {Davis.} Absolutely.

Mr. {Pompeo.} So is it possible in your mind is it possible that if we had not taken those monies and made a decision--a political decision about where to direct that money that we might be further along in finding out the next great technology?

Mr. {Davis.} Well, I don't believe so. I would say that the President has said there is no silver bullet. I have been working transportation area for you know a couple decades. If anyone knew the absolute one answer you can believe that we would be concentrating on it.

Mr. {Pompeo.} I appreciate that Mr. Davis. I actually agree with you.

Mr. {Davis.} Yes.

Mr. {Pompeo.} This is not about this President. It is not about the President before him. This is about all of us trying to centralize the decision making process and trying to pick that silver bullet. I think it is a fool's errand. And I think 50 years of energy subsidy history demonstrates that quite clearly. Ms. Oge, do you think it is possible that if we had left more resources with the taxpayer over the last 50 years we would be further along in finding the next great American energy technology.

Ms. {Oge.} Well, you know--

Mr. {Pompeo.} Just--it is impossible.

Ms. {Oge.} Let me say this. I agree with you that we should not be choosing winners and losers when it comes to technology. And actually I just want to bring to your attention a very important program that the President just announced last year and another important program that we are going to announce this year is to reduce the fuel consumption from on road vehicles both light duty and heavy duty. So last May our office worked with the Department of Transportation jointly to have a national program 2016 will improve the fuel efficiency by 35.5 mpg equivalent.

Now the consumer will pay something. We are not telling them that--we are not telling the audience how to get there. We are not telling them to use hybrids or electrics. It is a neutral standard so companies will get there by using the best market innovations. And the consumer saves money. You know they will save about $3,000 from fuel saving.

Mr. {Pompeo.} I appreciate that. I do appreciate that. Consumers are going to pick the right solution. Today you can see it. They are driving less. Right? When gasoline is at 3.50 or 3.80 in Kansas or $4.00, consumers will conserve. And I just--I have more faith in the American people and innovators than I do in Government bureaucrats.

Ms. {Oge.} And I do, too.

Mr. {Pompeo.} I think that is where we part company.

Ms. {Oge.} And I do, too, but there can be a hybrid we will both work together.

Mr. {Pompeo.} Yeah, I think if we would lower marginal income tax rates, lower corporate tax rates and shrink the size of the EPA and the Department of Energy, we would get cheaper, better fuels much more quickly. And so those are just different world views. I appreciate that and I am going to work hard every day that that is the direction that this Congress goes. Mr. Chairman, I yield back my time.

Mr. {Whitfield.} Thank you, Mr. Pompeo. And at this time recognize Mr. Griffith from Virginia for 5 minutes.

Mr. {Griffith.} Mr. Gruenspecht, am I correct in stating that your office has predicted that coal share of electricity in the generation mix will only decline slightly in the future?

Mr. {Gruenspecht.} We project the supply and the share of electricity--

Mr. {Whitfield.} Microphone?

Mr. {Gruenspecht.} I am sorry. Yes, we do foresee a decline. We see very new coal plants being--few if any new coal plants being built, but the ones in use under existing laws continuing to be used.

Mr. {Griffith.} And it is also correct to state that the electric needs of this country will increase?

Mr. {Gruenspecht.} They increase slowly in our reference case projection, about one percent a year.

Mr. {Griffith.} Okay. If you take an increase and a slight decrease in coal and no new power plants built with coal, we are still going to need more coal for power generation. Isn't that true?

Mr. {Gruenspecht.} I think we have slow, very slow growth in coal production--mostly going to power generation as you point out. Significant export potential for coal as well.

Mr. {Griffith.} Because other countries don't have the regulations that restrict them that we have?

Mr. {Gruenspecht.} Well--

Mr. {Griffith.} Wouldn't that be true? Yes or no? Sorry to--

Mr. {Gruenspecht.} I am not an expert in regulation in all other countries, but--

Mr. {Whitfield.} I think that is true.

Mr. {Gruenspecht.} Note that was a statement from the chairman, not from the witness.

Mr. {Griffith.} Does the EIA see an achievable path for increasing our energy security without using coal if you complete did away with it?

Mr. {Gruenspecht.} You know coal is a very significant

domestic resource. Natural gas is a very significant domestic resource. You know renewable are significant domestic resources. You know oil is less of a domestic resource than the others. But again, there is significant oil reserves and resources as well. So I think there are you know clearly almost 100 percent of our coal use comes from domestic production.

Mr. {Griffith.} All right, Mr. Davis, President wants to have a million electric cars by what--2015?

Mr. {Davis.} Yes, sir.

Mr. {Griffith.} And do you anticipate that coal will be pretty much passé by 2015?

Mr. {Davis.} I don’t believe so.

Mr. {Griffith.} I don’t believe so either and so therefore, in order to use the electric cars on the highway we are going to have to have a lot of coal, aren’t we?

Mr. {Davis.} Well, we would call the--you know when you plug your vehicle into the wall to charge it we normally refer to that as the grid mix which is a mix of coal, nuclear, renewable all types of generation.

Mr. {Griffith.} But right now that mix and we are only four years away from 2015 would be more than 50 percent coal, would it not?

Mr. {Davis.} I am not an expert on our generation

capacities by fuel, but I will take your word on that.

Mr. {Griffith.} All right, it doesn't sound off base to say that?

Mr. {Davis.} No.

Mr. {Griffith.} All right.

Mr. {Davis.} It is somewhere in the 40's.

Mr. {Griffith.} Oh, it has moved into the 40's?

Mr. {Davis.} Yes.

Mr. {Griffith.} I just know in my district it is still up in the high 70's. And so let me ask you some questions, ma'am, if I might. Would I be correct in assuming that the EPA supports the electric vehicles?

Ms. {Oge.} We support advanced technologies including electric vehicles and plug in hybrids because it really does offer a tremendous opportunity.

Mr. {Griffith.} And you are aware of the situation that with coal we are in the 40's according to one gentleman?

Ms. {Oge.} Yes.

Mr. {Griffith.} I have heard, you know different parts of the country different numbers. And I guess the problem is when you hear the President saying he wants a million cars, I am trying to figure out--and you hear the EPA talking about you know coal is bad and we--they are putting all these restrictions on coal. How do you expect informed citizens of

the United States who know that a significant portion of our electric grid and I am sorry I don't have that term right is coming from coal production, but we are going to save the environment with electric cars. How do you expect informed Americans to reconcile those two positions and to think that eliminating coal and stopping permits and doing all this stuff is actually in the best interest of the environment and the economy long term?

Ms. {Oge.} Sir, I am here as an expert in the transportation field. I am not an expert on permits and secondary services--

Mr. {Griffith.} But you would, you would--I understand that, but you can understand--

Ms. {Oge.} If I may, if I may--

Mr. {Griffith.} --that as a reasonable person--

Ms. {Oge.} Yeah.

Mr. {Griffith.} --it would be difficult for other reasonable people to reconcile those two positions. Would you not?

Ms. {Oge.} So we believe that--

Mr. {Griffith.} You think--

Ms. {Oge.} --electric vehicles--

Mr. {Griffith.} --yes or no? Is it easy for people to understand that or is it not?

Ms. {Oge.} To understand?

Mr. {Griffith.} To understand that on the one hand we want a million cars but we are still using somewhere around 50 percent, maybe in the 40's now of our electricity coming from coal. Do you understand that it is incongruent for most people to grasp how we are going to have a million electric cars save the environment, put coal out of business, and have the two work together?

Ms. {Oge.} The assumption is that EPA's trying to put the coal industry out of business. I cannot comment on that. I cannot comment on that.

Mr. {Griffith.} Yes, ma'am, that is my assumption. It seems to be evident in my district.

Ms. {Oge.} I cannot comment on that, sir.

Mr. {Griffith.} I yield back my time.

Mr. {Whitfield.} Gentleman from Texas, Mr. Olson is recognized for 5 minutes.

Mr. {Olson.} I thank the Chair and I would like to welcome our witnesses. Thank you for your patience today and thank you for your expertise. And I have got a couple of questions for you Mr. Gruenspecht. And first of all I would just like to talk about some of your projections, EIA's projections of the past years. And earlier this year, President Obama said that, and this is a quote ``oil

production from federal waters in the Gulf of Mexico has reached its highest level in 7 years.'' Although this makes a great sound bite I believe that the full picture in the Gulf tells a different story. Can you tell me what EIA's projections in the Gulf production were for 2010?

Mr. {Gruenspecht.} Close to 1.6 million barrels a day for 2010. I think all the data, MMS collects all of the data from operators over time, so I am not sure that all of the end of year data is in yet. Probably close to 1.6 million barrels, approximately.

Mr. {Olson.} Okay, sir.

Mr. {Gruenspecht.} Excuse me, probably close to 1.6 million barrels a day.

Mr. {Olson.} Okay. Thank you, but did actual Gulf production meet those--your expectations?

Mr. {Gruenspecht.} I believe that actual Gulf production it is you know well up close to 1.6 million barrels a day in 2010.

Mr. {Olson.} But what were your projections? Was that 1.6 your projection?

Mr. {Gruenspecht.} I am not sure when the--I am not sure. The projection evolves over time as.

Mr. {Olson.} Okay. I appreciate that, sir. I have some numbers that show it is 20 percent less than you

projected in 2007. That the actual--

Mr. {Gruenspecht.} 2007, okay.

Mr. {Olson.} And again, that is you know the President saying that production is higher and again it is his policies didn't get that. We have actually had a reduction in production because we have loosed our expiration and the moratorium had a significant impact on that. I have got a question, another one for you, Mr. Gruenspecht and you, Mr. Davis, as well. And can you guys tell me what your agencies are doing to ensure that the small refiners can comply with the RFS mandates and that they are not being overly burdened? I mean, I have many, many refineries, small refineries in the district I represent and I--they are concerned about increase costs for compliance. They want to compete. Can you assure us that they can compete that these mandates aren't going to affect them negatively?

Mr. {Gruenspecht.} Well, I am aware that another part of the department that is not represented here are the policy office. I recently completed a study on small refiners and I believe some of that information was sent to EPA. So maybe Ms. Oge would be able to--

Mr. {Olson.} Ms. Oge, if you have comments, please.

Ms. {Oge.} Yes, yes. Actually you know Eastside actually required that small refineries are given an

exemption all the way through 2010, December of 2010. And then the Department of Energy was required to undertake a study and advise EPA's Administration how to proceed with additional exemptions of small refineries. DOE completed that study I believe in 2009. They commended new exemption. Congress asked DOE to go back and take another look at that. So last week Secretary Chu sent Administrator Jackson a letter outlining a number of refineries that DOE is recommending to be exempted based on actual data. And we are in the process to notify all those refineries by the end of the week.

Mr. {Olson.} Can I have a copy of that list?

Ms. {Oge.} This is two year's exemption from RFS.

Mr. {Olson.} Yes, ma'am. Can I get a copy of that list? Because again, I have got many, many refiners would qualify on my district.

Ms. {Oge.} Would be glad to provide it to you.

Mr. {Olson.} Thank you very much. I appreciate that. And I have another question for you, Ms. Oge. Can you assure the members of this committee and my constituents back home that EPA's waiver for E-15 blends in vehicles will not cause excessive wear and tear on the vehicles?

Ms. {Oge.} Sir, we understand the concerns that have been expressed and what I can assure you is that the findings

of the waiver were based on a very robust and sound science. So we are very confident that E-15 will not damage any vehicle 2001 and newer. However, we have concern about off-road equipment and we are concerned about altered vehicles. And we are taking steps to minimize misfueling and putting labeling, appropriate labeling on across the country.

Mr. {Olson.} Thank you, and one follow-up question. Why was the exemption for vehicles model years before 2001? Why did EPA give that exemption?

Ms. {Oge.} The exemption--sir, right now what we are saying is that for 2001 and newer, E-15 will not under--you know will not damage emission control systems. So we are very confident the newer vehicles can use E-15 gasoline blend. But for older vehicles, 2001 and older and older equipment, both lack of data and engineering judgment about how those engines were built gives us a lot of concern. So we are not allowing at this point E-15 to be used for those for those vehicles.

Mr. {Olson.} Appreciate that and again I represent the 22nd Congressional District of Texas. There is a huge off-shore recreation, private recreation industry right in the shadow of the Johnson Space Center and they have been really hurt by the impact of E-10 on those marine engines, those outboard engines. And I don’t want that to happen with our

vehicles, so thank you for your time.

Mr. {Whitfield.} Gentleman from California is recognized 5 minutes.

Mr. {Waxman.} Thank you, Mr. Chairman. Ms. Oge, you have been working closely with the National Highway Traffic Safety Administration and the California Area Resources Board to develop vehicle, tailpipe, and efficiency standards for 2017 to 2025. These standards will reduce our oil dependents through increased vehicle efficiency and use of alternative fuel and advanced technology vehicles.

Last September, NHTSA and EPA released the technical analysis of the potential vehicle technologies, fuel savings, and emissions reductions, and costs of various alternatives. Could you please describe the results of this analysis in terms of the potential efficiency improvements and cost savings for consumers?

Ms. {Oge.} I will, thank you, sir. Last September, we put forward a document over 300 pages document based on an extensive dialogue with major car companies, major OEM's suppliers, but also experts in the Department of Energy, laboratories, academics and looking at extensive peer review data, plus work that we have done in our office, Department of Transportation. And as you know we are working--

Mr. {Waxman.} Give me the answer to that question of

the potential efficiency improvements and cost savings to consumers.

Ms. {Oge.} So it is three--we looked from three percent to six percent annually from 2017 to 2025 and the cost for those type of improvements were anywhere from $900 to $3,400 for six percent. But the payback to the consumer from fuel savings could be as much as $7,000.

Mr. {Waxman.} You talked about the work that went into this analysis. You said you talked to the auto industry. Did you look at recent peer reviewed literature?

Ms. {Oge.} Yes, we did.

Mr. {Waxman.} Okay. Technical staff experienced auto--technical staff of experienced automotive engineers, used most recent technical information, and many peer reviewed technical papers and reports, commission new studies. You also talked to DOE about forecasting work for battery costs, right?

Ms. {Oge.} Yes.

Mr. {Waxman.} Right, okay. I understand that EIA has also done some analysis of potential vehicle standards. Did EIA talk to you about their analysis and do you know if they spoke with NHTSA?

Ms. {Oge.} No, actually I spoke with a colleague from EIA yesterday about this analysis.

Mr. {Waxman.} Okay.

Ms. {Oge.} I don't know if they spoke with NHTSA.

Mr. {Waxman.} Okay. Are the EIA results consistent with NHTSA EPA analysis?

Ms. {Oge.} They are not.

Mr. {Waxman.} They are not. I think we should make sure that all of these analyses used the best available data and incorporate realistic assumptions. For example, EIA hasn't released the details of the analysis but it appears that EIA's analysis may use quite different assumptions from EPA and NHTSA's analysis about how consumer's value improved fuel economy and the resulting savings at the pump when they make a decision about buying a new vehicle. This is a critical assumption in getting it right and they have a big impact on the results. As you said earlier in the hearing, Mr. Gruenspecht, right now we are seeing the effect of the price of gasoline on what consumers buy. The auto industry has just had a great month. GM sales went up by 27 percent and the industry is telling us that gas prices are driving consumers to choose more efficient cars. Don Johnson, GM's Vice President for U.S. Sales said ``rising fuel prices have led many to rethink vehicle of choice.''

Last time gas prices went up over $4.00 a gallon, the American automakers weren't prepared. This time thanks in

part to the new emphasis on efficiency they have an expanded and attractive lineup of smaller cars and more efficient trucks and SUV's and sales and profits are up. Ms. Oge, is what we are seeing now consistent with your analysis of how the 2012, 2016 standards would affect the auto industry? Did you project that more efficient lower polluting vehicles would actually increase sales?

Ms. {Oge.} Yes, we did. Actually for our 2012, 2016 Program that was announced last year, we estimated about 600,000 to 800,000 vehicle sale increase due to that regulation. And clearly, sir, as you know the car companies have supported this analysis.

Mr. {Waxman.} Well, it makes sense if owning a new car will cost less because fuel savings outweigh any price increase people have more money to spend. And we certainly need to have a good understanding of this as NHTSA and EPA develop a new round of standards. I had some other questions, but Mr. Chairman, my time is expired, so I will cease.

Mr. {Whitfield.} Thank you. Mr. Gardner, you are recognized for 5 minutes.

Mr. {Gardner.} Thank you, Mr. Chairman, and thank you to the witnesses for your time today. I appreciate the opportunity to learn from you and wanted to follow up, Ms.

Oge, with something you had said, Ms. Oge at the beginning of your statements regarding cellulosic ethanol. And I think you had said it wasn't developing quite as quickly as the Administration or the EPA had thought. I wondered if you could go into that a little bit more and the reasons why.

Ms. {Oge.} In both my oral and written statement what I said is that it was not developed, actually then what the Congress intended back in 2007 when ESA was signed into law where the expectation was 100 million gallons of cellulosic fuel in 2010, and 250 million gallons. But also, Congress I believe recognized the innovative nature of that industry and how new it is. So they gave us the opportunity to adjust those levels which we have done for 2010 and 2011.

And as I said earlier there are two major issues that we are seeing. One is capital investment. You know Department of Energy and Department of Agriculture is investing in a number of companies but what they really need to be on Government investments so we are seeing limited capital investment for some of the companies. And the second is they are learning a lot lessons as they are going so there have been a lot of technological challenges to move from a small R&D, you know pilot project to a commercial project. But also we have been discussing this issue with a number of companies including some oil companies that are making

investments on these advanced biofuels. So we are moderately optimistic that this industry is going to come up with the volumes that Congress expected in 2007 time frame.

Mr. {Gardner.} Thank you. And recently the GAO, Government Accountability Office recent--issued a report a couple of months ago as a requirement of the last time the debt ceiling was increased--a report that identified duplication, inefficiencies in the Government. One of the areas that that report talked about was the volumetric ethanol excise tax credit. And are you familiar with that report?

Ms. {Oge.} I am not.

Mr. {Gardner.} Okay. Then I can submit that question for the record then. Wanted to just follow-up a little bit to more on parody across the tax code when it comes to various kinds of alternative fuels. Is there do you believe a parody in the tax code when it comes to alternative fuels and if not, could you explain why some get more credits than others?

Ms. {Oge.} Sir, that is not my area of expertise, so I cannot comment.

Mr. {Gardner.} And I don’t know if--

Mr. {Davis.} I would just make one comment and that is you know when you talk about parody, I would say that the tax

incentives are greatly different. For instance you mentioned the tax incentive for ethanol. That is a great--that incentive is greatly different than the $7,500 tax incentive when you buy an electric vehicle. So there are great differences. I don't know of anyone who has done a comprehensive study that looked at those various incentives to compare them.

Mr. {Gardner.} Thank you. And Mr. Chairman, I yield back my time.

Mr. {Whitfield.} Thank you. This time recognize the gentleman from Illinois, Mr. Shimkus for 5 minutes.

Mr. {Shimkus.} Thank you Mr. Chairman. I apologize for being late. The electric mix of--in electricity generation today as I understand it is coal 45 percent, nuclear 20, natural gas 23, hydro seven, and renewable 3.6. Just to get that on the record because my colleague, Congressman Griffith and I obviously are big coal supporters and it still has a major impact and it will. There is an expectation that electricity creates without even the electric fuel debate will increase 30 percent by 2035. I think that is IEA's estimation anyone confirm that or?

Mr. {Gruenspecht.} We are a little bit lower than that.

Mr. {Shimkus.} And what is your?

Mr. {Gruenspecht.} In the 20's. In the 20's.

Mr. {Shimkus.} So and that is without a massive increase in electric vehicles?

Mr. {Gruenspecht.} Right. Right.

Mr. {Shimkus.} Well, at least a 20 percent increase which will speak to the argument of needing more generation not less generation. Even with efficiencies as some people would profess, we are going to need more generation. I would wish that the Administration would look at empowering new power plants, looking at older facilities, and moving to more supply in this debate. The 2007 debate on the Energy Security Act is a curious debate because we are in a very similar position as we are today: high gas prices, the reality and political reality was we were pushing for more supply. My friends on the other side were not--the only way they could do it environmentally was go through and hope that the cellulosic science would be there to meet this new demand. It is not there yet. So it brings me the question is for EPA what about raising--there is a debate based upon the ethanol side, much discussion on the blend wall and or a second generation being considered to meet the next generation renewable fuel portions. What is your position on that?

Ms. {Oge.} For 2011, there is as you may know we lower the volume from 250 million gallons to 6.6. But what we did

not do, we did not lower the advance biofuel.

Mr. {Shimkus.} And that is what I meant to say. Then--

Ms. {Oge.} Yeah, exactly. It is because today if clearly if you look at various sources of biodiesel we believe the capacity is there to make up for the difference of the 200 million gallons of cellulosics. And I believe the second question that you ask has to do with the blend wall. We believe that the blend wall, the blend wall meaning that by 2014 time frame we believe 100 percent approximately of the fuel won't be--will contain 10 percent of ethanol. So the question then is how do you distribute the remaining of the renewable fuel mandate into the marketplace? And that is where we believe the E-15 it can play a--

Mr. {Shimkus.} Yeah, and let me reclaim my time just to get some other work done here. Mr. Chairman, I would like to submit for the record a couple letters: one from the Methanol Institute on the Economic Impact of the Methanol Economy On an Open Field Standard; also from the--from Admiral--former Admiral Blair who is a member of the Energy, Security, Leadership Council member on electric vehicle issues. Also, comments for the record submitted by Propel Energy an ethanol company in the Bay area of California and very supportive of that. If I may for the record.

Mr. {Whitfield.} Without objection.

[The information follows:]

********** COMMITTEE INSERT **********

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Mr. {Shimkus.} And let me just take this time to--and if Elliot was here, Elliot Engel, my colleague from New York, he would have taken time to do this also. He is with the President in New York City in my understanding--led the charge on a debate called an Open Field Standard. I mean imagine a world where we have a set standard for vehicle design and people can drive up to a--instead of a gas station, a refueling station and allow commodity products to compete at the pump for the use of a transportation fuel. And that is what the open fuels standard would do whether that is fuel produced by methanol, cold to liquid, biofuels, crude oil, I take this time to make sure I put that into the record, give credit to Elliot Engel who has been leading this charge. I am now the key sponsor because of course Republicans are in charge. He allowed me to be the head sponsor of that legislation. It is bipartisan with Steve Israel and Roscoe Bartlett. The roll out is right now. You are lucky to be here. And I would encourage all my colleagues to look at that. Remember we are constrained by crude oil. We have to have different commodity products that will compete at the pump that will increase energy security and it is best for America. And I yield back my time.

Mr. {Whitfield.} John, thank you for letting us share

this roll out with you today. All right, that culminates our questions, so I want to thank the first panel for your time and testimony. And at this time I would like to call up the second panel. And on the second panel, we have Mr. James Bartis, Senior Policy Researcher of the Rand Corporation; Mr. Richard Kolodziej, President NGVAmerica; Mr. Diarmuid O'Connell, who is Vice President of Business Development for Tesla Motors; Mr. Jeffrey G. Miller, who is Chairman of the Board of the National Association of Convenience Stores; Mr. Michael McAdams, President of the Advanced Biofuels Association; Mr. Robert Dinneen, President and CEO Renewable Fuels Association; and Mr. Lucien Pugliaresi, President of the Energy Policy Research Foundation. So we welcome all of you to the committee. We appreciate your taking time to be with us. And I am going to be recognizing each one of your for your opening statement and you will be given five minutes for that. And there is a little device on the table that will turn red when your time is up. So I hope that you would focus on that as well. So at this time, Mr. Bartis, we will recognize you for--huh? How do we know that? Well, let us just go on. Go ahead, Mr. Bartis. You are recognized for 5 minutes.

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^STATEMENTS OF JAMES T. BARTIS, SENIOR POLICY RESEARCHER, RAND CORPORATION; LUCIAN PUGLIARESI, PRESIDENT, ENERGY POLICY RESEARCH FOUNDATION, INC; JEFFREY G. MILLER, Chairman OF THE BOARD, NATIONAL ASSOCIATION OF CONVENIENCE STORES; DIARMUID O'CONNELL, VICE PRESIDENT OF BUSINESS DEVELOPMENT, TESLA MOTORS; RICHARD KOLODZIEJ, PRESIDENT, NGVAMERICA; MICHAEL J. MCADAMS, PRESIDENT, ADVANCED BIOFUELS ASSOCIATION; AND ROBERT DINNEEN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, RENEWABLE FUELS ASSOCIATION

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^STATEMENT OF JAMES T. BARTIS

} Mr. {Bartis.} Mr. Chairman and distinguished members, thank you for inviting me to testify on the opportunities for the greater production and use of alternative fuels for transportation. My remarks today are based on Rand studies that cover a spectrum of alternative fuels including oil shale, coal derived liquids, oil sands, and biofuels. An important finding from this research centers on the vastness of the resource base from alternative fuels in the United States. The largest deposits of oil shale in the world are located in Western Colorado and Eastern Utah. The potential yield is about triple the oil reserves of Saudi Arabia.

Our coal resource base is also the world's largest dedicating only 15 percent of recoverable coal reserves to coal to liquid production would yield roughly 100 billion barrels of liquid transportation fuels, enough to sustain 3 million barrels per day for more than 90 years. Our biomass resource base is also appreciable offering to yield over 2 million barrels per day of liquid fuels. And over the longer term, advanced research and photosynthetic approaches for alternative fuels production offers the prospect of even greater levels of sustainable production.

Today I will be giving particular emphasis through our recently published congressionally mandated study on alternative fuels for military applications. In this research we examined near term alternative fuels that could substitute for conventional jet fuel, diesel fuel, and marine fuel. While our focus was on military applications, many of our findings also hold for the much larger civilian consumption of these fuels. In particular, the combined demand in the United States for these fuels is currently over 5 million barrels per day most of which is directed at transportation.

Of the various options that we examined we found that the Fisher-Tropsch Method to be the most promising near term option for producing diesel, jet, and marine fuels in a clean

and affordable manner. The Fisher-Tropsch Method also produces gasoline. The method can accept a variety of feed stocks including natural gas, coal, and biomass. Modern commercial plants are in operation but none are located in the United States.

When using coal, our best available information suggests production would be competitive when world crude oil prices exceed $70 per barrel. This estimate includes the cost of capturing and sequestering nearly all of the carbon dioxide generated at the coal to liquids production facility so that life cycle greenhouse gas emissions would be in line with those of petroleum derived fuels.

We also looked at using a combination of coal and biomass as the feed stock to a Fisher-Tropsch facility while again capturing and sequestering carbon dioxide emissions. In this case, production would be competitive when crude oil prices exceed $100 per barrel. Moreover, life cycle greenhouse gas emissions can be less than half of petroleum derived fuels. In particular, with sequestration, a feed stock consistent of a 60/40 coal to biomass blend should yield alternative fuels with life cycle greenhouse gas emissions that are close to zero.

Other nearer term sources of diesel and jet fuel are renewable oils. These oils can be prepared from animal fats

or vegetable oils obtained from seed-bearing plants. Biodiesel from soybean oil is the most well-known of this class of fuels. When treated with hydrogen, these renewable oils can be converted to hydrocarbon fuels that are suitable for both military and civilian applications.

Unfortunately the prospects for these renewable oils are dim. For sea oils the main problem is the low oil yield per acre. Consider producing 200,000 barrels per day which is only one percent of current U.S. oil consumption. Producing this amount from seed oils would require about 10 percent of the total crop land under cultivation in the United States. There are also serious issues regarding greenhouse gas emissions, production costs, and adverse effects on food prices. Taking together waste oils, animal fats, and seed oils, it is highly unlikely that domestic production can exceed 100,000 barrels per day. From a national energy policy perspective, this class of fuels will not contribute much.

Our research also examined advanced alternative fuels such as oil shale and fuels based on algae or microbial processes. With regard to oil shale, most of the high grade resources are on federal lands. Six years ago when we published our examination of oil shale, we concluded that the prospects for development were uncertain. They remain so

today.

The key to progress lies in formulating a land access and incentive policy that rewards those private firms willing to take on the substantial risks associated with investing in pioneer production facilities. However, it would not be appropriate to develop detailed regulations that would pertain to full blown commercial development until more information is available on process performance. Algae and other microbial processes may yield alternative fuels without the limitations and adverse land use changes associated with seed oils. But these approaches are in the early stages of the development cycle.

Large investments in research and development will be required before confident estimates can be made regarding production costs and environmental impacts. In my written testimony I have also highlighted the national importance of alternative fuels, and further discuss policy issues associated with gaining early commercial experience in emerging alternative fuel technologies. This concludes my remarks. Thank you.

[The prepared statement of Mr. Bartis follows:]

********** INSERT 4 **********

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Mr. {Whitfield.} Thank you very much. And Mr. Pugliaresi, we will recognize you for your 5 minute opening statement. Be sure to get the microphone around so its close--

Mr. {Pugliaresi.} Thank you, Mr. Chairman.

Mr. {Whitfield.} --and make sure it is turned on.

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^STATEMENT OF LUCIAN PUGLIARESI

} Mr. {Pugliaresi.} Chairman Whitfield, Ranking Member Rush, and members of the Subcommittee on Energy and Power. On behalf of myself and EPRINC, we welcome this opportunity to testify on the topic of alternative transportation fuels. I will summarize my key points of my testimony but submit the entire statement for the record.

The Energy Policy Research Foundation is a non-profit organization that studies energy economics with special emphasis on petroleum and the development of downstream petroleum markets. We have been researching and publishing reports on all aspects of the industry since 1944.

The Federal Government provides a range of subsidies, tax incentives, and regulatory mandates for multi-use of ethanol and other renewable fuels into the National Gasoline Pool. Until recently, ethanol was limited by law to a maximum of 10 percent but as well as a specialty fuel at high levels, what we call EV5 or 85 percent. Under the Renewable Fuel Standard, volumetric requirements for ethanol increased annually regardless of the growth in gasoline use.

For 2001, the renewable fuel standard requires the gasoline pool to achieve almost 10 percent of by volume and

which is historically level--we have limited for conventional fuels, for conventional vehicles over concern about safety. So called obligated parties such as refiners and importers can only market additional volumes through greater sales of E-85. But E-85 has met a lot of consumer resistance through poor mileage performance. E-85 also requires a large investment in new pumps and tanks. In response to concerns over market limitations of E-85, EPA has authorized the use of a new fuel with 15 percent ethanol, or E-15. It is only available for model year 2001 and newer cars with certain exceptions. These initiatives to increase the blending volumes for gasoline have been sought as a means to create additional market access for the mandated volumes of ethanol as a 10 percent volumetric level or blend while it is reached. Could we go to the first slide?

[Slide]

Domestically produced--okay well my in--domestically produced ethanol should have provided some modest constraint on the rising cost of gasoline as turmoil in the Middle East and North Africa sent crude prices well above $100 per barrel. Instead, ethanol has seen its feed stock costs more than double over the last 10 months and increase considerably greater than the rising crude prices over the same period.

Now if we go to the second slide--

[Slide]

See that U.S. policy requiring ever larger volumes of ethanol blended into the gasoline pool is now running two distinct and important cost realities both of which are likely to contribute to an increase in the price of gasoline.

The first is a rapidly rising cost of corn. Disappointing U.S. corn yields, loss of wheat crops worldwide and the increasing domestic and international demand for corn has pushed prices from $3.50 a bushel to over $7.00 a bushel in the last 10 months. The second problem is the volumetric mandate on the use of ethanol in the U.S. gasoline pool which will soon exceed the threshold of 10 percent by volume. We have different debates on when that will happen, but this is going to cause some serious problems because this transportation fuel sector will be left with a program that mandates the blending of a fuel regardless of cost, demand, infrastructure, or value. We move to the third slide.

[Slide]

We can see in a market free of volumetric mandates, cost would be the prime determinate of evaluating the appropriate mix of ethanol and gasoline sold at the pump. EPRINC’s analysis shows that the volumetric ethanol mandate for the gasoline pool is bringing more costly product to the market, but when ethanol prices are converted to a gasoline energy

equivalent basis, the wholesale price of ethanol is $3.95 a gallon. Ethanol when adjusted for BTU and miles per gallon equivalents sells above the price of premium gasoline at retail outlets. This is DOE data. Now if we move to the last slide?

[Slide]

The congressional debate over the deficit has highlighted concerns over the cost of ethanol subsidies now estimated at nearly $6 billion per year. Ethanol is highly valuable and we often get criticized that we don't like ethanol, but actually ethanol's highly valuable as an octane booster and as it oxygenates. If we had no subsidies, we would use a lot of ethanol, probably 400,000 to 500,000 barrels a day. So what we are getting out of the subsidy program in the mandate is the second increment around 400,000 barrels a day and we are paying a lot for that.

It is not surprising that the volatility in the oil market are also present in the corn market. Corn is a globally traded commodity and China, the world's second largest corn producer has recently become a net importer of U.S. corn for the first time in many years. As long as both of these commodities are locked into a regulatory environment that strictly prohibits adjustments to changes in market conditions. Opportunities to temper the costs of market

volatility through adjustments in the domestic fuel mix with corresponding and unnecessary cost increases for transportation fuels will remain limited.

We are well aware that ethanol producers have made expensive capital investments in the production of conventional biofuels. And EPRINC is always maintained that ethanol is an important critical component in the production of domestic transportation fuels. We should not abandon this investment, but existing law would drive the mandate above 10 percent of the gasoline pool. These higher blend rates for ethanol, one, pose major cost on the wholesale and retail distribution components of the fuel sector. In addition to these primal risks, financial risk, we may find that he mandate has foreclosed more cost effective alternatives such as drop in fuels.

Given the costs involved, we should consider holding the mandate at 10 percent until we can get a full understanding of the risks and costs of the full range of strategies to increase the volume of domestic fuels in the transportation sector. Thank you, Mr. Chair.

[The prepared statement of Mr. Pugliaresi follows:]

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Mr. {Whitfield.} Thank you. At this time I recognize Mr. Miller for his 5 minute opening statement.

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^STATEMENT OF JEFFREY G. MILLER

} Mr. {Miller.} Chairman Whitfield, Ranking Member Rush, members of the subcommittee, my name is Jeff Miller and I am President of Miller Oil Company headquartered in Norfolk, Virginia. I also currently serve as Chairman of the National Association of Convenience Stores or NACS. Thank you for the opportunity to testify today on the topic of renewable and alternative fuels.

The convenience in fuel retailing industry which sells 80 percent of the fuel in the Nation to 117,000 outlets has a unique perspective on the future of transportation fuels. Let me start by stating that we support the use of renewable fuels and are working hard to expand their use for the motoring public. However, we are in the customer service business and have to make decisions every day regarding what products to sell and which services to offer our customers.

Choosing to sell a new fuel is very different than choosing to sell a new candy bar. As new fuels come under the market, we want to have a reasonable expectation that we will be able to generate a return on our investment and we will have the option to sell them while being in compliance with all laws and regulations. But to do this we need your

assistance.

I would like to highlight some of the issues retailers face when considering whether to sell a new fuel. To illustrate my points, I will use E-15 just as an example, but these issues can be applied to almost any other fuel that is being developed. First off is compatibility. By law, all of the fueling equipment I use at my stores must be listed by underwriter's laboratories as compatible with that liquid. If I use nonlisted equipment I violate OSHA regulations, tank insurance policies, and other regulatory requirements.

Because UL will not recertify any existing equipment even if it is technically compatible with the new fuel, my only legal option is to replace my dispensers. This could cost me about $20,000 per unit or roughly $80,000 to $100,000 per store depending on the number of dispensers. Further, if my underground equipment is not listed for E-15 I would have to replace that as well. Once we start breaking open concrete, my costs could easily exceed $100,000 per site. So offering E-15 could become very expensive.

But if I choose to make this investment I am then faced with a second issue: misfueling. Under EPA's partial waiver, only certain engines are authorized to fuel with E-15. So how do I prevent the consumer from buying the wrong product? If I don't I could be fined or sued under the Clean

Air Act or if using the wrong fuel causes engine problems I could be sued by the consumer or the word could spread that my fuel causes engine damage. But let's say I am willing to take this chance. I come to my third issue and that is long term liability exposure.

What if the future of E-15 is determined defective? There is significant concern that such a change in the law would be retroactively applied to any who manufactured, distributed, blended, or sold the product in question. We have experience with this situation and it is a major concern. Now if I am willing to change my equipment and accept these liability risks I have to ask myself will my customers purchase the fuel. It is important to note that this is the first fuel transition in which no person is required to purchase the fuel, so there are no assurances of consumer demand.

It is also important to remember that E-15 is approved by the EPA for only certain vehicles and that the auto manufacturers do not support this decision. So it is almost impossible for me to evaluate consumer demand and this creates a great deal of uncertainty. This leads me to what Congress can do to help retailers like me reach a decision that will help renewable fuels growth in our country. Congress can take the following actions to lower the cost of

entry and my exposure to unreasonable liability.

First, authorize an alternative method for certifying retail equipment. Last Congress Representatives Mike Ross and John Shimkus introduced H.R. 5778 which would do this. Secondly, insure that retailers that comply with the EPA's labeling regulations cannot be held liable for self service customer misfueling of nonapproved engines. H.R. 5778 also included provisions for this. Third, provide regulatory and legal certainty that compliance with certain laws and regulations will protect us from retroactive liability should the laws and regulations change at some time in the future. And finally, support the development of vehicle and infrastructure combatable fuels also known as drop-in fuels.

If Congress takes these actions to lower the cost of entry and to remove the threat of unreasonable liability more retailers may be willing to take a chance and offer new renewable fuels. The market then will be able to determine the fate of the new fuels. Thank you for the opportunity to share my perspectives.

[The prepared statement of Mr. Miller follows:]

********** INSERT 6 **********

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Mr. {Whitfield.} Thank you very much. Mr. O'Connell, you are recognized for 5 minutes.

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^STATEMENT OF DIARMUID O'CONNELL

} Mr. {O'Connell.} Thank you very much. Start again. Thank you very much, Mr. Chairman, distinguished members of the committee. It is an honor to be here as a representative of the electric vehicle industry, an emerging industry and of the leader of the technology leader in that industry Tesla Motors, a California based company.

Tesla Motors was founded in 2003, 2004 by a group of entrepreneurs, engineers, and venture capitalists with the idea of creating a company to achieve the mission of catalyzing the market for electric vehicles. The motivation behind this mission was a combination of factors. One, our analysis of the cost of the dependence effective monopoly of oil in our transportation infrastructure and the fact that has as many of our representatives have mentioned; a serious negative economic, environmental, and perhaps most importantly national security implications, I myself having come from out of the national security sector to this situation.

Also there is a fact of an absence by virtue of this monopoly and by virtue of the policy that is effectively supportive of an incumbent lack of a market or policy signal

that we are seriously interested in approaching any of these advanced technology fuels or vehicles in a serious fashion. Also, in terms of facilitating factors is the emergence of a new suite of battery technologies, batteries having been the major gating factor for electric vehicles over the course of time. As the Chairman's mentioned, electric vehicles have been on the scene since as early as the turn of the last century and were a serious contender absent the emergence of a facilitating battery technology to be the car of the future in the early 1900's.

But the fact is that a new suite of lithium ion battery technology largely growing out of the demand for consumer--mobile consumer electronics has made a new class of electric vehicles possible. Plus in terms of technology addressing such issues as range as well as increasingly addressing the important issues of economic access.

Finally and perhaps most importantly was the suitability of our project to the application of the disruptive technology introduction model. This is the model of bringing together innovation, venture capital, and available bench technologies which has led to the emergence of just about every industry that we have either mentioned here today or could think of. Most recently in mobile technology whether it is the cell phone, the personal computer, or all the

associate technologies there, but going back even further in history the fashion in which airline travel became a commercial reality. Or in the automotive sector the fashion in which safety technology such as airbags and antilock brakes have emerged. And that is that initial technology, early technology tends to be expensive. It is expensive because of the substantial investments that we make in the R&D. It is also expensive because economies of scale and manufacturing are not available for widespread deployment and thus early unit costs are low.

So in just about all of these technologies and services that I have just referenced initial costs were high. It was effectively a luxury item or characterized as such accessible only to wealthy early adopters. But with commercial viability proven at that point, further investments are attracted to the project, economies of scale are increasingly achieved, but most importantly iteration of that technology, improvement of that technology is achieved. You will note that the early generations of this technology, the 1984 version of the cell phone were substantially bigger and more cumbersome, also much more expensive.

Tesla Motors has made great progress over the course of time. Our first project was to develop an electric drive train that would achieve the necessary efficiency and cost

profile. Our second project was to deploy it. And our first car, the Tesla Roadster, which is a vehicle which there are over 1,600 vehicles on the road in over 30 countries. Our third project is to develop an electric vehicle sedan, less than half as expensive as the Tesla Roadster at less than $50,000 which will optimize the vehicle to the power train in the same fashion that cars optimized the early internal combustion technology evolved from horse carriages powered by internal combustion engines to more suitable platforms.

Along the way, we have attracted serious investment interest and validation from the auto industry. Daimler has invested in our company almost $50 million, so too, Toyota. Both of those companies are customers for our technology. Their deploying our batteries and our power trains in their own EV's and this is helping us to achieve on an accelerated basis our overall goal which is to create a mass market for EV's. We are getting there on our own by making increasingly larger volumes of lower cost vehicles. But the way that we are working with the industry to effectively borrow their economies of scale to allow them to put their own vehicles on the road. And already on the road is the Smart under the Daimler family, the Smart EV in the U.S. and Europe. They are deploying an A class vehicle in Europe and coming next year will be the Toyota RAV4 SUV powered entirely by a Tesla

developed and manufactured drive train.

One other point I would like to make and that is with respect to infrastructure. In truth, electricity is in terms of its feed stock and as my friend Pat Davis mentioned, it is mixed. The ultimate flex fuel vehicle in that the grid is powered by diversity of historic and new technologies, those will only get cleaner and better over the course of time. And it is--the infrastructure is already in place. Mr. Chairman, you could plug one of our cars into the outlet behind you and charge that. That exits in every home in America and requires no investment in large scale infrastructure. Thank you very much.

[The prepared statement of Mr. O'Connell follows:]

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Mr. {Whitfield.} Thank you. Mr. Kolodziej, you are recognized for 5 minutes.

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^STATEMENT OF RICHARD KOLODZIEJ

} Mr. {Kolodziej.} Mr. Chairman, Mr. Rush, members of the committee, subcommittee, my name is Rich Kolodziej. I am President of NGVAmerica. We are the National Trade Association for vehicles that are powered by natural gas and biomethane. Thank you for the opportunity to be here today to discuss how increased use of natural gas can reduce our dependence on foreign oil while also reducing greenhouse gas production and reducing urban pollution. And we are doing all this while creating more jobs here at home.

It is now clear that we have massive amount of natural gas right here within America's borders. The U.S. information--Energy Information Administration, the Potential Gas Agency, other expert bodies have now estimated that we have up to 100 years supply of natural gas as technology improves, that number is going to continue to go up.

For petroleum, America must pay a well price which is out of our control. We are a price taker. But because there is no way to ship large quantities of natural gas off of North America, the supply and demand of natural gas here is set by prices here--is actually set to price here. So we have much more supply than we have demand, so natural gas

prices are forecast to be way below oil. The question is how do we use all that gas? Well the market tells us that the vehicles, four vehicles that is the highest valued application of all natural gas uses. That is why we are seeing such rapid growth in the NGV market worldwide.

In fact, NGV's are the fastest growing alternative fuel, alternative to petroleum in the world. In 2003, we had only about 2.8 million NGV's globally. Today we have over 13.2 million, and according to the forecast by the International NGV Association, but 2020, we are going to have 65 million vehicles on the world's roads.

Most of those are smaller sedans, but for a number of reasons including the sheer size of America, the strategy of the U.S. NGV industry has been to focus on high fuel use fleets: trash trucks, transit buses, short haul, 18 wheelers, school buses, urban delivery vehicles, shuttles of all kinds, taxis. We estimate that last year these vehicles used about 43 billion cubic feet of natural gas. That is the equivalent of 320 million gallons of gasoline we did not have to import. However, with proper government policies, the number could reasonable grown to 1.25 trillion cubic feet or the equivalent of about 10 billion gallons within 15 years.

Now some of this will displace gasoline, but the majority would displace diesel. Diesel represents about a

quarter of on-road petroleum use. While there are many options to displace gasoline in light duty vehicles, there are very few options to displace diesel in trucks and busses and other heavier vehicles. Of those options, natural gas can make the biggest impact the fastest. This is important since trucks are the economic lifeblood of America. Everything we buy moves by truck. If we reduce the cost of trucking, we reduce the cost of everything and that is going to benefit businesses and consumers alike. And NGV's can help do that.

Right now the cost of NGV's are--the cost to buy an NGV is high. It is higher than gasoline and diesel. But the cost to operate those vehicles is less, therefore, the more miles driven, the faster the payback. For some fleets, the most intensive fuel use fleets, NGV's are economic today. But to expand the use of NGV's and maximize NGV's oil potential--oil displacement potential, we need to bring down the cost of NGV's, that first cost of NGV's. We have to make them more economic for more fleets. And that is going to happen through economies of scale and through a more large scale production. That is why the industry is so excited about the bill recently introduced by Mr. Sullivan, H.R. 1380, the NAT Gas Act of 2011.

That bill would provide federal incentives for the

production, purchase, and use of natural gas vehicles and the expansion of NGV fueling infrastructure. That bill which was introduced on April 6 as Mr. Sullivan had mentioned already has 180 bipartisan cosponsors. It would only be in place for 5 years. It is only a 5 year program, but during that time and long thereafter this would make a big impact on the number of NGV's for which the fleets would be found and economically attractive.

This is going to accelerate the NGV use in this country which in turn would bring more NGV manufacturers into the market, increase competition, and drive down that first course premium. NGV's are here and now technology. We don't need any major technological breakthroughs. What we do need is to grow faster and the NAT Gas Act would help jumpstart that growth. Thank you for your attention.

[The prepared statement of Mr. Kolodziej follows:]

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Mr. {Whitfield.} Thank you. Mr. McAdams, you are recognized 5 minutes.

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^STATEMENT OF MICHAEL MCADAMS

} Mr. {McAdams.} Chairman Whitfield, Ranking member Rush, and members of the committee, I am honored to be with you this morning.

The Advance Biofuels Association represents 36 of our Nation's and world's leading advance biofuels companies and feed stock producers. Since its inception, the Association has advocated technology neutrality, feed stock neutrality, and subsidy parody. Said another way, put everyone on a level playing field and please do not pick a winner.

Speaking to the focus of today's hearing, recent energy information data showed that we as a country use 290 billion gallons of various fuels products in 2010. Most of those gallons came in the form of gasoline, diesel, jet, marine fuels, and heating oils. Over 50 percent of this demand was met using foreign oil or imported products. Advance biofuels and cellulosic producers are uniquely positioned to produce fuels that can meet this demand while delivering more sustainable environmental performance.

The Association and its members believe that all the various renewable and alternative fuels have an opportunity to make a contribution towards reducing the dependence on

foreign oil. We urge Governments to provide stable, long term, common sense policies which allow everyone to compete to achieve a clear set of National energy objectives. Recent developments in the advance biofuels technologies enable our companies to make significant contributions in diversifying our transportation fuels.

One of the most noteworthy developments in advance sector is the ability of many companies to manufacture gasoline, jet, diesel, heating oil, and crude oil from renewable resources. These fuels are called drop-in fuels. They are fungible in today's planes, trains, boats, and automobiles. They do not require changing current infrastructure or transportation fleets. Many of them are economically competitive with current products on the market today.

There are some that would like you to believe that advanced and cellulosic biofuels are a long way off, but nothing could be further than the truth. These fuels are commercially being produced today with many more gallons on the way. In fact, dynamic fuels, a joint venture between Tyson Fuels of Arkansas and Centroleum of Oklahoman is currently producing 75 million gallons of renewable diesel and jet fuel. This plant makes diesel and jet fuels as if they were made from a traditional refinery out of a

traditional barrel of oil.

In addition, I am pleased to report that several advanced biofuels companies have gone public with great success. This is the private sector's money, not the Governments. GVO as a result of its recent $127 million offering 40 days ago has begun its plans to retrofit traditional corn ethanol plants to produce 18 million gallons of isobutanol next year. They further have plans to develop 350 million gallons of production by 2015.

These developments would simply not be occurring if it were not for the vision of this committee and Congress to enact the RFS. Our Association and member companies strongly believe that the current RFS is the most important federal policy in supporting the development of all biofuels in this country. We specifically urge the committee and the Congress not to tinker with this statute at this time. One issue we would like to bring to the committee's attention today is the regulatory process at EPA and the certification of RIN credits.

When Congress expanded the statue in 2007, the intent was to back out as many types of gallons of foreign fuel products as possible. Currently the EPA and their RIN certification process is showing a tendency to be prescriptive and narrow in approving some determinations for

qualified pathways as well as qualifying some potential feed stocks. We would urge the Congress to remain closely engaged with the Agency on these determinations.

Many are moving forward at this time and could have a significant chilling effect if not resolved correctly. While we support EPA's efforts to protect the environment and the existing commercial change of delivery, we encourage them to air on the side of bringing as many types of renewable advance biofuels to the market as reasonably possible.

Additionally we need to acknowledge for the last 20 years our regulatory structure has regulated gasoline and ethanol and a number of new types of fuels will need to be harmonized with existing regulatory system so we are able to compete on a level playing field. We should not allow the regulatory elements of the past to be barriers of entry for these new high performance fuels of the future. As most of you are aware, the chief challenge of the advance and cellulosic industries has been acquiring the necessary funding to build the next generation facilities.

One of the primary reasons is the disappointing lack of commercial funding has been our biofuels tax policy. The current code is inconsistent and what it rewards according to the molecule, the feed stock, or the process used. Advanced and cellulosic biofuels tax policy does not provide parody

and in many cases the credit is not in the right form to enable the companies to monetize their value. The depending on the size and scale of the company, many in the advanced or cellulosic believe they would have been more successful if they had had a similar investment tax credit to the solar and wind industries rather than the production tax credits afforded under the law.

In conclusion, a significant amount of progress has been made over the last two years by the advance biofuels sector. Much more is on the way as these fuels continue to make significant contributions to America's world's transportation pool. Thank you for the opportunity to be with you and I look forward to your questions.

[The prepared statement of Mr. McAdams follows:]

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Mr. {Whitfield.} Thank you. Mr. Dinneen, you are recognized for 5 minutes.

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^STATEMENT OF ROBERT DINNEEN

} Mr. {Dinneen.} Thank you, Mr. Chairman. Chairman Whitfield, Ranking Member Rush, members of the committee, I want to thank you for the opportunity to be here today. I do believe as others have stated that this is an incredibly important and timely hearing. Look CNN yesterday had a poll of economists across the country and every single one of them said--suggested that the single most important threat to our Nation's economy today is the skyrocketing price of gasoline. We need to get a hold of this issue as many of you have noted so far this morning.

But I can tell you that as a consequence of this committee's actions over the past several years, no matter who has held the gavel with the 2005 Energy Bill and the 2007 Energy Bill, we are making some progress. As a result of that bill we now have 200 ethanol plants in operation across the country. Companies, Mr. Chairman, like Commonwealth Agrienergy in Kentucky. Certainly, Mr. Rush, many in Illinois, in Nebraska, in Kansas, in Colorado. And even Congressman Griffith we have a plant now in Virginia in Hopewell, Virginia that is processing ethanol from barley, a cover crop. It is exactly what the renewable fuel standard

was hoping to do. It was hoping to evolve this industry to new feed stocks and new technologies. It is having some success.

As a result of this committee's work in 2005 and 2007, our industry is now producing some 13 billion gallons. Our industry is now responsible for some 400,000 jobs across this country. This industry is responsible for $53 billion to the gross domestic product. We are displacing some 445 million barrels of oil that would otherwise be used in the production of gasoline.

But most importantly and critical to the debate going on today with respect to gasoline prices, the fact that we are producing 13 billion gallons, the fact that ethanol is now blended in 10 percent of the Nation's fuel is having a dramatically positive impact on gasoline prices. A report that was released earlier this week by Iowa State University and professors at the University of Wisconsin concluded that in 2010, the blending of ethanol actually reduced consumer gasoline prices 89 cents a gallon. That is a savings to household incomes of about $800 a year. That is a meaningful impact and it is just going to grow as the ethanol industry and other biofuels continue to grow and evolve. But a couple things still need to happen.

As Mr. McAdams just noted, the renewable fuel standard

that has helped propel this industry in this fashion needs to stay in place as it is. You ought not be tinkering with it. I would suggest however, and my testimony goes into many areas where the Environmental Protection Agency needs to pay a little bit closer attention to the statute and congressional intent in implementing this program. There are a number of areas where they have hampered the continued development and evolution of biofuels in the implementation of the renewable fuel standard. And my testimony goes into many--I will just maybe mention one.

The process by which the Agency approves new feed stock and new pathways is extraordinarily cumbersome and limiting and it is keeping new fuels from gaining access to the marketplace. In addition to that though, we have to find a way to get through the blend wall. If the 36 billion gallon renewable fuel standard requirement is going to be met, we have to blend more than 10 percent ethanol into gasoline. Now EPA has made some useful steps in the right direction by allowing E-15 for 2001 in newer vehicles and I applaud them for that. But quite frankly by placating the market in the way that they have, by only making it available to those newer vehicles and not making it available to consumers that have an older vehicle, they are causing issues with the implementation of that.

We support efforts and legislation that would address some of the issues that marketers have brought to bear on this issue. We do need to find a way to the--assure that he liability and the implementation issues that the marketers have raised are addressed.

We supported in the last Congress H.R. 5778. I look forward to that being introduced again, but ultimately we need to get beyond just the blend market anyway. We need to be utilizing some of these biofuels and alternative fuel markets as E-85. And so we are very supportive of the legislation that Congressman Shimkus introduced yesterday, H.R. 1687, the Open Fuel Standard. That will empower consumers to make the choices that are best for them. Look, every one of you today has talked about our desperate energy situation, the need to have more energy choices. We need to stop demonizing domestic energy supplies no matter where they are whether it is coal or corn based ethanol. We need to be empowering consumers to make the choices that are best for them. Things like the Open Fuel Standard would do that. Things like making sure the RFS is implemented as Congress intended will do that. But the inexorable march toward more domestic renewable fuels like ethanol, like cellulosic ethanol, like other advanced biofuels has got to continue. It is too important for our Nation’s economy, and energy

security. Thank you.

[The prepared statement of Mr. Dinneen follows:]

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Mr. {Whitfield.} Thank you and thank all of you for your testimony. We have four votes on the House floor and unfortunately one of them is a Motion to Recommit in which it is not only a 10 minute debate on each side, but also 15 minutes. So I am just--I am going to go on and ask my questions. We will get you, Mr. Rush, and maybe we won't use all of our time and try to get as many in as we can. And then we will decide what we are going to do. But, Mr. Dinneen had indicated that the renewable fuel standard hadn't reduced the price of fuel by 89 cents a gallon. And I think in your testimony, Mr. Pugliaresi, you had indicated that the renewable fuel standard had actually increased the cost. Is that correct?

Mr. {Pugliaresi.} Yes, I mean, we can -- talking the blend wall provides that such a threat. It is really crossing the blend wall is what the major problem is. I can explain while I think that Mr. Dinneen got his numbers, they removed, their study removes all ethanol from the gasoline supply. Ethanol has a value, a very high value at small volumes, three to five percent because it boosts octane and then it provides an oxygenator. After five percent in the gasoline pool its value is less than gasoline because it has 30, 35 less BTU's. So the real question is what is the cost

of the fuel? And when corn prices go up the price of the fuel goes up. And so when we have a mandate you force that into the system even if they are a competitive environment you wouldn't call for that. You could see conditions in which people would want blended or 10 percent, just depending on relative prices. But in the prices of corn, the feed stock goes way up, we have got a problem.

Mr. {Whitfield.} Yeah.

Mr. {Dinneen.} Could I just--

Mr. {Whitfield.} Yeah.

Mr. {Dinneen.} --clarify?

Mr. {Whitfield.} Yeah.

Mr. {Dinneen.} This was not Mr. Dinneen's numbers. This was a study done by Iowa State University and the University of Wisconsin.

Mr. {Whitfield.} Okay.

Mr. {Dinneen.} And you know really what they were looking at was ethanol today. We are more than a dollar cheaper than gasoline at the rack and just by the fact that we are 13 clean gallons of the U.S. motor fuel market we are having a downward pressure on gasoline prices.

Mr. {Whitfield.} Okay.

Mr. {Dinneen.} And they concluded 89 cents benefit.

Mr. {Whitfield.} Mr. Miller, I really appreciated your

points because renewable fuels is good for farmers, certainly good for a lot of people in this country and it helps us become less dependent. But it sounds like it presents a lot of just practical problems for the retailer who is trying to get it out to the consumer. And do you feel like that most convenience store owners around the country have this same experience that you have?

Mr. {Miller.} Yes, sir. I think the issue for us you know is the equipment incompatibility with the higher blend of ethanol.

Mr. {Whitfield.} So if it is certified for EPA-10 it cannot be recertified for EPA-15 that is on equipment?

Mr. {Miller.} The certification process now that we go by is under writers laboratories and they will not go backwards. They will only certify equipment going forward which was why a provision was put in the bill last Congress about establishing a method for certifying older equipment, because some of the older equipment may work. But we don't have a method of getting it certified so therefore we would be out of compliance.

Mr. {Whitfield.} Dr. Bartis, the Fisher-Tropsch's technology, it is my understanding that they will not license it for use in the United States. Is that true or not true?

Mr. {Bartis.} That is not true.

Mr. {Whitfield.} Not true. Okay. All right, thank you. That was easy.

Mr. {Bartis.} Some of my members are planning to use it.

Mr. {Whitfield.} Okay. Mr. O'Connell, in your company with these electric cars, I know they are quite expensive, but it sounds like you are obviously doing very well with it. And right now how far can the car go if it is fully charged?

Mr. {O'Connell.} We saw our first generation Tesla Roadster had the ability--has the ability to drive at the EPA of--using EPA roles, 244 miles on a single charge. They have been driven in demonstrations over 300 miles. Our next generation sedan so that's sports car, two-seater nice weekend car. The sedan, five plus two seating so a regular everyday driver will have the ability to drive up to 300 miles on a single charge.

Mr. {Whitfield.} Okay. Thank you. Mr. Rush, you are recognized.

Mr. {Rush.} Thank you, Mr. Chairman. I--Mr. Dinneen, your passion is certainly commendable. I am from a corn state--ethanol producing state and I just want to ask you and maybe I will ask this of Mr. Pugliaresi also. I am sorry if I am mispronouncing your name. Please accept my apology. But it seems to me that the most striking arguments against

the ethanol is impact on overall food supply. Can you address that Mr. Pugliaresi? If you could also address those issues? What do you think about that argument?

Mr. {Dinneen.} Thank you for giving me the opportunity to address that issue. With 5 minutes it is a little bit hard to get everything in and I certainly wanted to address that because it has been mentioned so far here today. Look, ethanol is absolutely not driving crude price inflation today. What is? It is the skyrocketing price of gasoline. It impacts everything from the fertilizer the farm utilizes to the diesel fuel to get the product to the stores, to the packaging that is used to package the fuels, to the marketing. I mean, petroleum drives all of our economy today. So that is the single most important impact.

The second might be the speculation in the marketplace that is going on today. I mean, it has been a phenomenon just really over the past five or six years, but you know hedge funds today with long positions on grain supplies control more corn ethanol--I am sorry, more corn that does the entire ethanol industry would utilize in the year. So the role that speculators is having an incredibly important role in this.

But at the end of the day, Congressman, we are just utilizing the starch in the processing of corn. All of the

protein, all of the vitamins, the feed value of the corn is retained and is then used in livestock and poultry markets across this country. We have produced some 36 million tons of feed products last year; enough feed to feed every cattle that is fed on a feed lot. So this is not a food versus fuel industry. This is a food and feed industry and people need to take a step back, leave the hyperbolic scaremongering aside and recognize that the industry is continuing to grow, it is continuing to evolve, and we need it if we are ever going to get a handle on skyrocketing prices of energy.

Mr. {Pugliaresi.} Congressman Rush, I think the issue is not really--you can talk to the Department of Agriculture, the long run--we can produce a log more corn at relatively low cost. It is when we get into these situations in which there is a lot of volatility in the market that the producers aren't able to adjust their fuel mix to deliver the product at the lowest possible cost. So we put this--it is the mandate where we have the problem. The mandate says we don't care what the cost of ethanol is, you have to use it. And what we really need is a lot more flexibility so that when the cost of one feed stock goes up producers can alter their mix to deliver the product at the lowest possible costs to the consumer.

Mr. {Rush.} Thank you so much. Mr. Kolodziej--I am

sorry. Are you familiar with the Administration's initiative to green the fleet? Yes, are you familiar with the Administration's initiative to green our fleet?

Mr. {Kolodziej.} Green the federal fleet?

Mr. {Rush.} Right.

Mr. {Kolodziej.} Yes.

Mr. {Rush.} Okay. What role could natural gas play an advance in that objective of using more Government owned vehicles that run on alternative and more efficient fuels?

Mr. {Kolodziej.} Well, it is a--just like with all the alternatives, if the Federal Government moves to alternative fuels you are going to use less fuel. Natural gas has the benefit of being also less expensive, significantly less expensive so that you would help reduce the cost of operating those vehicles especially in the bigger vehicles. I mean, in the Federal Government has a lot of light duty fleets; you know vans, pickups, sedans. But they have a number of--a significant number of larger vehicles where the option is diesel and we are the best alternative to that.

Mr. {Rush.} Mr. Chairman, this is the time I am going to yield back my time.

Mr. {Whitfield.} Thank you. Mr. Pompeo, you are recognized.

Mr. {Pompeo.} Great. Thank you. I will try to do this

in less than 5 minutes so we can get on our way. I want to ask Mr. O'Connell, Kolodziej--we get you pronounced right?

Mr. {Kolodziej.} Yes.

Mr. {Pompeo.} I get mine pronounced wrong all the time, too, so--

Mr. {Kolodziej.} I know.

Mr. {Pompeo.} --and Mr. McAdams, I heard each of your three testimonies they sounded eerily similar. Each of you has got industries that have made technological progress. Each of you has got vehicles that are in production phase. Each of you believe that you have got the low cost future technology. You should know that you are the three of 12 industries that have been in my office in 100 days to tell me that you have provided the great next American energy solution. I have heard from 12 different industries. I wish you would go to the capital markets and not Washington, D.C. for your solutions. I want to ask each of you, this is a yes or no--are you prepared for your personal tax dollars to go to the other two guys to support the tax credits and subsidies that they are looking for?

Mr. {Kolodziej.} Yes.

Mr. {McAdams.} Absolutely.

Mr. {O'Connell.} Yes, sir.

Mr. {Pompeo.} So we should subsidize all 12? So

everybody who comes to my office with a great energy solution, the taxpayers should underwrite each and every one of those industries?

Mr. {Kolodziej.} No, we should look at--I would suggest is look at each technology on its own. And with respect to natural gas vehicles, I can tell you that that is one of the reasons we have 65 million--we will have 65 million natural gas vehicles on the road eventually in 2020. We have 13 million now is because primarily because Governments are supporting that activity to get oil out of the market. There is very few--and again there is very few options with respect to diesel vehicles. And if you want--if the goal of the Federal Government is to reduce independence on foreign oil and diesel is one of the problems, natural gas has to be one of the alternatives.

Mr. {O'Connell.} And let me expand by giving you the businessman's answer on this. If you don't believe that there is a moral hazard in the cost of gasoline, if you don't believe the cost of national security and protecting supply lines, if you don't believe that there are subsidies in that I can't convince you of anything. What I would suggest is that if the Federal Government or the decision makers in this city decide that we are going to move away from gasoline, that the best strategy would be that of an investor which is

a portfolio strategy. Now I believe I have got the best--the best solution. I will fight it out on those terms both against the incumbents as well as against the new entrance, but I think that the best strategy for the investor of the Federal Government if they decide to go that way is a strategy of variety.

Mr. {Pompeo.} I agree. I--let me reclaim my time. We will get out of here. I agree. The best portfolio strategy is exactly right and the best portfolio strategy is to not invest in any of them. It creates an infinite number of possible solutions and outcomes where the best technology will advance. And I happen to have industries that I think are closest, too. I happen to think natural gas is the place where we are very, very likely to get there, but just one guy and I am afraid I may just not be smart enough to get it right. So my inclination is just very, very different. And so with that I will yield back my time.

Mr. {Whitfield.} Okay. Thank you. I want to thank the panel very much. We have certainly looked at all of your testimony. We appreciate you presenting it today. I know that there were a lot of other questions, but because of this sort of erratic schedule on today particularly I am not going ask you all to stay around for another hour and half or so. So we are going to keep the record open for 10 days for

additional questions to the panelists and with that we look forward to working with all of you as we continue our efforts to solve the problems facing our country in relation to transportation and if there is anything the committee can do to be of assistance to any of you, please let us know. And with that we will adjourn the hearing. Thank you very much.

[Whereupon, at 1:00 p.m., the Subcommittee was adjourned.]