

**THE RENEWABLE FUELS STANDARD:  
ISSUES, IMPLEMENTATION, AND  
OPPORTUNITIES**

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**HEARING**

BEFORE THE

SUBCOMMITTEE ON ENERGY AND AIR QUALITY

OF THE

COMMITTEE ON ENERGY AND

COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

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# **THE RENEWABLE FUELS STANDARD: ISSUES, IMPLEMENTATION, AND OPPORTUNITIES**

**TUESDAY, MAY 6, 2008**

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON ENERGY AND AIR QUALITY,  
COMMITTEE ON ENERGY AND COMMERCE,  
*Washington, DC.*

The subcommittee met, pursuant to call, at 10:39 a.m., in room 2123 of the Rayburn House Office Building, Hon. Rick Boucher (chairman of the subcommittee) presiding.

Members present: Representatives Boucher, Melancon, Barrow, Markey, Doyle, Harman, Gonzalez, Inslee, Baldwin, Ross, Matheson, Stupak, Green, Upton, Hall, Whitfield, Shimkus, Shadegg, Bono Mack, Walden, Rogers, Sullivan, Burgess, Blackburn, Terry, and Barton (ex officio).

Staff present: Bruce Harris, Lorie Schmidt, Laura Vaught, Chris Treanor, Rachel Bleshman, Alex Haurek, David McCarthy, Andrea Spring, and Garrett Golding.

## **OPENING STATEMENT OF HON. RICK BOUCHER, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF VIRGINIA**

Mr. BOUCHER. The subcommittee will come to order.

This morning the subcommittee is conducting its first oversight hearing on the Energy Independence and Security Act of 2007 passed by the Congress last year and signed into law last December. The new law takes bold steps to increase the efficiency of energy use in commercial, industrial, and residential settings; promotes automobile fuel efficiency and reduces greenhouse gas emissions. It also substantially increases the renewable fuels mandate first adopted as part of the Energy Policy Act of 2005. Under the new law, annual increases in the volume of renewable fuels used in the national fuel supply are required, leading to a total renewable fuel use in 2022 of 36 billion gallons. The 2007 renewable fuel use was approximately 7 billion gallons, and under the new mandate, that volume must be 9 billion gallons by the end of this year and 11.1 billion gallons by the end of 2009. Beginning in 2009, the law requires that a portion of the total mandate be met by the use of advanced biofuels, and by 2022, advanced biofuels will account for the total mandate. Advanced biofuels are manufactured through the use of feedstocks other than cornstarch. But today cornstarch is the feedstock for most of the U.S. renewable fuel supply and it will remain the primary feedstock for years to come until advanced

biofuels such as cellulosic ethanol achieve broad market commercial deployment.

In 2007, 24 percent of the Nation's corn crop was devoted to biofuels production, and in the next several years that percentage may grow as the mandate of last year's law requires ever-greater volumes of renewable fuel use. In recent months, there has been a rise in expression of concern about increasing food prices, both domestically and globally. There is now clear competition for the corn supply between biofuel uses and food and livestock feed uses, causing corn price increases and a resulting increase in a range of food and feed prices. As corn production has increased, in part because of the rising demand for its use in biofuels, farmers have converted land once used for wheat and soybean production to corn, causing a rise in wheat and soybean prices as well.

Other factors beyond biofuel use are also exerting upward pressure on food and livestock feed prices such as rising costs of petroleum and the effect of those increases on the transportation costs for fuel and livestock food and unusual weather events that have caused crop losses around the world and a greater level of meat consumption in developing countries, resulting in an increase in the demand for livestock feed crops.

Beyond those concerns, in a series of recent reports, arguments have been advanced that the clearing of land for corn-based ethanol production releases large quantities of CO<sub>2</sub> into the atmosphere, resulting in life cycle greenhouse gas emissions for the biofuels so produced that are greater than the life cycle greenhouse gas emissions of the petroleum that those biofuels displace. Calls have been made by some for a re-examination of the biofuels mandate in light of these concerns.

Today we will hear testimony from a range of interested parties regarding the appropriateness of the mandate in light of the current debates over food and feed prices and the overall effect of ethanol production on the transportation fuel life cycle greenhouse gas emission. We will also receive testimony from our colleague from South Dakota, Stephanie Herseth Sandlin, the author of H.R. 5236, which would amend the renewable fuels standard to enable woody biomass removed from Federal lands to be used as a feedstock for cellulosic ethanol production, which in turn would qualify under the biofuels mandate. Also appearing this morning is Bob Meyers, a former counsel to this committee and currently an administrator of the Air and Radiation Office at the EPA. The EPA has broad waiver authority under the 2007 law to suspend the biofuels mandate in whole or in part, and Mr. Meyers will advise the subcommittee this morning of the status of consideration by EPA of the request that the Agency to date has received, asking that it exercise that authority.

I want to thank all of our witnesses for joining us for a timely discussion today, and I would note that in making the decision of whether or not to make opening statements, members should be advised that if they waive their opening statement, 3 minutes of questioning time will be added, not to the first witness but to the second witness, Mr. Meyers from the Environmental Protection Agency, and that slight change in our procedure is made pursuant to agreement with the Minority.



Mr. BOUCHER. That concludes my opening statement, and at this time I am pleased to recognize the ranking member of the subcommittee, the gentleman from Michigan, Mr. Upton, for his statement.

**OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN**

Mr. UPTON. Well, thank you, and I thank you, my friend, Mr. Chairman, for holding this important and certainly timely hearing.

One of the major components of the recently signed Energy Independence and Security Act was an ambitious renewable fuel standard, or RFS. I have always been and remain supportive of renewable fuels. However, as we all know, Congress doesn't always get things right. The laws we write are not always perfect and only require re-examination, corrections, and oversight, and certainly there are some legitimate concerns with using food for fuel that we need to continue to examine.

I believe that the goal of that legislation was to meet the needs of sound energy policy, environmental policy as well as national security. Many of the provisions in this new energy package that President Bush signed into law in fact meet that criteria. Unfortunately, after further examination and recent economic and environmental studies, the RFS may miss the mark in a few areas. For example, if the goal is to increase our usage of renewable fuel, we should examine the impact on cutting the import tariff, which would certainly bring hopefully a flood of renewable fuel to the market. I will be asking our witnesses about that proposal.

I want to be perfectly clear: I support the use and development of renewable fuels. I introduced a bill in the last Congress and again in January of last year along with Mr. Doyle that requires all gasoline sold in the United States after 2012 to contain a minimum of 10 percent renewable fuels, something that the State of Minnesota already has on the books. We are careful not to specify any one technology or source of fuel, allowing the market to fill the need, be it corn-based ethanol, cellulosic or fuel from algae, other renewable sources, perhaps even sugar. The new RFS does not allow our technology-neutral and feedstock-neutral model. I believe that this may be contributing to many of the problems with the RFS.

While biofuels such as ethanol are not the silver bullet to cut fuel prices or increase supply, they are in fact an important part of the overall puzzle, along with conservation, efficient technologies, and increasing domestic oil supply through increased production. Under current law, there is no effective safety valve to allow for unforeseen difficulties in meeting the required ethanol volumes that last for more than a year, such as ethanol production shortfalls. Many proposed plants are being canceled or delayed due to the high cost of corn or inconsistent State laws that prevent refiners from meeting the national renewable mandate. For example, the Nation's largest gasoline market, California, limits the amount of ethanol in gasoline to 5.7 percent until 2010, and in 2008 the Federal requirement translates to 7.7 percent, in 2009, about 9 percent. The California deficit would need to be made up in the rest of the country through increased blending and some refiners cannot easily meet

the California deficit with refiners in the rest of the country since the EPA regulations and car warranties currently prohibit blending above 10 percent use in conventional autos.

Recognizing that problem, I introduced a bill with my good friend, Charlie Gonzalez, that would provide refiners with more time to meet that biofuel mandate. Our legislation would allow a carry forward of up to three calendar years for refiners to make up deficits in meeting the mandate in 2008, 2009, and 2010. For instance, refiners who do not blend in enough renewable fuel in 2008 would have until 2011 to make up that deficit. Current law provides refiners who do not blend in enough renewable fuels a shorter 1 year window to make up that deficit. This bipartisan legislation would help avoid supply shortages and price spikes that might otherwise occur.

Now, I am one that reads and signs all of my legislative mail, all of it, and one of the top issues that our constituents are concerned about is certainly the high cost of gasoline. The price of a barrel of oil is strongly entrenched above \$100. Today the price is over \$120 with no sign of retreating. Gasoline prices are on a path toward \$4 a gallon yet America's oil resources remain off limits to exploration. According to Federal government estimates, there is enough oil in deep waters many miles off our coast and on Federal lands to power more than 60 million cars for 60 years. Additionally, if we advance the commercialization of the Nation's 2 trillion barrel shale oil resource, we will meet the U.S. oil needs for over 2 centuries. It would be ideal if we could grow all of our own fuel. However, this is not a possibility, and if we overreach we will be creating even more problems.

Along with a strong RFS, if we were permitted to utilize our vast domestic energy resources, prices would fall and the United States would achieve a greater level of energy security. Inexpensive energy helped build our economy into the most powerful and prosperous in the world, and high energy costs obviously take us in the opposite direction. We can all talk about alternative energy. Well, the alternative to our existing policy is to achieve lower prices along with energy security by relying on environmentally friendly American energy. American energy includes renewable fuels, coal-to-liquids, oil shale and the vast reserves of domestic oil and natural gas that are being blocked by shortsighted policy. We owe it to the working families to pursue an energy policy with a vision of the future. We cannot stand idly by for another year and allow gas to go up to even perhaps \$5 a gallon.

At this point I would like unanimous consent to put a letter in from API, which I have somewhere in my notes, and with that, Mr. Chairman, I yield back my time. Thank you.

Mr. BOUCHER. Without objection, that letter will be made a part of the record.

[The information appears at the conclusion of the hearing.]

Mr. BOUCHER. The Chair recognizes the gentleman from Georgia, Mr. Barrow, for 3 minutes.

**OPENING STATEMENT OF HON. JOHN BARROW, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF GEORGIA**

Mr. BARROW. I thank the Chair.

At the outset, I want to commend Ms. Herseth Sandlin for her bill and her legislation, which I think tries to strike the right balance here. I agree with her that we need to sort of widen the definition of what wood waste can be for effective advanced biofuels policy. But at the same time, I want to make sure that we don't loosen it so much that we end up deranging the market for other products.

I have a huge stake in this myself. In my district, in Treutlen County, Georgia, Range Fuels is building the first commercially viable, commercial-scale cellulosic ethanol plant in the country, and it is our plan to try and provide added value for stuff that has no value right now, and I advocated very strongly for a substantial grant from the Energy Department to try and jump-start that operation there, and the vision that we have is, the things that have no value right now can be better put to advanced biofuels development, and stuff that has existing value, and that is a concern I have got because I have also got a stake in this, because I sat in the same room with folks in my party and the leadership of my party are writing checks on Georgia's supply of biomass that we just can't cash in our State. I have sat around with folks that basically said we got enough biomass in Georgia to do this, do that, we got other things going on with Georgia biomass right now like the pulp industry and the construction industry. We have a lot of uses for the stuff that we are doing right now in Georgia.

We talk about not wanting to pick winners and losers and not try and play favorites with the programs that we initiate, and we adopt programs that ostensibly look neutral in their impact and will rely upon the invisible hand of the marketplace to sort of guide our choices but existing technology can only meet a certain mandate in a certain way and incentives geared toward providing that we do it by way of existing technology, we will find out that the invisible hand is a very heavy hand and it can derange a lot of existing markets.

What I think we ought to be doing—I can't help but relate to this problem in terms of my own experience as a local elected official. Perhaps we ought to be thinking about this a little bit more the way county commissioners or city councilmen think about zoning decisions because it is a zero-sum game. You change the zoning of a piece of land since they aren't making any more land, you change the zoning and you are reducing the supply of land that can be used one way and you are increasing the supply of land to be used in another way. It is a zero-sum game. And we ought to be thinking about what we are doing with our energy feedstocks the way city councilmen and county commissioners have to think about zoning decisions. What is the highest and best use of this energy feedstock over here and what is the highest and best use of that energy feedstock over there, and let us not pretend we are being neutral when actually we are setting up things in an ostensibly neutral fashion and it is actually going to take all of the feedstocks being used for one purpose and apply it toward another. So if we can think about that, I think that will certainly guide my thinking of this, and I am interested in hearing what the witnesses have to say about how we can make more effective decisions that take advan-

tage of the marketplace and are neutral in effect as well as in purpose.

Thank you, Mr. Chairman. I yield back the balance of my time.  
Mr. BOUCHER. Thank you, Mr. Barrow.

The gentleman from Kentucky, Mr. Whitfield, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF KENTUCKY**

Mr. WHITFIELD. Mr. Chairman, thank you very much, and we genuinely appreciate your holding this hearing this morning on a topic of great importance for the entire country.

I might say that recently I met with a group of agriculture leaders and they made the comment that the Nation's energy policy, particularly referring to this mandate on ethanol production, has more of an impact on agriculture than the agricultural policy. So I think it is imperative that we move deliberately and cautiously in trying to reverse a policy until we understand completely the ramifications on it as it relates to agriculture prices, as it relates to oil prices.

And so I want to commend the chairman for the hearing. We look forward to some of our witnesses today, who have some expertise in this area to help us move forward in a way that is most likely to be correct for our country, and I yield back my time.

Mr. BOUCHER. Thank you very much, Mr. Whitfield.

The gentleman from Pennsylvania, Mr. Doyle, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. MIKE DOYLE, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA**

Mr. DOYLE. Thank you, Mr. Chairman.

Mr. Chairman, it sometimes happens that we here in Congress pass policies that don't turn out as good in the real world as they looked on the drafting paper, and despite our best intentions and due diligence, the law of unintended consequences rears its ugly head, forcing us to revisit our earlier policy decisions. That is what I believe is happening today in regard to corn-based ethanol, and I commend you, Mr. Chairman, for holding this hearing so that we can again look at the renewable fuel standards so that we can ensure that we get the results we seek without causing more problems in the future.

I remember back when we passed the ethanol mandates back in the Energy Policy Act. Corn ethanol was presented almost as a holy grail solution to the challenges presented by our dependence on foreign oil. It seemed at the time that we could not only start to break the chains of this dependence but we could do it in a way that would benefit the American farmer and put us on a path to combating global warming. While time has proven that some benefits have resulted from this policy, most notably the increased profits in the agricultural sector, I believe its negatives today far outweighs its benefits.

I have said time and time again that there is no silver bullet to address the dual challenges of energy independence and global warming. There is no one policy we can adopt or one technology we can develop to meet these challenges. Unfortunately, our committee and our Congress essentially chose food-based ethanol and encouraged the private sector through authorizations in the tax code to pick this biofuel over others. We must learn from this mistake and roll back these policies.

Now, don't get me wrong: I am not advocating for a rollback of the entire renewable fuel standards as I believe the standard itself can help move us toward energy independence. What I am advocating is that we roll back the support structure that food-based ethanol receives and which other promising biofuels are not. We need to encourage all of these advances, not pick the one we can sell better at home. Food prices are rising. Rain forests are being deforested and we need to understand the real-world realities that this policy has caused. Any food that is used for fuel is a food that won't be used to feed our Nation and to a large extent, the world. We have other options such as algae, municipal waste, and the like, which offer a path toward energy independence but don't put the burden on the backs of the hungry to pay for it or pay for it by destroying rain forests.

In conclusion, Mr. Chairman, we need to revisit this policy and back away from food-to-fuel policies and instead accelerate the development of biofuels that don't put our energy needs ahead of the needs of the hungry or the environment.

With that, Mr. Chairman, I yield back the balance of my time.

Mr. BOUCHER. Thank you, Mr. Doyle.

The gentleman from Illinois, Mr. Shimkus, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. JOHN SHIMKUS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS**

Mr. SHIMKUS. Thank you, Mr. Chairman. It is great to have this hearing, although I am really concerned how shortsighted we are. I want to welcome Congresswoman Herseth Sandlin and her position.

This is the cell phone in 1986. It is a brick. This is my BlackBerry today. This whole debate on ethanol is a debate about the current availability versus future technology. What you all did in the Energy Security Act was say we have to develop corn today and move to cellulosic for the future. That is all your bill did. That is all your bill did and that is where we need to go. So this is very frustrating. How shortsighted we are to walk away. You know, we have 8.5 billion gallons in ethanol refinery. When we passed the Energy Policy Act in 2005, I told you all, I said OK, don't build any new crude oil refineries, we will just continue to build ethanol refineries. Check the record. That is what I said. And because you all won't go to other supplies of fuels, your default is renewable fuels.

This is where we are today. When your Majority came in, \$58 a barrel. Today, \$120 a barrel. Two dollars and 33 cents a gallon of gas, \$3.66 today. With climate change, 50 more cents. \$4.16 is what we would pay. Take away the ethanol mandate, another \$1.10. Do

you know how much ethanol adds to our fuel mix today? You take that away, you add another \$1.10 to the gas at the pump. So now we are at \$5.26 a gallon. Nobody wants to pay that.

Why am I so frustrated? Chairman, we have had this debate. We had motions to recommit on the bill, alternative fuel standards, not just an RFS. What is an alternative fuel? It is electric vehicles put into the standard. It is coal-to-liquid put in the standard. It is OCS put in the standard. It is all these other things that we could do to increase supply. We are not one-trick ponies. We want more supply. You all won't give it to us. And what we have, we are going to have—we continue to have escalating prices. Corn is the bridge. It is this cell phone. Cellulosic is here. That is why I appreciate your bill. And that is where we need to go but we can't jettison the present and not get to the future. And we are going to send terrible signals to the investment community just because we are scared and we are not willing to handle this debate on energy prices in a realistic manner, we are going to send terrible signals to not only to corn-based ethanol but all the cellulosic technologies because we are haphazard, we don't plan. We have a terrible supply debate on energy. We need more supply to have lower prices.

I am glad we had this hearing, Mr. Chairman.

Mr. BOUCHER. Well, thank you very much, Mr. Shimkus. I particularly appreciate the last sentence. And as the gentleman knows, I share his view with regard to the need for a broader range of alternative fuels, particularly coal-based.

The gentlelady from California, Ms. Harman, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. JANE HARMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA**

Ms. HARMAN. Thank you, Mr. Chairman.

I do want to apologize to our first witness, Ms. Herseth Sandlin, for leaving the hearing after I speak. I have a competing subcommittee hearing and a full committee hearing this morning, and I regret that I can't hear your testimony.

Mr. Chairman, I think injecting partisanship is not particularly useful at this point. Last year members of this House and members of this committee on a bipartisan basis believed that an expanded renewable fuels mandate was a win for both climate change and a win for energy independence. The benefits of cellulosic ethanol and other advanced biofuels are extraordinary and the Federal government should encourage the development of those resources. But in my view, our enthusiasm for corn ethanol deserves a second look. That is all I am saying. It deserves a second look. Sure, the billions of gallons of corn ethanol that American farmers will produce this year can displace some billions of gallons of foreign oil, but the greenhouse gas reductions of corn ethanol appear to have been overstated, and now it looks more and more that we are robbing Peter to pay Paul, and judging by the skyrocketing prices of milk, eggs, and flour, robbing ourselves too.

Changes in the U.S. corn market alone are not to blame for the climbing price of food in the United States or the scarcity of staple crops in places like Somalia and Haiti. We can point to poor harvests in Australia, Canada, and the Ukraine as other culprits. But

weather changes, perhaps caused by climate change, may account for these regions' poor grain production this year. The 2-year drought in Australia, the world's second largest wheat producer, has cut its production by a third.

So what is the lesson? The lesson is that climate change is linked to policy debates about fuel, food, and security. We cannot afford to think of them as separate issues, something that I know Al Gore has been telling us for years. Energy independence can help us fight terrorism. In the long run, growing our own fuel can insulate us from political instability and keep American dollars from funding repressive regimes and violent causes. But if our policies promote starvation in unstable regions of the world, we may end up producing more terrorists no matter how we get our energy.

So in sum, Mr. Chairman, I am glad you are holding this hearing. I am glad we have a diversity of views in our several panels. I will try to come back to hear some of the testimony. But I think we are doing the right thing by taking a second look at what we did last year. I think we did the right thing last year but it may need some fine-tuning.

I yield back the balance of my time.

Mr. BOUCHER. Thank you, Ms. Harman.

The gentleman from Oregon, Mr. Walden, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON**

Mr. WALDEN. Thank you, Mr. Chairman. I too appreciate this hearing. I know when I am at home, a lot of people are concerned about the rising food costs and they have a lot of questions about ethanol and whether or not it contributes to that, and so I think we will learn a lot from our witnesses today. I especially want to welcome our colleague, Ms. Herseth Sandlin, who I have worked with on numerous occasions on forest-related legislation, and I am pleased to be one of the original cosponsors of H.R. 5236.

I think this committee made a mistake and this Congress made a mistake when it slipped in a provision that precludes the use of woody biomass from Federal forestlands and from anything other than plantation-planted forestlands on private ground from using any ethanol derived from that mass to count against the RFS. It makes no sense. There are laws on the books already that determine how you harvest forests on Federal ground, trees on Federal ground, how we do all that. That is already there. Those management rules are already in place. Those laws are already in place. What this committee did or what this Congress did was say that ethanol produced from woody biomass doesn't count against the RFS if it comes off Federal ground.

Now, I know we are going to hear testimony from some of the environmental groups that claim that preventive thinning from national forests as a biofuel source makes little economic or ecological sense and then they argue against thinning to control burns. I would like to invite these people out to my district where we see these incredible forest fires that burn hundreds of thousands of acres and leave incredible devastation behind and then some of these same groups litigate and stop the harvest of the burned dead

trees which the material could be used to go into various biomass uses.

And so I obviously disagree with their viewpoint on this and agree with Representative Herseth Sandlin. I hope this bill passes and I hope the provision that was slipped into this energy bill will be repealed. It makes no sense the way it is.

So Mr. Chairman, I yield back the balance of my time and I thank you for this hearing.

Mr. BOUCHER. Thank you very much, Mr. Walden.

The gentleman from Texas, Mr. Gonzalez, is recognized for 3 minutes.

Mr. GONZALEZ. I waive opening.

Mr. BOUCHER. The gentleman waives his opening statement.

The gentlelady from Wisconsin, Ms. Baldwin, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. TAMMY BALDWIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN**

Ms. BALDWIN. Thank you, Mr. Chairman. I thank you especially for holding this important and timely hearing, that with rising food prices and soaring fuel costs is the subject of many discussions around the country and certainly in my home State of Wisconsin.

In December, Congress passed the Energy Independence and Security Act, which made an historic commitment to American biofuels with its increase in the renewable fuels standard. It creates American jobs and provides critical environmental safeguards to ensure that the growth of homegrown fuels helps reduce carbon emissions and does not degrade water or air quality or harm our lands or public health.

Since the first large-scale ethanol plants opened in Wisconsin in 2002, my home State has increased ethanol production levels to almost half a billion gallons annually at nine plants across the State. Wisconsin is now in the top 10 States for overall production. Meanwhile, air quality in my home State has improved and the price of gas would be about 15 percent higher, according to Merrill Lynch analysis, if ethanol consumption were diminished. Moreover, a number of the producers in my State have created a food and fuel scenario rather than a food versus fuel scenario by using the process that separates the protein from the starch in the corn kernel, allowing for the production of ethanol and a dried distiller grain product that is used as feedstock for animals.

Now, I can appreciate the concern that increasing corn-based ethanol production has some unintended consequences on the world's food supply. However, the issue cannot be examined in a vacuum. In fact, according to one study, the cost of corn used to produce food is on average about 3.2 percent of the total typical consumer's grocery bill. That means that 96.8 percent of the remaining cost of food depends on other factors, other food input, food marketing, processing, packaging, transportation to market. Adding costs to the mix are the worldwide drought, fuel costs and exploding demand elsewhere in the world, especially among developing countries, and speculation in the commodity markets. And given the state of our flailing economy here in the United States,



it is simply foolish to only examine one of these factors or make drastic decisions to undo a carefully crafted policy that we just enacted 5 months ago.

Certainly, though, ethanol is not the only answer but it should be a part of a multifaceted approach as we move forward. We will only be able to perfect the science of lowering greenhouse gas emissions and addressing energy independence if we set the stage through research, technology, infrastructure, and policy advancements, all of which open the door for third-generation biofuels including cellulosic ethanol from switchgrass and other inputs.

Last year, the Department of Energy made a commitment to moving forward with advanced biofuels when it awarded the University of Wisconsin, in partnership with Michigan State University, a \$134 million grant to develop one of three national research centers aimed at converting woodchips, grasses, corn stalks, and other plant-based materials into biofuels. The science that will emerge from this center would not be possible without our commitment to corn-based ethanol.

Mr. Chairman, I hope that today's hearing will shed light on this issue. We must examine the warning signs that are out there but we certainly will not be able to address our country's growing energy needs if we are to run away from this challenge. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Ms. Baldwin.

The gentleman from Texas, Mr. Burgess, is recognized for 3 minutes. Oh, I am sorry. The ranking member of the full committee has arrived. The gentleman from Texas, Mr. Barton.

Mr. BARTON. That is OK, Mr. Chairman.

Mr. BOUCHER. Mr. Burgess, would you take your 3 minutes, please?

**OPENING STATEMENT OF HON. MICHAEL C. BURGESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS**

Mr. BURGESS. I will be pleased to, Mr. Chairman. Thank you also for holding this hearing today.

You know, just yesterday as kind of a warm-up for this hearing, we did a Republican House Policy Committee hearing over at the Library of Congress on this very issue, the food-to-fuel issue, and I must say, I was pleasantly surprised by the caliber of witnesses we had, many of the same witnesses we are going to hear from today, and very surprised by the turnout, at least from staff from member offices, and we even—Mr. Chairman, I think we even had a Democrat in the audience, so it became a bipartisan event, not just a Republican House Policy Committee event.

So certainly we need to dig deeper into this issue, and we have heard some of the issues already discussed on both sides of the dais this morning. You know, Mr. Chairman, we are all pretty familiar with the renewable fuel standards from the Energy Policy Act of 2005 because we talked about that, we debated that almost like a pure Athenian democracy here in this committee for hour after hour, but I really don't recall that much discussion about the policy of 2007 because it kind of came to us, if you will recall, late in the game, and once again subverted the committee process, and it kind

of leads us to some of the anxiety, I think, that we are experiencing this morning.

Now, my governor, Rick Perry from Texas, has submitted a letter to Administrator Johnson at the Environmental Protection Agency talking about the renewable fuels standards mandate and how it will negatively impact the citizens of Texas to over \$3.5 billion if corn prices reach their estimated price threshold this year, and Governor Perry and the Connecticut governor have submitted requests for relief from the renewable fuels standard because they must face the realities of the unintended consequences of Congressional biofuel mandates.

And we have heard a little bit about unintended consequences today, and you know, it used to be in Congress, unintended consequences would be visited upon you 2 decades, 3 decades later, and now because of the issue of compression of the timeline, we are seeing the unintended consequences come at us mere months after we make unwise policy decisions so it is important that we fully vet this issue and it is important that we come to the right conclusion because we are not going to outlive our unintended consequences this time, I don't believe.

So Mr. Chairman, thank you for taking a hard and serious look at the costs associated with the renewal fuel standards. What additional price should we ask our country's citizens to pay for energy independence? How can we expect the developing world to react when their growing economies are demanding more and more food or facing starvation? We heard from a member on the other side that said growing our own fuel will insulate us from the instability in the world, but the reality is, growing our own fuel may in fact lead to some of that instability around the world if people indeed cannot get enough to eat.

So here we are, the committee of jurisdiction, we are having the opportunity to oversee and fully vet what others thought we were not capable of crafting. I encourage us to proceed on this. I think this committee, with its long history of successful bipartisan legislation, has the right tools, right manpower, womanpower, the right brainpower to make the necessary changes to save this and make it a more workable policy in the future.

So with that, Mr. Chairman, I will yield back my time.

Mr. BOUCHER. Thank you very much, Mr. Burgess.

The gentleman from Utah, Mr. Matheson, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. JIM MATHESON, A  
REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH**

Mr. MATHESON. Thank you, Mr. Chairman.

This is a very complicated issue, and I think Members of Congress and a lot of other folks are asking a lot of questions about how we can navigate this issue to achieve greater energy independence and make progress on climate change as well. It is an issue that hit the popular press just in the last month with Time magazine asking about this policy is it doing the right thing, is it driving up food prices, is it making global warming actually worse.

I would echo what Dr. Burgess said about the fact that this issue as it came up in the 2007 Energy Policy Act really didn't go

through the regular order of this committee, and I think that it is unfortunate. This is a very substantive, capable committee. It is why I was so interested in joining this committee, and as a first-term member of the committee, I think that this is the type of issue where this committee can really perform a good service to this country and I think it is unfortunate that the renewable fuels effort didn't go through regular order. I am not saying we wouldn't have maybe had a few things slip through that we wouldn't have gotten right but already people are saying we need to revisit what happened in the 2007 Act. We do need to try to get this right. Just one quick example, we got today the legislation from Representative Herseth Sandlin pointing out one of the weaknesses in the 2007 Act that excluded certain types of biomass fuel. Now, I think that is a very legitimate issue. I think that we are probably going to want to take action to include that in the mix. Those are the types of discussions we ought to be having on this issue and work in a bipartisan way to try to have credible policy that balances competing needs of energy independence, climate change, and security of our food supply.

And so, Mr. Chairman, I want to thank you for holding this hearing and I just ask we ought to hold a number of hearings on this issue and really try to flesh this out. We can't turn the clock back and do it before the bill was passed last December but we can certainly conduct ourselves with our oversight responsibilities and try to make good policy changes moving forward.

I will yield back my time.

Mr. BOUCHER. Thank you, Mr. Matheson.

The gentleman from Texas, Mr. Barton, ranking member of the full committee, is recognized for 5 minutes.

Mr. BARTON. Thank you, Mr. Chairman. I am going to submit my written statement for the record. I just want to make a few extemporaneous remarks.

First, I appreciate you holding this hearing. I appreciate the cooperation with the Minority on witnesses, and I appreciate the willingness to take an honest and fresh look at this issue. When I was chairman of this committee, we passed the Energy Policy Act of 2005. It was an open, bipartisan process in this committee, in the House, in the Senate, and in the conference committee. We had open conference committee hearings and markups in this very room.

There is a renewable fuel standard in that Act. For this year, the renewable fuel standard is 5.4 billion gallons and it rises to an estimated 8.6 billion gallons over time. Under the legislation that was signed into law this past December, we have a new biofuel mandate. It is 9 billion gallons this year. It cannot be met. There is not enough biofuel in the country to meet it. I think that is probably one of the reasons we are holding this hearing. Nobody likes to see food prices skyrocketing like they are skyrocketing. Nobody likes to see our U.S. domestic fertilizer capacity cut in half, and half our fertilizer plants being shut down. Nobody on either side of the aisle likes the unintended consequences of what the proponents passed last December with the past of intentions.

I am going to be introducing a piece of legislation, Mr. Chairman, this week to repeal section 202 of last year's Energy Act and just

go back to the previous biofuel mandate in the 2005 Act. Now, that is not a perfect solution and it may not be acceptable but at least it is doable. There are things that can be done. We are going to hear about some of those things today. And one of the things that can be done is obviously to do nothing. If we do nothing, we are going to have the chaos that we have right now and it will just be political finger pointing.

So Mr. Chairman, I do hope that the aftermath of this hearing is as positive as the lead-up to it and that we do work together, and if there is a solution that is acceptable to the biofuels community and to the farm community and to the food-producing community and to the consumers, all the various environmental groups that we can come together and find that balance point.

With that, Mr. Chairman, I yield back.

Mr. BOUCHER. I thank the gentleman and assure him that we will welcome his thoughtful contributions to our deliberations.

The gentleman from Louisiana, Mr. Melancon, is recognized for 3 minutes.

Mr. MELANCON. Thank you, Mr. Chairman. I will waive my opening statement.

Mr. BOUCHER. The gentleman waives his opening.

The gentleman from Texas, Mr. Green, has left. The gentlelady from Tennessee, Ms. Blackburn, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE**

Ms. BLACKBURN. Thank you, Mr. Chairman. I join all of our colleagues in thanking you for the hearing and looking at the links between the RFS and food prices.

We all know, and as you have heard this morning, that biofuels can and should play a part in our renewable energy development and our ag community wants to play a part in this as we look toward energy independence and how we best achieve energy independence, and we have all heard a lot about the unintended consequences that have come from crops that are used for food being used as a part of this chain. We have seen, and Mr. Burgess alluded to this, the part of the debate that we look at areas of the world like China and India and the increase in global income and then therefore the demand that is there for processed foods and for meats and the impact that this has on the global food market. And I think that as we look at this, and I am glad that we are reviewing the issue today because we do have to go in and look at what has happened with corn production, with prices, with the existing reserves and then the effect that this has had on those crops, on the marketplace and then on corn production, wheat production, and soybeans, which come from my district in rural west Tennessee. And we also are hearing from our constituents about the cost of meat, grocery prices, what is happening, and as they are rolling that cart down the aisle at the grocery store and they are seeing this played out across the board, they are indeed angry, they are discontented with some of the steps that we have taken, and they are realizing these unintended consequences. I am glad that they are ahead of Congress on this issue and that they do want to

see us take some action. Also, we are hearing from many of our constituents about some of the speculative activity in the futures market and the way this, a lack of risk management that has been there and the way this is having an impact. We all know that high energy prices are a key factor behind what is happening with food and food prices. We know, as has been said this morning, there are steps that can be taken to mitigate this. We are looking forward to seeing how we best move forward.

I thank you, Mr. Chairman, and I yield the balance of my time.

Mr. BOUCHER. Thank you very much, Ms. Blackburn.

The gentleman from Massachusetts, Mr. Markey, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. EDWARD J. MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF MASSACHUSETTS**

Mr. MARKEY. Thank you, Mr. Chairman, very much.

Mr. Chairman, the energy bill which the Democratic Congress passed and was signed by President Bush is already working. A broad spectrum of analysts, including those working at McKinsey, Consumer Federation of America, and Iowa State all find that ethanol is helping to lower the price of gasoline. While \$3.60-a-gallon gasoline is bad, it could be worse. By driving the development of new fuel possibilities, the energy bill is ensuring that the next generation of biofuels will also expand the opportunity for all regions of the country to produce the fuels that meet their needs the best.

Massachusetts once played a critical role in the U.S. energy supply back when Melville was writing by whale-oil lamps about Captain Ahab's pursuit of Moby Dick. With the commercialization of technology now being developed in the State, Massachusetts could once again begin to meet its own fuel needs and help other parts of the country to do the same. But we must be good captains of the biofuels ship and be aware of the challenges facing their development and the wider impacts they could have. Today we will explore a crucial one. Along with other factors including increasing global demand, rising energy costs, greater speculation in the commodities market, and bad weather, corn ethanol production is also contributing to an increase in corn prices.

With the impact on food prices in mind, the renewable fuels standard was designed to drive development of biofuels from feedstocks that are also not food stocks. Some have argued that since Congress can only control the renewable fuels standard, we should reduce the mandate to control food costs. But it is unclear whether that would actually reduce corn prices and instead could impede the critical development of biofuels from non-food sources.

Instead, we should move in the direction that the Farm Bill appears to be going: reducing the subsidies for corn ethanol, which allows ethanol producers to buy corn at a higher price and increase the financial incentives for using cellulosic ethanol and other advanced biofuels. Likewise, Massachusetts has eliminated the State gasoline excise tax on cellulosic biofuels to encourage their use, and we should consider, as our witness from the NRDC advocates, developing a single performance-based financial incentive for renewable fuels that will drive development of biofuels that are best for

the planet and for the pocketbook. This is the direction we should be heading. This, combined with the 35-mile-per-gallon standard that we passed after a 35-year lag in December of 2007, is the way we should go in order to break our dependence upon imported oil and at the same time protecting the planet. The standard for fuel economy will back out the equivalent of all the oil we import from the Persian Gulf. We need a smart strategy for reducing the subsidies for corn while increasing dramatically the subsidies for cellulosic fuel. If we do that, we will be on the path to backing out oil and protecting the planet.

I thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Markey.

The gentleman from Michigan, Mr. Rogers, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. MIKE ROGERS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN**

Mr. ROGERS. Thank you, Mr. Chairman.

I can't think of a more important topic that we have today than this. We are funding our enemy every day we stop at the pump and fill up with \$120-a-barrel oil, and I think what we see today is part of our problem. This is a national security issue, it is an environmental security issue and it is an economic security issue, and we tend to hear mandate in a very singular focus by trying to pick the winner and loser of what is next. The example of the cell phones was interesting. I have one exception, that the marketplace got us to the BlackBerry. The marketplace invested research and development and took us to the next generation. It wasn't a government mandate that got us there. I think we have to be about cellulosic research but we should be on the R&D side and pushing it as fast and as furious as we can.

I think we have got to go and say we are going to make a commitment to nuclear power. If you really want to impact prices in the future and have an environmental impact as well, we have to have a commitment to new nuclear power. We have to have substantial investments in new green auto technology and intelligent transportation systems so we can drive cars that use less oil and ride on smart roads that manage congestion with us. We have to invest in things like lithium ion batteries, the research and development side. We are so close, we are so close, but because we are so mandating and regulating here, we forgot that there are these other technologies out there that should be invested in all at the same time. We also need supplies of oil and natural gas from ANWR and the Outer Continental shelf. We can't fool ourselves to think that it is just the price of corn that is causing this problem for food. Diesel trucks are paying \$4.50 a gallon for diesel. That is raising the costs on everything that we buy and consume.

A new commitment to helping working Americans trade in their older automobiles for new fuel-efficient ones—3 percent of the cars out there are causing a tremendous amount of pollution out of the tailpipe. If we come up with a program to get them off the road, get them into new, more efficient cars, everybody wins, including automobile workers all across the country. An extension of solar and wind production credits without new taxes. The use of fuels

like coal-to-liquids that are nearly ready for use in air travel but are being blocked by Congress.

We have to have a holistic view on this, and I think we are coming at it exactly the wrong way. We are going to mandate winners and losers. We are going to manipulate the market price but our heavy regulation and mandates and what you can and can't use versus us stepping up and saying we are going to invest in the things that are going to make a difference for our national security, our environmental security, and our economic security. If we invest in the private industry and let that intellectual capital unleash on these problems from every perspective, from cellulosic to lithium ion batteries, to nuclear power, to new generation of solar and wind, we are going to win the fight. But if we don't do that, we will take a backseat to the rest of the world when it comes from leading the way on what I think can be new technology that gets us off of foreign oil, burns cleaner, and still protects the economy for working Americans.

I appreciate the hearing, Mr. Chairman, and I hope we finally take a step back and say we need to do all things all at the same time to make a difference for the future of the country, and I yield back my time.

Mr. BOUCHER. Thank you very much, Mr. Rogers.

The gentlelady from California, Ms. Bono Mack, is recognized for 3 minutes. She is not here.

The gentleman from Texas, Mr. Hall, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. RALPH M. HALL, A  
REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS**

Mr. HALL. Mr. Chairman, I thank you.

Ethanol is getting a lot of attention these days as the price of food increases and the renewable fuels standards mandate that is included in the Energy Independence and Security Act is getting the blame. I am not opposed to biofuels but I want us to be smart about them and I want us to realize that biofuels can't replace the gasoline and diesel that we use in our cars and planes, and I have mixed emotions about it. I guess I am a little like that candidate that didn't want to tell exactly where he stood on alcohol. He said that if you are talking about alcohol that smoothes men's tongues and intensifies conversations and alcohol that is in long-stemmed glasses that is used to toast success wherever it is found, I am certainly for it, and if you are talking about that alcohol that breaks up families and causes wrecks on the highway, I am against it, and I guess that is kind of the way I feel about corn and soybeans.

According to environmental economic and energy costs and benefits of biodiesel and ethanol biofuels and the proceedings in the National Academy of Science's July 12, 2006, said, "If all the current output of U.S. corn and soybeans were put into biofuels, it would replace only 12 percent of our gasoline demand and 6 percent of our diesel demands." I think biofuels ought to be part of the fuel mix but not to the detriment of the food supply for our country and the rest of the world.

I look forward to the witnesses' testimony and it is folks that are going to come sit at those tables there that know more about it obviously than Members of Congress do. That is why we summon

them up here and listen to them and type up and put into condensed form what their testimony is and extract and glean from that what is what Jeremy Bentham called the greatest good for the greatest number, and that is the way we are supposed to legislate. I look forward to the witnesses' testimony and the ongoing discussion about the important issues.

Mr. Chairman, I thank you for having this session and I thank you for yielding me this time. I yield back.

Mr. BOUCHER. Thank you very much, Mr. Hall.

The gentleman from Arizona, Mr. Shadegg, is recognized for 3 minutes.

**OPENING STATEMENT OF HON. JOHN B. SHADEGG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA**

Mr. SHADEGG. Thank you, Mr. Chairman, and I want to thank you for holding this hearing and welcome our witnesses.

A little over 4 weeks ago, Time magazine published this edition which says on the cover "the clean energy myth," and then inside, and I thought it was interesting, introducing the very same article that says "the clean energy scam." I am not convinced either of those are fair criticisms but certainly we need to be discussing these policies.

In the latest energy bill, Congress drastically expanded the renewable fuels standard. In the latest iteration of the Farm Bill, we may see an extension of what I would view as excessive tax credits for biofuels and an extension of the import tariff on ethanol. These policies are clearly having at least some unintended consequences and the American people are not aware of them and I think they would be justifiably upset if they were. For example, there is a tax credit on biodiesel enacted by this Congress that is forcing Americans to pay millions of dollars, last year some \$300 million, to subsidize diesel fuel prices overseas under a phenomenon known as flash and dash, and that is a procedure whereby biodiesel produced outside the United States is shipped to the United States. One percent of petroleum diesel is added to it, so you add 1 gallon to 100 gallons, and that fuel is then shipped back out of the United States with a \$1-per-gallon subsidy paid by American taxpayers. So Americans are paying \$1-a-gallon subsidy. It is interesting, you look at America exported millions of gallons of biodiesel last year more than we produced. How did that happen? Because under this policy, it pays to ship biodiesel to the United States, add 1 percent real diesel and ship it back out and get that \$1-a-gallon subsidy. Clearly that is a policy that needs to be repealed.

As we will hear later today, the current policies are causing an increase in food prices of as much as 35 percent. These hit some of the poorest populations in the world. Initially in my part of the country in Arizona, we saw a spike in tortilla prices in Mexico. Haitians are currently experiencing food prices which are 40 percent higher than 1 year ago. Egg prices, milk prices, bread prices have all gone up. I think we can avoid these mistakes by letting the marketplace and not the government pick winners and losers. One of those I think would be a technology alternative fuels mandate which would allow us to take advantage of natural gas and displace a great deal of the petroleum we are currently burning in auto-



mobiles. That would also achieve a reduction in greenhouse gases of over 1.5 million metric tons for every billion gallons of gas not burned.

I am also a cosponsor of Representative Herseth Sandlin's bill. In Arizona, we have a great deal of biomass which could be used but unfortunately in the definition of renewable in the most recent energy bill, much of that biomass cannot be used. We have a huge resource for that fuel in Arizona and it makes sense. I believe this is an important hearing to look at these policies when Americans are suffering by what they are paying at the pump.

I thank you again, Mr. Chairman, for holding this hearing.

Mr. BOUCHER. Thank you very much, Mr. Shadegg.

The gentleman from Nebraska, Mr. Terry, has joined us here. He is not a member of the subcommittee. However, as a member of the full committee, we welcome him and would be happy to entertain any opening statement that he cares to make.

**OPENING STATEMENT OF HON. LEE TERRY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEBRASKA**

Mr. TERRY. I do appreciate that opportunity. Under the rules, you don't have to do that but I am pleased that you did.

I appreciate that you had this hearing today because I think there is a lot of misinformation or exaggerations about the impact of biofuels upon the world as we know it today. I hope the goal here today, as I expect it is, is that we have our esteemed blue ribbon panel of witnesses here to put the facts before us so that the American public can make and we can make informed decisions on whether or not to alter a renewable fuels mandate.

My perception when I have read studies from universities and the Federal government is that there is definitely an impact of using corn to create ethanol, but that it is more equivalent to the acorn falling and hitting us on the head than the sky is falling that I am reading. Or the editorial cartoons that in drought-ridden areas were somehow caused by the few percent more of corn used last year for ethanol, is somehow causing the famine and drought in Asia and other parts of the country. That is the type of hysteria that I think we need to kind of remove from our discussions about the biofuels mandate.

My vision, and I think the vision shared by our first panelist, I think she has got the right focus here, is that biofuels are going to have to be part of our energy portfolio. As we look to become less dependent on foreign countries to fuel our economy, to make sure that we can grow our crops, to get to work, to generate electricity, that we have to have a more varied, diverse portfolio and that is going to include biofuels, and then within that it is going to be varied. I can envision that you use one type of biomass in the Southeast and a different one in the Midwest and another one in the Southwest and another one in the Northwest and maybe a different one in the Northeast. I think when we can really put our research into what would be the ideal sustainable biomass in our respective regions and then set up pilot plants so we go from the Shimkus 1980s cell phone to the BlackBerry because that is what we have to do is get from generation one to generation two, three, four where the process will be efficient and affordable.

So hopefully we can keep on the track because it is necessary that we do, and Mr. Chairman, and I thank you for allowing me time to speak.

Mr. BOUCHER. Thank you, Mr. Terry.

We now welcome our first witness of the morning and would ask that she come to the witness table. Stephanie Herseth Sandlin is the Representative of the State of South Dakota. She is also the chief sponsor of H.R. 5236, which has been referenced by many members of the panel in their opening statements. They are serving as cosponsors of her legislation. The legislation she has introduced would qualify woody biomass taken from Federal lands as a feedstock that could qualify for the mandate for renewable fuels contained in our 2007 law.

So Ms. Herseth Sandlin, we are delighted to have you with us this morning. Your prepared written statement will be made a part of the record, and we welcome your oral summary.

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

Ms. HERSETH SANDLIN. Chairman Boucher, Ranking Member Upton, and members of the subcommittee, thank you for the opportunity to discuss the new renewable fuels standard enacted as part of the Energy Independence and Security Act of 2007.

With the increase in the RFS included in the energy bill, we are moving aggressively to take advantage of the contribution agricultural producers across the Nation can make to our national security, our energy economy, and our environment. Through an increase in biofuels production, we can reduce our dependence on foreign oil, revitalize rural economies, and decrease our overall carbon emissions at the same time.

Because we are in the beginning stages of developing biofuels as a reliable domestic source of energy, it is essential for Congress to sustain its support for ethanol production as a way of fostering the development of advanced biofuels. We expect these advanced biofuels to utilize a diversified set of cellulosic feedstocks from corn-cobs to prairie switchgrass to wood waste.

While inclusion of a forward-looking RFS in the energy bill was great news for many renewable energy producers across the Nation, late in the process an unfortunate provision was added that prohibits virtually all woody biomass from national forests including the Black Hills National Forest in South Dakota from being counted toward the expanded renewable fuels standard. The definition also excludes all biofuels made from biomass from private sources unless it comes from those trees that are planted in a plantation and actively managed, which could potentially exclude most woody biomass on private property.

I think this is a misguided policy that squanders what could be an important source of renewable homegrown energy. It is a wrong-headed disincentive to use an available cellulosic feedstock. It simply doesn't make sense.

That is why I have introduced a bipartisan bill, H.R. 5236, the Renewable Biomass Facilitation Act, which revises the definition of renewable biomass to allow federally sourced biomass and that

would include trees, wood, brush, thinnings, chips, and slash that is removed as a result of approved preventive treatments to count toward the renewable fuels mandate, provided it is used for the production of biofuels. Approved preventive treatments include reducing hazardous fuels, minimizing or containing disease or insect infestation, and restoring ecosystem health.

H.R. 5236 does not alter Federal forest management policy. In fact, the bill, if enacted, could help foster responsible public forestland management by supporting efforts to reduce the incidence of destructive wildfires. The altered definition simply means that these forest byproducts which would otherwise not be used or perhaps, in the case of slash piles, simply be burned, thereby releasing more carbon in the air or allowed to rot, releasing methane into the air, are instead able to be counted toward the renewable fuels standard if used to produce biofuels.

The bill would also allow virtually all private land biomass that is used as a feedstock for biofuels to count toward the mandate.

The bill language is identical to the language included in the Senate version of the Farm Bill, which passed that chamber by a vote of 79 to 14.

I am proud to say that the 25 x '25 Coalition and the Society of American Foresters have written to Chairman Dingell and Ranking Member Barton expressing their concern with the energy bill's definition and urging the committee's consideration of H.R. 5236 as a remedy, and Mr. Chairman, I would ask unanimous consent to include those letters into today's hearing record.

Mr. BOUCHER. Without objection.

[The information appears at the conclusion of the hearing.]

Ms. HERSETH SANDLIN. Earlier this year I got an exciting firsthand view of the present and future of woody biomass feedstocks when I visited my constituent KL Process Design Group's pioneering wood waste ethanol production facility in Upton, Wyoming, not far from KL's headquarters in Rapid City, South Dakota. KL, also testifying today, uses woody biomass, some of which has been removed from federally owned forestland, to produce cellulosic ethanol, and I have discussed with KL its concerns with the renewable biomass definition.

Importantly, I heard the very same concerns when I hosted a roundtable discussion in Rapid City, South Dakota, with a group including forestry product industry leaders and representatives from the Black Hills National Forest. I listened carefully to the participants because they rely and depend on the forest for their livelihood. Many of them were puzzled why our Nation, when it is supporting the development of alternative energy, would purposely exclude a feedstock that is a byproduct of existing forestry practices. They pointed out that leaving slash piles to rot or burning them leads to negative environmental effects that far outweigh any benefit gained when waste returns to soil. They would like to participate in the renewable energy movement the energy bill fosters and they have no interest in turning the Black Hills into a so-called fuel farm. It is my firm opinion that the forest planning process followed by the U.S. Forest Service will appropriately protect against such a development.

In conclusion, by amending the definition of renewable biomass in keeping with H.R. 5236, we can put sound policy support in place for the development of cellulosic ethanol so crucial to meeting the new RFS. I commend to the Committee and all observers the testimony and experience of KL Design Products, which speaks to the potential that exists here. If we fail to realize this tremendous potential for advanced biofuels, we could fail once again to take every responsible measure to wean ourselves from dependence on foreign oil.

Thank you, Mr. Chairman.

[The prepared statement of Ms. Sandlin follows:]

#### STATEMENT OF HON. STEPHANIE HERSETH SANDLIN

Chairman Boucher, Ranking Member Upton, and Members of the Committee, thank you for the opportunity to discuss the new Renewable Fuel Standard (RFS) enacted as part of the Energy Independence and Security Act of 2007.

With the increase in the RFS included in the Energy Bill, we are moving aggressively to take advantage of the contribution agricultural producers across the nation can make to our national security, our energy economy and our environment. Through an increase in biofuels production, we can reduce our dependence on foreign oil, revitalize rural economies, and decrease our overall carbon emissions at the same time.

Because we are in the beginning stages of developing biofuels as a reliable domestic source of energy, it is essential for Congress to sustain its support for ethanol production as a way of fostering the development of advanced biofuels. We expect these advanced biofuels to utilize a diversified set of cellulosic feedstocks, from corn cobs to prairie switchgrass to wood-waste.

While inclusion of a forward-looking RFS in the Energy Bill was great news for many renewable energy producers across the nation, late in the process an unfortunate provision was added that prohibits virtually all woody biomass from national forests, including the Black Hills National Forest in South Dakota, from being counted towards the expanded RFS.

The definition also excludes all biofuels made from biomass from private sources unless it comes from those trees that are “planted” in a “plantation” and “actively managed,” which could potentially exclude most woody biomass on private property.

I think this is a misguided policy that squanders what could be an important source of renewable, homegrown energy. It is a wrong-headed disincentive to use an available cellulosic feedstock. It simply doesn't make sense.

That's why I've introduced a bipartisan bill, H.R. 5236, the Renewable Biomass Facilitation Act, which revises the definition of “renewable biomass” to allow federally sourced biomass - and that would include trees, wood, brush, thinnings, chips, and slash—that is removed as a result of approved preventive treatments—to count toward the renewable fuels mandate, provided it's used for the production of biofuels. Approved preventive treatments include reducing hazardous fuels; minimizing or containing disease or insect infestation; and restoring ecosystem health.

H.R. 5236 does not alter federal forest management policy. In fact, the bill, if enacted, could help foster responsible public forestland management by supporting efforts to reduce the incidence of destructive wildfires. The altered definition simply means that these forest byproducts, which would otherwise not be used, or perhaps, in the case of slash piles, simply be burned—thereby releasing more carbon in the air—are instead able to be counted toward the Renewable Fuels Standard if used to produce biofuels.

The bill would also allow virtually all private-land biomass that is used as a feedstock for biofuels to count toward the mandate.

The bill language is identical to the language included in the Senate version of the Farm Bill, which passed that chamber by a vote of 79 to 14. I'm proud to say the 25 by '25 Coalition and the Society of American Foresters have written to Chairman Dingell and Ranking Member Barton, expressing their concern with the Energy Bill's definition and urging the Committee's consideration of H.R. 5236 as a remedy.

Earlier this year, I got an exciting first-hand view of the present and future of woody biomass feedstocks when I visited my constituent KL Process Design Group's pioneering wood-waste ethanol production facility in Upton, Wyoming, not far from KL's headquarters in Rapid City, South Dakota. KL, also testifying today, uses

woody biomass that has been removed from federally-owned forest land and I have discussed with KL its concerns with the renewable biomass definition.

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They pointed out that leaving slash piles to rot—or burning them—leads to negative environmental effects that far outweigh any benefit gained when waste returns to soil. They would like to participate in the alternative energy movement the Energy Bill fosters, and said they had no interest in turning the Black Hills into a “fuel farm.”

By amending the definition of “renewable biomass” in keeping with H.R. 5236, we can put sound policy support in place for the development of cellulosic ethanol so crucial to meeting the new RFS. I commend to the committee and all observers the testimony and experience of KL Design Products, which speaks to the potential that exists here. If we fail to realize this tremendous potential for advanced biofuels, we could fail, once again, to take every responsible measure to wean ourselves from dependence on foreign oil. Thank you.

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Mr. BOUCHER. Thank you very much, Ms. Herseth Sandlin, and we look forward to Mr. Kramer's testimony on our third panel this afternoon.

I just have one question of you. Could you focus for just a moment on your definition of the woody biomass that would qualify for the renewable fuels standard? Is there any restriction on the kind of biomass that can be taken out of the national forest under your bill for that purpose? Would it be limited, for example, to biomass that is harvested out of the forest for other purposes?

Ms. HERSETH SANDLIN. It is consistent—it would be consistent with the forest plan for that particular forest, so it puts no additional restrictions other than the types of practices for addressing the urban-wild land interface and the thinning projects that are conducted by the U.S. Forest Service, the slash piles that remain in light of those thinning projects. Again, anything that is an approved preventive treatment again for reducing hazardous fuels, for addressing insect infestations would be allowed to count toward the RFS if used for biofuels production.

Mr. BOUCHER. Thank you very much. Well, I personally think you have made a compelling case for your measure, and I thank you for being here to do that this morning.

The gentleman from Michigan, Mr. Upton.

Mr. UPTON. Well, thank you. I think you have made a compelling case also and I thought I would tell you particularly, even before you said Upton, Wyoming. You can add my name as a cosponsor to your bill. I look forward to working with you and obviously keeping it bipartisan. Thank you for the nice job.

I yield back.

Ms. HERSETH SANDLIN. Thank you.

Mr. BOUCHER. Thank you, Mr. Upton.

Let me just ask if anyone does have questions they would like to propound to Ms. Herseth Sandlin. Mr. Hall, do you have a question?

Mr. HALL. I would like to make a brief statement and welcome her as a Member of Congress and giving us the intelligent thrust of your bill. It sounds very good to me, and I am honored to have

you as almost a Texan in that you married one of my very best friends, a guy I admire very much, and you are welcome.

Mr. BOUCHER. Thank you, Mr. Hall.

Do other members have comments or questions for our witness?

Well, Ms. Herseth Sandlin, with the committee's thanks, you are excused, and we will try to treat your measure with tender care.

We now welcome to the subcommittee our second panel, which consists of one witness, and that is Mr. Bob Meyers, the principal deputy assistant administrator with the Office of Air and Radiation for EPA. Mr. Meyers is also a former committee counsel for this committee, who provided very distinguished service during his years here, and Mr. Meyers, we welcome you. Without objection, your prepared written statement will be made a part of the record, and we would welcome your oral summary.

**STATEMENT OF ROBERT J. MEYERS, PRINCIPAL DEPUTY ASSISTANT ADMINISTRATOR, OFFICE FOR AIR AND RADIATION, ENVIRONMENTAL PROTECTION AGENCY**

Mr. MEYERS. Thank you, Mr. Chairman. I appreciate the opportunity to testify today regarding issues of implementation and opportunities attendant to the renewable fuels standard.

As you know, renewable fuels are a key element of our Nation's strategy for addressing the serious challenge of global climate change. In his 2007 State of the Union address, the President proposed to reduce gasoline consumption by 20 percent through increased use of renewable and alternative fuels and through the promulgation of new vehicle efficiency standards. Although Congress did not enact all aspects of the President's Twenty in Ten plan, it did approve new renewable fuel and fuel economy standards as part of the Energy Independence and Security Act of 2007.

As the chairman noted, when Congress approved the RFS program as part of the 2005 energy bill, the Environmental Protection Agency was charged with drafting regulations and implementing the new program. This responsibility was maintained in the 2007 energy law. Under Administrator Johnson's direction now, we are conducting a broad outreach effort to discuss programmatic issues with multiple stakeholders regarding the implementation of the 2001 energy law. We have had numerous meetings, starting in January, less than a month after the enactment of EISA, and we have talked to individual refiners, refiner organizations, biofuel producers, feedstock providers, fuel distributors, downstream marketers, technical experts, and major environmental groups, and I would say active discussions and informational exchanges are also ongoing right now. EPA is also working very closely with our Federal partners, the Department of Energy, Department of Agriculture, and others, to go beyond the direct consultative roles that were contained in the legislation and to take advantage of external expertise and analytical capability.

In this regard, we are certainly mindful of the present discussion and public debate on the matter of food versus fuel. Last week the chief economist for the Department of Agriculture provided testimony to the Joint Economic Committee concerning the national and global increase of food prices and his analysis of the various factors involved. I am not going to provide any further illumination

on his testimony but I would note that our economic analysis to accompany the RFS rule will include an extensive review of the effects of the mandate on commodity prices, food prices, exports, cattle feed, and other factors.

In addition, I would note, as has been noted already in this hearing, that the Agency has received several requests related to our waiver authority including the specific request by the governor of Texas for EPA to waive 50 percent of the mandate for the production of ethanol derived from grain. In response, it is our intent to shortly issue a Federal Register notice on this matter and establish a docket to receive public comments. EPA is required under the Clean Air Act to approve or disapprove a State petition within 90 days of receiving it.

Overall, as the subcommittee well appreciates, EISA made significant changes in the RFS program and developing and implementing regulations for these provisions will require careful evaluation and considerable new analysis. I will just briefly go through parts of the bill, but first, as already mentioned, EISA increased the total renewable fuel volume approximately fivefold over the 2005 energy bill while extending the statutory schedule by 10 years. Second, EISA extended the RFS program to include both on-road and non-road gasoline and diesel fuel volumes. This change may affect new parties possibly including a number of small businesses. Third, EISA increased the number of renewable fuel categories and standards to a total of four including total renewable fuel and three new subcategories, each with its own required minimum volumes: advanced biofuels, biomass-based diesel and cellulosic fuels. Fourth, new provisions that are included in EISA require EPA to apply life cycle greenhouse gas performance standards to each category of renewable fuel. The agency in coordination with DOE and USDA has done a substantial amount of work on life cycle analysis over the past year. However, even with the advances that we have already made, additional new and improved analysis will be necessary. And fifth, EISA adds a number of other new provisions including changing the definition of renewable fuel feedstocks. Developing appropriate enforceable regulations on this provision is also going to require extensive dialog with our inter-agency colleagues as well as stakeholders.

Finally, as required also by Congress, we will be assessing the impacts of EISA on vehicle emissions, air quality, greenhouse gases, water quality, land use and energy security. We believe these analyses will provide important information to the public and Congress on the effectiveness of the new legislation.

I will stop there and be available for any questions.

[The prepared statement of Mr. Meyers follows:]

**ROBERT J. MEYERS  
PRINCIPAL DEPUTY ASSISTANT ADMINISTRATOR  
OFFICE OF AIR AND RADIATION  
U.S. ENVIRONMENTAL PROTECTION AGENCY**

**BEFORE THE COMMITTEE ON ENERGY AND COMMERCE  
U.S. HOUSE OF REPRESENTATIVES  
MAY 6, 2008**

Mr. Chairman and members of the Committee, I appreciate the opportunity to come before you today to testify on implementation of the renewable fuel provisions of the recently enacted Energy Independence and Security Act of 2007 (EISA). The Act's aggressive new renewable fuel standards (RFS) will further our nation's goals of achieving energy security and reducing greenhouse gases by building on the successful RFS program established by the Energy Policy Act of 2005 (EPACT 2005).

Renewable fuels are a key element of a national strategy for addressing our energy security and the challenge of global climate change. Through his "Twenty in Ten" initiative, the President has committed the United States to take the lead in reducing greenhouse gas emissions by pursuing new, quantifiable actions. Congress has agreed by approving new fuel and vehicle fuel economy standards as part of the Energy Independence and Security Act of 2007. These national standards will reduce emissions of greenhouse gases in the transportation sector and improve our energy security. The changes brought about by EISA are expected to prevent billions of metric tons of greenhouse gases emissions into the atmosphere over the next several decades.



The Environmental Protection Agency is responsible for implementing the RFS program, and we are proud of our success to date in working with stakeholders in industry, states and the environmental community to build an effective program for increasing the volumes of renewable fuel used by the transportation sector. In April 2007 we announced final regulations for implementing the RFS Program under EPACT 2005. The Agency worked very closely with both our federal partners and stakeholders to develop broad and early support for the program. This program was officially launched in September 2007. We believe our success is grounded on our close collaboration with stakeholders on the design and implementation of the program. The Agency continues to work with these parties to refine certain aspects of this program.

Since EISA was signed into law on December 19, 2007, the Agency has been working diligently to review its provisions and develop regulations to implement the new RFS program, commonly called RFS2, established by that legislation. In this regard, our first and most pressing task was to issue a new renewable volume standard for 2008. The RFS program established by EPACT 2005 required 5.4 billion gallons of renewable fuel in 2008. The EISA legislation increases the standard to 9 billion gallons in 2008, with further yearly increases in mandated volumes resulting in 36 billion gallons being required in 2022. We published a notice implementing the 2008 volume requirement in the Federal Register on February 14 of this year.

Looking beyond 2008, we are conducting an in-depth evaluation of all mid and long term actions required under the RFS provisions of EISA. While the RFS program

established under EPACT 2005 provides a solid foundation from which to begin developing the new regulations, RFS2 includes new elements which add complexity to the program. As a result, the new EISA provisions require careful evaluation and considerable new analysis.

In this new undertaking, the Agency is following much of the same approach we used in developing the first RFS program. This includes obtaining critical input from our stakeholders early and throughout the rulemaking process. Using a collaborative approach will help the Agency gather important information quickly and facilitate EPA's development and promulgation of regulations to implement the legislative provisions enacted by Congress. Since EISA was enacted less than five months ago, the Agency has met with more than thirty different stakeholders, including renewable fuel producers, technology companies, petroleum refiners and importers, agricultural associations, environmental groups, gasoline and petroleum marketers, pipeline owners and fuel terminal operators. Agency technical staff have participated in numerous conferences and workshops, which have allowed us to reach a broad range of technical, programmatic and policy issue experts. We continue to meet regularly with the Departments of Energy and Agriculture. Through these meetings, EPA has sought input on the key RFS2 program design elements as highlighted in this testimony.

While EPA will draw from its experience in developing the original RFS regulations, it is important to understand that EISA made a significant number of changes to the RFS program. First, as mentioned previously, RFS2 increases the total renewable

fuel volumes mandated to 36 billion gallons a year by 2022. This is nearly a five fold increase over the 7.5 billion gallons a year mandated under EPACT 2005 for 2012, and constitutes a 10-year extension of the schedule provided for in that legislation. EPA believes that the implications of the volume expansion of the program are not trivial. Development of infrastructure capable of delivering, storing and blending these volumes in new markets and expanding existing market capabilities will be needed. In addition, the market's absorption of increased volumes of ethanol will ultimately require new "outlets" beyond E10 blends (i.e., gasoline containing 10% ethanol by volume). A rule of thumb estimate is that E10 blends, if used nationwide, would utilize approximately 15 billion gallons of ethanol. Accommodating approximately an additional 20 billion gallons of ethanol-blended fuel is expected to require an expansion of the number of flexible-fuel E85 vehicles and their utilization of E85 and/or other actions.

Second, beyond the significant increase in the volume mandate, EISA extended the RFS program to include both non-road gasoline and diesel fuel volumes. Under the regulations implementing EPACT 2005, RFS volume requirements were applied only to producers and importers of on-road gasoline. RFS2's extension of this program to both non-road gasoline and diesel fuel volumes is a significant change that may affect new parties, including a number of small businesses that have not been regulated under this program in the past.

Third, EISA has established new categories of renewable fuel. EPACT 2005 established standards for two categories of renewable fuels: one standard for the total

volume of renewable fuel; and a second standard for cellulosic ethanol requiring 250 million gallons beginning in 2013. RFS2 increased the number of renewable fuel categories and standards from the current two to a total of four, including total renewable fuel and three new categories within that, each with their own required volumes: advanced biofuels, biomass-based diesel and cellulosic biofuels. Industry will be required to demonstrate compliance with the four separate fuel standards. This will likely require the obligated parties, producers and importers, to forge new business relationships and contracts that are necessary to guarantee their compliance with the new standards. Establishing the necessary systems to track and verify the production and distribution of these fuels and demonstrate compliance with four separate standards also will require sufficient lead time to design and implement these new tracking systems. As in the current program under EPCACT 2005, in the near term, some parties may not be able to comply by blending the renewable fuels, and thus may need to purchase or trade credits for the appropriate number and category of fuels to satisfy their volume obligations. It will be very important to conduct effective outreach with these parties to help assure smooth implementation.

As part of its restructuring of the renewable fuel mandate, EISA increased the cellulosic biofuel mandate from 250 million to 1.0 billion gallons by 2013, with additional yearly increases to 16 billion gallons in 2022, and provided a new definition of this fuel. Implementing these requirements will entail additional work by EPA as it develops its upcoming regulation. For example, the Act authorizes EPA in certain circumstances to adjust the cellulosic biofuel standard to a level lower than that specified

in the law, however it requires in this circumstance that the Agency also make credits available for compliance purposes and provides instructions on how to establish a specific price for these credits. The Agency will therefore need to address several critical issues, such as how many credits will be generated, to whom they will be available, the extent to which they can be traded, and what the life of the credit will be.

RFS2 also established for the first time minimum volume standards for biomass based diesel fuel. These standards begin in 2009 at a half billion gallons and ramp up to one billion gallons per year in 2012 and there after. To qualify as biomass based diesel, the renewable fuel portion of the biodiesel blend must result in greenhouse gas emissions that are at least 50 percent lower than the baseline GHG emissions for petroleum based diesel fuel (RFS2 established the baseline year as 2005).

Fourth, new provisions were included in EISA requiring the Agency to apply lifecycle greenhouse gas (GHG) performance threshold standards to each category of renewable fuel. The Agency has done a substantial amount of work on lifecycle analysis over the past year, and has made significant advances, honing the overall methodology, updating data inputs and incorporating new inputs for assessment of land use change. However, even with these advances, additional new and improved analyses will be necessary to implement the statute's lifecycle GHG performance standards. Given our experience in this area and the statute's utilization of lifecycle GHG performance standards as part of the definitions of different renewable fuels mandated in the Act, we would anticipate extensive comment from all stakeholders on both lifecycle analysis

inputs and methodology. In addition, certain requirements in RFS2 pertain only to renewable fuel production facilities that commence construction after the bill was passed. EPA will need to carefully consider how the terms in this new provision should be interpreted and defined in the context of the new law.

Fifth, RFS2 added a number of other new provisions, including changing the definition of renewable fuel feedstocks in a fundamental manner. The new law limits the crops and crop residues used to produce renewable fuel to those grown on land cleared or cultivated at any time prior to enactment of EISA, that is either actively managed or fallow, and non-forested. Developing appropriate and enforceable regulations addressing this provision will require extensive dialogue with USDA, USTR, the agricultural community and renewable fuel producers to better understand current practices and changes in practices that can be developed, implemented and enforced consistent with our international obligations. The Agency has started these discussions and plans to continue this dialogue throughout the regulatory process. EISA also requires that forest-related slash and tree thinnings used for renewable fuel production pursuant to the Act be harvested from non-federal forest lands.

Finally, in support of the rulemaking, we will be assessing the many impacts of the EISA renewable fuel program including on emissions and air quality, greenhouse gases, water quality, land use, the economy, and energy security. These analyses will provide important information to the public and Congress on the many anticipated impacts of the new legislation.

As you are probably aware, Texas Governor Rick Perry sent a letter to EPA Administrator Johnson on April 25 requesting a partial waiver of the 2008 RFS volume obligations required by EISA. Governor Perry requests the volume requirement be reduced by 50 percent, from 9 billion gallons in 2008 to 4.5 billion gallons. This waiver request states that the mandate is having an “unnecessarily negative impact on Texas’ otherwise strong economy while driving up global food prices”. Under authority and direction provided in EPCA 2005 and EISA 2007, the Agency has 90 days from the date of receipt of this request to issue a decision. We are in the process of evaluating the information and analysis that will be needed for the Administrator to reach a decision. We will be issuing a federal register notice in the near future requesting public comment on this request. Of course, EPA will fully consult with our colleagues at the Departments of Agriculture and Energy and elsewhere within the Executive Branch on this waiver request.

In closing, the Agency is moving forward with the development of regulations implementing the RFS2 provisions and is utilizing the successful approach we employed in developing the regulations for the original RFS program. We look forward to working closely with members of Congress and our many other stakeholders during this process. We are confident that together we can develop implementing regulations that enhance both our energy security and our environment.

Thank you, Mr. Chairman, and members of the Committee for this opportunity. This concludes my prepared statement. I would be pleased to answer any questions that you may have.



Mr. BOUCHER. Thank you very much, Mr. Meyers. You probably heard the testimony of our previous witness, Representative Herseth Sandlin, concerning her legislation which would qualify woody biomass taken from Federal lands for the renewable fuel standard, and I have just a couple of questions for you concerning that. Do you believe that EPA has the flexibility under current law to provide for the permissibility for the use of woody biomass coming from Federal lands under the renewable fuel standard?

Mr. MEYERS. Mr. Chairman, that is an issue in front of us in terms of the implementation of the legislative language but the legislative language refers directly to non-Federal.

Mr. BOUCHER. Well, so what is your conclusion from that?

Mr. MEYERS. The face of the language would prove difficult to not obey.

Mr. BOUCHER. So if I can paraphrase that, you haven't made a final decision yet but you would say that it may pose difficulty for you to qualify woody biomass coming from Federal lands, given the—

Mr. MEYERS. It would certainly be challenging.

Mr. BOUCHER. Given the statutory language. OK. You have a number of requests for waivers of the mandate for a certain use of renewable fuels in the Nation's transportation fuel supply, one prominent one coming from the governor of Texas, I think, and the statute says that you have 90 days from the receipt of that request for a waiver to either grant or deny the waiver. You received that, I think, at some point in April, did you not?

Mr. MEYERS. Just recently within about the last week.

Mr. BOUCHER. So toward the end of April you would have received that?

Mr. MEYERS. Yes.

Mr. BOUCHER. Will you be able to act within that 90-day period? Will you make that deadline?

Mr. MEYERS. Well, we are certainly making every attempt to comply with the dictate of the statute. As I mentioned, we will be going out very soon with a notice to offer up the public comment period. That is also required in the legislation. The legislation says we should approve or deny within 90 days, therefore, contemplation is to have a 30-day public comment period attendant to the request from the State of Texas.

Mr. BOUCHER. And so you are moving rapidly to put that public comment into effect. Is that correct?

Mr. MEYERS. Yes, we are. There are certain delays in terms of getting things published in the Federal Register and certainly we need to have the statutory public comment period to comply with the statute but we are moving very quickly.

Mr. BOUCHER. OK. Well, we will watch with interest your deliberations on that question and would encourage you to meet that 90-day deadline for making a decision.

Under the 2007 law, there is a new life cycle greenhouse gas emissions standard that applies to biofuels, and specifically what it says is that for facilities for which the construction begins after the effective date of the law, meaning after December of last year, the life cycle greenhouse gas emissions for the fuels from that facility would have to be more beneficial than the life cycle greenhouse

gas emissions that come from the petroleum that that biofuel displaces. Now, obviously the way that is structured, that better-than-petroleum carbon footprint would not apply to the corn-based ethanol refineries that either were in operation or under construction as of December of last year, and my question to you is, let us suppose that an owner of one of those refineries wanted to expand its size. Would that expansion be subject to the life cycle greenhouse gas emission requirements of the 2007 law?

Mr. MEYERS. That is one of the questions, sir, that we are looking at in the road ahead in looking at the provisions of the statute and implementation. I think basically the question is, if a facility had a major modification, would that still count, and I think that is one of the issues we have not decided on. We have been talking to a lot of stakeholders and certainly would be part of our discussion on the proposed rule.

Mr. BOUCHER. And so you have that issue under consideration. All right, Mr. Meyers. That concludes my questions.

The gentleman from Michigan, Mr. Upton.

Mr. UPTON. Thank you again, Mr. Chairman.

I want to follow up on the chairman's question as it related to biomass. I know that the President in 2007, January, wanted to include an expansion of the RFS to include alternative fuels such as coal-to-liquid, something that Mr. Shimkus and Mr. Boucher have authored and I have cosponsored, compressed natural gas. Would the Administration, do you think, be open now to an expansion of the RFS to include those two in addition perhaps to the woody biomass? It just seems to me that they would be a good thing, at least from my perspective, to move forward.

Mr. MEYERS. Well, you are correct in terms of what the Administration's bill included. It did include alternative fuels as otherwise defined in existing EPCA legislation. So that was the policy of the Administration. I would say as a general matter, the policy of the Administration with respect to specific new legislation is something we would decide on a case-by-case basis through the interagency process, so I wouldn't be able to speculate but certainly it was part of the Administration's previous position.

Mr. UPTON. Would there be—as you study this issue including the woody biomass, it is something that you might be likely to come to a decision on within the next number of months?

Mr. MEYERS. I am sure that the Administration would consider any legislation moving through Congress and be involved with the discussion with the committees of jurisdiction on this.

Mr. UPTON. Now, EPA just reduced the ozone national ambient air quality standards. What are the ozone air quality impacts of large increases of ethanol and biodiesel consumption? Was that taken into consideration?

Mr. MEYERS. Well, our last analysis of that occurred when we promulgated the 2005 regulations based on the 2005 statute. What we showed was a mixture of effects based on the 7.5 billion gallons and some limited air quality modeling that we did to judge those effects. We saw some pollutants like particulates go down. We did see some increases in nitrous oxides, which are a precursor to ozone. They were not large on a great scale but there were some increases in NO<sub>x</sub> from that modeling.

Mr. UPTON. So it is somewhat of a negative reaction as it related to ozone?

Mr. MEYERS. We will be doing—we will be refining our analysis on the new bill, on the basis of the new bill analyzing that on a going forward basis so that is one of the things we are looking at. Again, some other pollutants, some air toxics go down as well as particulate matter, and other emissions like CO are also decreased. It depends. One thing to remember is that we have different fuels. We have ethanol and we also have biodiesel, which have different effects, and this bill also incentivizes directly biodiesel that the previous bill did not.

Mr. UPTON. Now, has the EPA studied the requirements in the RFS in the context of the real-world fuel availability, particularly as it relates to what the situation is today and what is coming forth in the legislation that the President signed?

Mr. MEYERS. We will be looking at things such as the energy security impact of the legislation on the United States, which does involve an assessment of the global oil environment.

Mr. UPTON. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Upton.

The gentlelady from Wisconsin, Ms. Baldwin, is recognized for 5 minutes.

Ms. BALDWIN. Thank you for your testimony today. I wanted to start by inquiring a little bit more about the process that EPA will be engaging in as you consider the waivers. Specifically, it is my understanding that EPA is going to evaluate whether full implementation of the RFS would severely harm the economy or environment of the State or region of the United States in terms of your statutory directive under the Clean Air Act or whether there is an adequate domestic supply, and I am kind of interested how you think you are going to define severe economic harm, and I know I am asking you to anticipate the future and you will have a lot of assessments and analysis but what sort of factors will you be looking at? Will it be beyond the energy markets to the food price issues, et cetera? Please elaborate a little bit for me.

Mr. MEYERS. Sure. I first would want to clarify that we would not be looking at full implementation of the RFS. Full implementation of the RFS generically would be in the year 2022. The waiver request we have right now is for essentially the current year and has been filed under the previous 2005 law since the new waiver authorities are not now effective under the law. So we would be looking at the more immediate effects, the effects cited in the governor's letter to the EPA.

As for the standard of severe economic or environmental harm, that is a new standard that was first placed into the Clean Air Act in 2005 as part of that legislation. This would be a case of first impression for the Agency. We do not have comparable standards within the Act for severe economic or environmental harm so as far as I know, we have never interpreted that statutory standard before.

Ms. BALDWIN. Well, I guess I am looking ahead at how you think you will be approaching that case of first impression in terms of those definitions.

Mr. MEYERS. Well, that would be part—we will be soliciting comment, public comment on whether or not the information submitted to the Agency would constitute severe economic harm, which the basis of the letter in front of us was mostly economic. It was not—we did not receive information so far from the State of Texas regarding environmental issues directly. But we will have to essentially give full faith and credit to the statute as written and make a reasonable determination based on that language. Again, with cases of first impression, I am very hesitant to project how the Agency would interpret those terms.

Ms. BALDWIN. Switching to a different topic, I would really like to hear your assessment of the ability of advanced biofuel technologies to meet the timing and production volumes of the RFS mandate, and as we move to third-generation technologies, I wonder what you see as the primary feedstocks for these technologies.

Mr. MEYERS. Well, our work on this issue has been done by the Department of Energy so I am not as familiar with the research but I think a lot of different feedstocks are being used and looked at in terms of cellulosic development, including things you hear quite a bit about switchgrass and the aforementioned forest thinnings, different feedstocks would be readily available and essentially fit the profile for production where you need to move a lot of mass to the facility. Most corn-based ethanol facilities now get most of their feedstocks within about 30 miles or so from the facility so you need to have the feedstock available in the immediate vicinity and have transportation infrastructure to get it there. So I think our impression too is that obviously things the private marketplace is looking at right now is using the other parts of the corn, the husk and the stalk and other things, and that may be the first penetration for non-kernel-based ethanol. But we would be happy to provide more information for the record. We have the Office of Research and Development working on these issues and I would greatly like to provide information from that office also.

Ms. BALDWIN. Great. I see I am almost out of time. You mentioned in answer to that question a concern about how far the feedstocks travel to the point of production. I have a real interest in—we had an amendment to the Energy Independence and Security Act relating to the adequacy of our transportation infrastructure to get the product to market after production, and I don't think I have time to ask a question on that but that is something that we really have to be vigilant about.

Mr. MEYERS. Clearly, Congresswoman, if I have the opportunity, we are looking at those issues. It is one thing to look at the production and capacity of the ethanol industry. It is quite another thing to look at the ability to blend it in all markets through the current transportation system and with the current economics of that.

Mr. BOUCHER. Thank you very much, Ms. Baldwin.

The gentleman from Texas, Mr. Barton, is recognized for 5 minutes.

Mr. BARTON. Thank you.

It is good to have you back, Mr. Meyers. Can a 9-billion-gallon mandate in current law for renewable fuels be met this year?

Mr. MEYERS. Well, information from the Agency would indicate that there is sufficient capacity to produce more than the 9 billion.

The issue, I think I referenced in the last question was, is transportation and blending. We are monitoring the situation right now. We don't have any information that would indicate that it will not be able to be met for this current year.

Mr. BARTON. So you say it will be met?

Mr. MEYERS. I can't say definitively it will be met. I say we don't have the information now in front of the Agency that would indicate—

Mr. BARTON. If it is not met, do you have sufficient authority under law to grant waivers to alleviate the situation?

Mr. MEYERS. There are certainly a number of waivers. The 2005 energy law which you were very instrumental in provided waivers and additionally the new law provides additional waiver authority. There are also waiver authorities outside of the Clean Air Act that are applicable. Section 1541 of the energy bill passed in 2005—

Mr. BARTON. So the answer is yes?

Mr. MEYERS. Yes.

Mr. BARTON. What is the definition that the EPA is using for greenhouse gas to implement this bill?

Mr. MEYERS. The statute itself provides the definition of greenhouse gases as the six Kyoto gases plus the additional ones that the administrator finds would meet the—

Mr. BARTON. What are the six Kyoto gases?

Mr. MEYERS. Well, broadly, carbon dioxide, methane, nitrous oxides, and then we have the fluorinated gases, perfluorocarbons—

Mr. BARTON. But water is not one of them, even though it is the most prevailing greenhouse gas?

Mr. MEYERS. Water is not currently defined in the Kyoto Protocol or the statute.

Mr. BARTON. So you don't have to consider water vapor?

Mr. MEYERS. No, we don't have to. We have the discretion under law to include other gases.

Mr. BARTON. But water vapor is the most prevailing greenhouse gas?

Mr. MEYERS. Water vapor certainly has an effect on climate. That has been documented by the IPCC and our own analysis, yes.

Mr. BARTON. How does the EPA intend to model requirements for life cycle greenhouse gas reductions? That is an artful term.

Mr. MEYERS. We have been working on this for some time and most intensely in the last year. We have used a model developed initially by the Department of Energy, the GREET model. Essentially we look at direct inputs into production of the fuel, you know, through transportation system and the different processes involved in the production of the fuel and the infrastructure that is made. So it is a fairly complex model. It has been under development and revision for several years.

Mr. BARTON. Will the EPA eventually create a mathematical model that is replicable?

Mr. MEYERS. Well, I believe the GREET model is replicable now and I think it may be available publicly—I could check on that—to be used by others so the model itself is—

Mr. BARTON. But my point is, at some point in time to implement the Act, you have to have a way for ordinary people who are trying to conform to the Act, comply with it, to plug in production num-

bers and output numbers and compare apples to apples, in this case, emissions to emissions.

Mr. MEYERS. That is true, and I think transparency is a part of the process we should keep in mind as we go forward so our results are replicable. But the Act essentially contemplates that the Agency will do the calculations and establish them through the regulations. Once they are established, then the law then further says they should be stable until there is essentially new methodology available. So we need to follow the provisions—

Mr. BARTON. Well, let me ask you a hypothetical. Under your definition of a greenhouse gas, you included methane. Cows emit methane.

Mr. MEYERS. Correct.

Mr. BARTON. If rising corn prices result in fewer cows, that is a net reduction in methane. In your life cycle analysis then, would that be considered a net reduction in greenhouse gas emissions?

Mr. MEYERS. Well—

Mr. BARTON. Would it have the perverse effect of higher prices resulting in fewer cattle produced, which would on paper have the benefit of less methane being—so it would be mathematically a net improvement in greenhouse gas emissions.

Mr. MEYERS. There will be some challenges interpreting the statute. I tried to make those available. But essentially, Congressman, we are—

Mr. BARTON. I mean, it is not a frivolous question.

Mr. MEYERS. No, it is not at all, and we are charged with looking at both direct and indirect emissions, so—

Mr. BARTON. My time is expired. I have got one final question. In the letter that Governor Perry sent to the EPA on April 25, he says that based on an expected average cost per bushel of corn in the Texas market in 2008 of \$8 a bushel, that is going to have a negative impact to Texas cattle producers of almost \$4 billion. Do you consider that to be severe economic harm?

Mr. MEYERS. Mr. Barton, that would be tantamount to my deciding the issue before we receive public comment so I would respectfully demur on the question. We will certainly take all the information that Texas has provided us and analyze it and ask for comment. Again, the standard itself is entirely new in the Clean Air Act and we need to be respectful that we have interpreted—

Mr. BARTON. Thank you, Mr. Chairman. Thank you, Mr. Meyers.

Mr. BOUCHER. Thank you very much, Mr. Barton.

The gentleman from Texas, Mr. Gonzalez, is recognized for a total of 8 minutes.

Mr. GONZALEZ. Thank you very much, Mr. Chairman.

Welcome, Mr. Meyers. Quickly, I am going to reference what the ranking member was talking about. That is Governor Perry's letter. When it first came out, it was an article in the San Antonio paper so I tried to figure out what exactly he is asking, what is the application. So the question comes down to, how realistic a request it is. On page 2 of his letter he says, "My request is for a waiver of 50 percent of the mandate for the production of ethanol derived from grain," but this is not Texas specific. You can't take this one State, segregate it from the others in reference to the nationwide mandate. I asked the question of my staff and I believe the answer

he got from someone, I am not sure if it was with the department or agency, was that no, you don't segregate Texas. It is a 50 percent request across the board mandate applicable to the United States. Is that the way you interpret it? I am trying to figure out what he is asking.

Mr. MEYERS. The face of the request asks for 50 percent reduction, I think, in grain produced part of the mandate. I am paraphrasing. Most of it is now satisfied by grain, although some of the biodiesel might not fit in that category. But the waiver mechanism we are talking about refers back to the applicable volume, which is the national standard.

Mr. GONZALEZ. So what he is asking is basically maybe Texas specific as to the economic condition that it may wrought but the solution is a 50-State solution if applied. Would that be correct?

Mr. MEYERS. That is something we will be also examining and looking for comment on. The Act is not entirely clear as to—although the effect can be at a sub-national level, the way it was written in 2005, the governors can request it based on State, region, or the United States. Congress retained that in the 2007 law while allowing further parties to also bring such a petition. But the effect can be more localized but I guess the remedy refers back to the national standard.

Mr. GONZALEZ. That is going to be tough. Now, you heard Mr. Upton make reference to a piece of legislation that I have joined him in sponsoring, and that is doing something about the mandate situation that occurs or is occurring and specifically, let us say California that has a certain percentage limitation on the use of the ethanol blend. We are talking about now the refiners, the blend and such, not necessarily the transportation issue, which you have mentioned, which is huge, but nevertheless, you have waivers and such but if you—I am not asking you to endorse and promote the piece of legislation but really, it has to deal with the carry-over provision. You still will meet the targets at the end but when you extend the carry-overs, because the way they are written presently, it makes it almost impossible for the refiners to meet the mandate regarding the restrictions from certain States that are already in place, even though they may be increasing the amounts of the ethanol blend, it still will not be in the way of timeliness in meeting the mandates. Is a legislative remedy one of those avenues rather than just what might be available in the way of waiver?

Mr. MEYERS. Well, as mentioned, there are other waivers other than the one that was specifically the subject of the governor for the State of Texas request. But referencing the availability of credits, the language from the 2005 Act, which limited credit life essentially to 12 months, remained in 2007 so we interpreted that in our 2005 regulations and we are looking at it again but it is the same statutory language so it is not an infinite credit life under the statute, so there are limitations in the statute as to how long the credit can be used between years.

Mr. GONZALEZ. And maybe I have to even look at the legislation more carefully because I am really thinking in terms of how specific we are when it comes over to the deficits only, not necessarily the credit scheme. What we are doing is, we are extending the time to accumulate obviously deficits but making them up toward the

tail end when we are able to when we have increased percentages that are allowed by States and they have figured out the consequences of increasing the blends themselves, availability and so on. But we look forward to some input from the Agency.

Mr. MEYERS. We are aware of certain individual situations, I think. With reference to California, we have talked to a refiner in California and we will continue to talk to individual refiners and others who find themselves in difficult situations under the statute.

Mr. GONZALEZ. I was looking at your testimony because I think it was interesting that you are going to be taking into consideration emissions, air quality, greenhouse gases, water quality, land use, the economy, energy security, and all of that, which is an ongoing process, I guess, and it is one that I think some members of this committee and other Members of Congress would agree that maybe we should have done a more careful analysis ourselves before we adopted the certain mandates. It seems to me that the President made mention of ethanol and the use of it in the State of the Union and somehow we just adopted it as gospel and we find ourselves where we are today without clearly looking at availability, consequences and such, but again, thank you for your service, and I yield back.

Mr. BOUCHER. Thank you very much, Mr. Gonzalez.

The gentleman from Illinois, Mr. Shimkus, for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman. I will try to be a little bit calmer in this round.

Bob, welcome. I have got a couple questions, and you may not know this answer but it will lead to other questions. How many gallons of refined product do we import in this country each day? Do you know?

Mr. MEYERS. How many gallons? I am not sure. Those numbers are usually in barrels. I think about—it is over half of our oil is imported at this stage.

Mr. SHIMKUS. Well, yes. The numbers I have is about 3 million barrels of refined product, product that has been already refined overseas. Of that 3 million barrels of refined product at some refinery not on the continental United States, how much involvement does the U.S. EPA have on the air quality of those refineries?

Mr. MEYERS. The refineries themselves, our jurisdiction obviously doesn't extend to Europe and other countries from where the gasoline comes from but as to the product itself, it must meet U.S. specifications.

Mr. SHIMKUS. So the refineries that are producing product for our market being shipped here at 3 million barrels per day, there is no environmental standard on how that refined product meets the end standard for us to receive that product?

Mr. MEYERS. We currently don't attempt to enforce stationary source standards against non-U.S. refineries. There are certain baselines applicable to foreign refineries with regard to their product but, again, it is a product focus.

Mr. SHIMKUS. Now, right now there are 147 ethanol plants with a capacity of 8.5 billion gallons. Do those currently have to meet air quality standards?

Mr. MEYERS. Yes. If they meet our major source definitions under the Act, they would need to meet PSD requirements.



Mr. SHIMKUS. So the ethanol refineries that we built because of the absence to build petroleum refineries here in this country are meeting a standard but the imported product in the refinery process is not meeting any standard, because you have no jurisdiction overseas, correct?

Mr. MEYERS. Well, I would say that would be correct for traditional criteria air pollutants. There is an open issue going forward in the new statute as to the greenhouse gas standards and how—

Mr. SHIMKUS. Well, we are going to go there, so just hold on. There are 55 new plants under construction as well as 6 expansions underway. These expansions are already being built. These new ethanol refineries had to meet air quality standards and permitting for construction to move forward. Is that correct?

Mr. MEYERS. Yes, they would need to meet applicable standards. Again, any particular standard or refinery may vary, depending on how it is constructed, what it is fired with.

Mr. SHIMKUS. So hopefully between the next 9 to 12 months when we have 13.6 billion gallons of refined product of ethanol base to add to our fuel mix, they will be under refinery standards that we support.

Let me move real quick. It is very curious that this debate is revolving around severe economic harm. You were here a couple weeks ago. We talked about carbon dioxide and that based upon the Massachusetts case, yours will be whatever the legal terminology is, habitat and all this other stuff, but it will not be involved with economic harm.

Mr. MEYERS. That is correct. I think—

Mr. SHIMKUS. So we are going to debate economic harm for a product grown, produced, refined in this country and discourage the production of that but we are not going to be involved through your process of economic harm and carbon dioxide.

Mr. MEYERS. The endangerment language that was the subject of *Massachusetts v. EPA* talked about endangerment to public health or welfare.

Mr. SHIMKUS. And I think that is USA Today from May 1, China leaves United States in dust as the number one carbon dioxide offender. National Journal from 3 May on India NVES green no. That is this whole carbon debate. You know, they are not going to comply. We are going to have all this pain and no gain. I will end up with again the debate that the chairman supports is the alternative fuel standard. What the President announced in his State of the Union was an alternative fuel standard, not an RFS. RFS was part of the alternative fuel standard. If we had moved to an alternative fuel standard with some air regulatory guidelines, if we had built a coal-to-liquid refinery, would they have had to be permitted and blessed by you all as having met the environmental air standards?

Mr. MEYERS. Any new facility built in the United States is subject to permitting on the construction if it reaches major source thresholds and would need an operational Title V permit.

Mr. SHIMKUS. Thank you.

Mr. Chairman, thank you for your indulgence. I yield back.

Mr. BOUCHER. Thank you very much, Mr. Shimkus.

The gentleman from Arkansas, Mr. Ross, is recognized for 5 minutes.

Mr. ROSS. Thank you, Mr. Chairman.

Mr. Meyers, thank you for being here with us today. I want to discuss biodiesel. The biodiesel industry tells me that we already produce 500 million gallons of biodiesel, and that they know how to keep track of it under EPA's current tracking system. With that said, can you explain the reason why the diesel fuel requirement of 500 million gallons of biomass-based diesel cannot be required in 2009 as directed by Congress?

Mr. MEYERS. That is one of the issues we had had discussions with the industry on. What we are dealing with right now is a transition between the 2005 law and the new 2007 requirements. For 2008, the current year, there was a provision that allowed us to effectively change just the applicable volume, raising it to 9 billion gallons but retained the current regulatory program. We need to make a transition to a new regulatory program to implement the new law. We are moving on that but 2009 is a year which is very tight for us to meet to have all the regulations in place.

Mr. ROSS. So it is not that they can't produce it, it is that you all can't do the paperwork by then?

Mr. MEYERS. Well, we are trying to look at ways we can accommodate the interests of the industry and certainly we are paying attention to the statute and the regulatory schedule that Congress laid out for us. I would just reference, after 2005 law, we moved very aggressively. It still took us 18 months to put together both proposed and final regulations. So the law was passed last December and having it all in final form before January 1, 2009, is an extremely short time period.

Mr. ROSS. So Congress has mandated 500 million gallons of biomass-based diesel fuel. The industry says they are already producing it and that they know how to keep track of it under your current EPA tracking system and yet we can pass a law and the folks in the industry can figure out how to make 500 million gallons of biomass-based diesel and yet you all can't figure out how to track it and do the paperwork on it by the time prescribed by Congress?

Mr. MEYERS. Well, it is not a matter of us just deciding. We will need to propose that as part of our regulations, take public comment, and then go final. It makes most sense to do as much as we can as fast as we can but we have to do it in a manner given the enormity of the mandate and given the importance of the economic issues. We have to do that in a very thoughtful manner. So one of the directives the administrator tried to implement was a massive—I don't want to say massive—a very robust outreach program. We are talking to a lot of stakeholders including the National Biodiesel Board and others to try and look at these issues and try to see if there is flexibility to address them. I would say we are working in faith and we will continue to do that but it is a very tight time frame to get final regulations.

Mr. ROSS. Well, I would hope that the EPA would respect the wishes and the legislation passed by Congress and be able to figure out how to do the paperwork and the rules and regs, given the fact that the industry has certainly adhered to the legislation and they

have got the ability to meet the new requirements. I would hate to see us see even higher diesel prices and see us continue to increase our dependence on foreign oil simply because a Federal agency couldn't put in place a tracking system, the rules and regs, in the timeframe that was prescribed by Congress, and I just want to bring that to your attention and urge that you work with us so that we can—we have a lot of challenges with ethanol right now and there has been a lot said about that, but with biomass-based diesel we don't have nearly the controversy we have over ethanol. It can reduce our dependence on foreign oil. It can reduce the price that my truckers and farmers pay at the pump, and I think it is very critical that the EPA be able to figure out how to do their part of this equation just as the folks in the biodiesel industry have figured out how to do theirs, and I appreciate your time.

Mr. MEYERS. Thank you.

Mr. BOUCHER. Thank you, Mr. Ross.

The gentleman from Oklahoma, Mr. Sullivan, is recognized for 5 minutes.

Mr. SULLIVAN. Thank you, Mr. Chairman, Mr. Meyers.

The Energy Independence and Security Act allows the EPA to make assessments on cellulosic production and adjust the mandate's volumes downward if it makes a determination there won't be enough production to meet the requirements of the bill. However, EPA has until 30 days before the year a required volume of cellulosic is supposed to start before making this determination. This doesn't give refiners much lead time. Is the EPA considering making this production determination sooner to help ease the potential supply problems?

Mr. MEYERS. We are willing to look at any permissible constructions. One thing that the statute provides, however, is that we rely on the estimates of EIA, the Energy Information Administration, in looking at the projections. They are required under law to make those projections at a certain time period so—and we need to look at those under the statute. So it is the timing that was contemplated by the statute, would be my response, but we will be happy to look at any flexibilities there might be.

Mr. SULLIVAN. So you would be willing to look at flexibilities?

Mr. MEYERS. I would be happy to look at the matter. Again, we are required on an annual basis to look at EIA's projections. The EIA's projections are essentially done in the fall for the next coming year so that is where the time frame came from.

Mr. SULLIVAN. And also following up on Congressman Barton's question, could biofuels increase greenhouse gas emissions on a life cycle basis including indirect factors and land-use change?

Mr. MEYERS. Could any particular biofuels?

Mr. SULLIVAN. Yes.

Mr. MEYERS. I think it is theoretically possible.

Mr. SULLIVAN. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Sullivan.

We have two members on the Democratic side who are members of the full committee, not members of the subcommittee, who have joined us here and we will welcome questions from them. We also have a recorded vote pending on the Floor, and our goal will be to try to fit in both sets of questions prior to recessing for that vote.

First I will recognize the gentleman from Texas, Mr. Green, for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman, and thank you for allowing me to waive on the subcommittee for this hearing because renewable fuels is important to where I come from in Houston, Texas, and fuel itself.

Section 1505 of the Energy Policy Act of 2005 directed the EPA to perform a study and provide Congress with a report on public health, air quality and water resource impacts of fuel additive substitutes for MTBE, which today is almost exclusively made by ethanol, and has this report been completed?

Mr. MEYERS. The 1505 report has not presently been completed. I think we are scheduled to do that fairly soon and have that report available.

Mr. GREEN. Do you have any kind of idea when we might be able to see that? I think that would help us in making some of the decisions?

Mr. MEYERS. I will be happy to follow up. I was under the impression we may have that as early as next month.

Mr. GREEN. Do you think it is wise for Congress and the Administration to support a vast increase in renewable fuel standard before the basic public health, air quality, and water quality impact studies of ethanol are completed?

Mr. MEYERS. If the question was whether it was wise for Congress to—

Mr. GREEN. To do something before we see the results of your report.

Mr. MEYERS. Congressman, I worked here for 23 years so I respectfully would respect the judgment of Congress.

Mr. GREEN. OK. Well, we appreciate that. At least as one Member, I would like to see what the report says before we increase the standards. Do you have any idea what the report might conclude?

Mr. MEYERS. No, I do not. I would be happy to follow up for the record and verify our timing, but we certainly are mindful of the studies that were passed in 2005, as well as the new requirements in the 2007 law.

Mr. GREEN. The RFS includes requirements of studies of various aspects of biofuels. These studies included assessing the RFS impacts on feed grains, livestock food, forest products and the energy industry and its environmental and resource conservation impacts. If the results of these studies were found negative and harmful impacts on the industries or to the environment, does the bill require the EPA administrator to adjust the mandate to prevent these unintended consequences?

Mr. MEYERS. I do not believe the bill would require the administrator. The administrator on his own motion is able under the 2007 statute to initiate a waiver process.

Mr. GREEN. OK. Do you believe it would be beneficial for the EPA to have the authority to alter the mandated RFS levels in order to prevent any unintended consequences if the results of these or other studies are found negative impacts on our public health, environment or the economy?

Mr. MEYERS. I would demur on any legislative changes to the current statute since the Administration has not taken a position on any bill yet.

Mr. GREEN. Mr. Chairman, thank you again for your time and for allowing me to waive on, and appreciate the courtesy.

Mr. BOUCHER. Thank you very much, Mr. Green.

The gentleman from Michigan, Mr. Stupak, is recognized for 5 minutes.

Mr. STUPAK. Thank you, Mr. Chairman, and thanks for holding this hearing. I have been pestering you to have this hearing because I am really concerned about the renewable biomass definition as the trees and residues from tree plantations on non-Federal lands cleared prior to enactment, so I have a number of questions along those lines, if I may.

Regarding the renewable biomass definition in the bill, what are the roadblocks you see in enforcement? How are you going to enforce this to make sure that it does not come from Federal lands?

Mr. MEYERS. That is something that we are currently examining and we are aware of situations where the mill or facility might not know exactly where one tree came from and another tree came from. But in situations where the statute would pose difficulties, we would have to exercise some judgment and rule of reason and interpret the statute in a way that we thought could be workable.

Mr. STUPAK. But as on the 2005 energy conference report having timber and trees be part of our ethanol solution here, we never dreamed we would be sitting here saying, did this log come from a State forest or Federal land or private land? That is insane. How about, have you had any discussions how this would be enforced? Would the requirement of enforcement be on the production facilities, cellulosic production facility, or on the logger? The only one who is going to know where the wood came from is the logger, and when they are going down the road, we don't know if they are State, Federal, where they are coming from.

Mr. MEYERS. We have not reached a determination on those issues. Since we are at the proposal stage that will afford us the opportunity to take comment with regard to various compliance options. But we need to deal with the statute we have and interpret it the best we can.

Mr. STUPAK. Well, I have a couple of entrepreneurs looking at my district right now to make significant improvements in developing ethanol from cellulosic from timber. Can you give us any time frame in which you might clarify this so we know how it is going to be enforced, or what is the enforcement mechanism, so I want to make sure they can move ahead with their investment, private investment that they are trying to make and in areas such as mine.

Mr. MEYERS. We are moving ahead. Again, we have been talking to a lot of stakeholders and doing the type of analysis we need to do, and our intent is to have the proposed rule out and available obviously in the Federal Register this fall, early this fall is our projection right now.

Mr. STUPAK. Well, let me ask you this. You mentioned in your testimony there will be important work with the U.S. Trade Representative so that you are meeting your international obligations.

Explain that in more detail, could you? What are the international concerns here?

Mr. MEYERS. Well, in application of the language of the statute, we are dealing with both domestically produced and imported product so the standards are applicable to the product and its life cycle direct, indirect inputs. So we would need to look and consult with the USTR and others as to any regulations to implement that to make sure they were consistent with U.S. treaty requirements.

Mr. STUPAK. OK. Well, in my district, we border Canada, and we move timber all the time back and forth for production of paper and other things. How would you enforce this provision here on trees or residues from tree plantations on non-Federal lands if the wood came from Canada?

Mr. MEYERS. I have not thought of that question, sir, and I would be happy to provide it for the record.

Mr. STUPAK. All right. I have no further questions, Mr. Chairman. I hope we can pass the Herseth bill and get this thing resolved. You can see all the nightmares this provision would provide, especially for those of us who have timber-based economy, and as we try to move cellulosic properties of timber to make it into ethanol, it is impossible to enforce the provisions set forth.

So with that, I would yield back the balance of my time. I thank the gentleman for his time and for his forthright answers.

Mr. BOUCHER. I thank the gentleman from Michigan, and Mr. Meyers, you are excused with the committee's thanks. We appreciate your testimony today.

We are going to recess pending the votes that are now on the Floor, probably for 45 minutes to 1 hour, and so those who would like to obtain lunch can do so, and we will reconvene as soon as the last vote is concluded. It is going to be at least 45 minutes before that happens. So we will welcome our third panel at that time and until then, the committee is in recess.

[Recess.]

Mr. BOUCHER. The subcommittee will come to order.

We welcome now our third panel of witnesses. Mr. Nathanael Greene, the senior policy analyst for the National Resources Defense Council; Mr. Bob Dinneen, president of the Renewable Fuels Association; Mr. Charles Drevna, president of the National Petrochemical and Refiners Association; Mr. Randy Kramer, president of KL Process Design Group in South Dakota, which has developed a wood waste ethanol demonstration plant; Mr. Scott Faber, vice president of Federal affairs for the Grocery Manufacturers Association; Mr. Rick Tolman, chief executive officer of the National Corn Growers Association; Dr. Mark Stowers, vice president of research and development of POET; and Mr. Gawain Kripke, director of policy and research for Oxfam America. We welcome each of our witnesses.

Without objection, your prepared written statements will be made a part of the record. We will welcome your oral presentations and ask that each witness please limit the presentation to approximately 5 minutes.

Mr. Greene, we will be happy to begin with you.

**STATEMENT OF NATHANAEL GREENE, SENIOR POLICY  
ANALYST, NATURAL RESOURCES DEFENSE COUNCIL**

Mr. GREENE. Thank you very much, Mr. Chairman, Ranking Member, members of the committee. Thank you for this chance to share my views on the opportunities and challenges of implementing the renewable fuels standard. My name is Nathanael Greene. I am a senior policy analyst with the Natural Resources Defense Council and one of our main experts on renewable energy technologies.

At NRDC, we believe that biofuels from biomass produced following environmental safeguards processed efficiently and used in efficient vehicles can reduce our dependence on oil, reduce emissions of global warming pollution, contribute significantly to a vibrant farm economy, and avoid impacting food prices. However, pursued without adequate safeguards and standards, large-scale biofuel production carries grave risks to our lands, forests, water, wildlife, public health, and climate.

The new renewable fuels standard was a major step forward for our biofuels policy, a step away from the “more is better” approach that has dominated our policies toward a “better is better” approach. The latest research confirms Congress’s foresight in crafting the renewable fuel standard to do the following four things: Firstly, to set minimum life cycle greenhouse gas emissions standards for all biofuels from new facilities; secondly and importantly, to define the life cycle greenhouse gas emissions to include all of the emissions from the full life cycle; from cultivation, production through to combustion and specifically to include both the direct and indirect emissions from land-use change. Accounting for emissions from land-use change is the most important step to producing low-carbon biofuels and taking biofuels out of the food price equation. It is through increasing the competition for arable land that biofuels face the greatest risk of increasing global warming pollution and driving up food prices.

The third important part in the renewable fuel standard is encouraging the production of plentiful biofuel feedstocks, including woody biomass while ensuring that the renewable fuel standard mandate does not drive up the destruction of old-growth forests, native grasslands or imperiled ecosystems or the degradation of our Federal forests. These lands and wildlife safeguards are critical to getting biofuels right. Proposals like H.R. 5236 to remove the protections not just from our Federal lands but from all of our lands would turn biofuels done right into biofuels done wrong.

The fourth and most important part of the renewable fuel standard is that it requires the vast majority of new biofuels required under the law to be advanced biofuels derived from renewable cellulosic biomass, providing a life cycle greenhouse gas emissions reduction of at least 60 percent compared to the fossil fuels they replace.

The efficacy of the renewable fuel standard depends entirely on EPA’s implementation of these critical provisions. EPA has good momentum from the work they have been doing implementing the President’s Twenty in Ten Executive Order but aggressive and effective implementation will require resources and monitoring. Congress should make sure that EPA is fully funded to do this imple-

mentation and monitor EPA's progress to ensure that science rather than politics drives the resulting regulations.

New crops and conversion technologies are developing rapidly and would make it easier to produce lots of biofuels with a smaller environmental footprint and without impacting food prices, but technologies are not guarantees of good environmental performance. Just because we can do it right doesn't mean that we will. We need to maintain the environmental safeguards and performance standards in the renewable fuel standard and build on them, guiding the market so that innovation and competition will drive biofuels to provide the greatest benefits.

Looking beyond the renewable fuel standard, Congress should adopt a low-carbon-fuel standard, as California and Massachusetts are planning to do. I believe this builds on a lot of ideas that were mentioned in the opening statements about really letting the market and innovation thrive. Congress should also pass comprehensive climate legislation built around a mandatory economy-wide carbon cap-and-credit trading system, and finally, Congress should reform the various existing biofuels tax credits and import tariffs to be a single technology-neutral performance-based credit to encourage water efficiency, reduced water pollution, better soil management and enhanced wildlife management.

Thank you very much for your time.

[The prepared statement of Mr. Greene follows:]





NATURAL RESOURCES DEFENSE COUNCIL

**Statement of  
Nathanael Greene  
Senior Policy Analyst  
Natural Resources Defense Council**

**Before the  
Committee on Energy and Commerce  
Subcommittee on Energy and Air Quality  
United States House of Representatives**

**May 6, 2008**

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## Summary

- Biomass feedstocks produced with environmental safeguards, processed efficiently and used in efficient vehicles can reduce our dependence on oil for transportation, reduce emissions of heat-trapping carbon dioxide, contribute significantly to a vibrant farm economy, and avoid impacting food prices.
- Pursued without adequate guidelines, large scale biofuels production carries grave risk to our lands, forests, water, wildlife, public health and climate.
- The Renewable Fuel Standard contained in EISA contributed important advances to our energy and climate policy that can help mitigate global warming, reduce the environmental impacts of biofuels, and start to take biofuels out of the food price equation. The latest research confirms Congress' foresight in crafting the RFS to:
  - Require conventional biofuels from all new facilities to achieve at least a 20 percent reduction in lifecycle greenhouse gas emissions compared to conventional gasoline and advanced biofuels to achieve at least a 50 percent reduction.
  - Define lifecycle greenhouse gas emissions to include the full cultivation, production, and combustion cycle of fuels and both the direct and indirect emissions caused by this cycle.
  - Encourage production of plentiful biofuels feedstocks—including woody-biomass—while ensuring the RFS mandate does not result in the loss of old-growth forest, native grasslands, “critically imperiled”, “imperiled”, “vulnerable” ecosystems pursuant to a State Natural Heritage Program, the degradation of our federal forests<sup>1</sup>, or conversion of natural forests on non-federal lands.
  - Require the vast majority of new biofuels required under the law to be advanced biofuels derived from renewable cellulosic biomass with a 60 percent lifecycle greenhouse gas emissions reduction.
  - Establish a no-backsliding requirement to protect air quality by directing EPA to adopt regulations that “mitigate, to the greatest extent achievable ... any adverse impacts on air quality.”<sup>2</sup>
- New crops and conversion technologies are developing rapidly that will make it easier to produce lots of biofuels with a smaller environmental footprint and without impacts on food prices, but the technologies are not a guarantee of good environmental performance. We need to maintain the environmental safeguards and performance standards in the RFS and build on them guiding the market so

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<sup>1</sup> Biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire is excepted from these restrictions, on both federal and non-federal lands.

<sup>2</sup> Section 211(v)(2)(A) of the Clean Air Act (42 U.S.C. 7545) as amended by Section 209 of EISA07.

that innovation and competition will drive biofuels to provide the greatest benefits.

- The RFS also includes important requirements for studies of various aspects of current and future biofuels. Seemingly every day now, we learn of new technologies that promise to improve the performance of biofuels and of new negative environmental impacts that biofuels can have if pursued carelessly. These studies are critical to ensure that we identify unintended consequences of our policies as soon as possible and get the greatest good from our policies.
- Congress should make sure EPA is fully funded to aggressively and effectively implement these critical safeguards and should monitor their progress closely to ensure that science rather than politics drives the resulting regulations. The effectiveness of EPA's implementation of the RFS will entirely determine the law's success.
- Congress should build on the foundation of the RFS by:
  - Adopting a low-carbon fuel standard that requires progressive reductions in the average greenhouse gas emissions per gallon of all transportation fuels sold, as California and Massachusetts are planning to do.
  - Passing comprehensive climate legislation built around a mandatory, economy-wide carbon cap and a carbon credit trading system with all of the benefits of the trading system dedicated to public benefits.
  - Reforming the current ethanol excise tax credit, the ethanol import tariff, and the biodiesel blending tax credit to be technology-neutral, performance-based to encourage water efficiency, reduced water pollution, better soil management, and enhanced wildlife management.

**Introduction**

Thank you for the opportunity to share my views regarding the opportunities and challenges of implementing the Renewable Fuels Standard (RFS). My name is Nathanael Greene. I'm a senior policy analyst for the Natural Resources Defense Council (NRDC) and one of our main experts on renewable energy technologies. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing.

Mr. Chairman, as you know, U.S. energy policy must address three major challenges: reducing America's dangerous dependence on oil, reducing global warming pollution, and providing affordable energy services that sustain a robust economy. Biofuels have the potential to contribute significantly to all three of these goals. Sustainably produced biomass feedstocks, processed efficiently and used in efficient vehicles can reduce our dependence on oil for transportation, reduce emissions of heat-trapping carbon dioxide, and contribute significantly to a vibrant farm economy. Pursued without adequate guidelines such as those contained in current law, however, biofuels production carries grave risk to our lands, forests, water, wildlife, public health and climate.

The potential for biofuels to be done right or wrong is reflected in recent headlines, which just a few months ago regularly hailed biofuels as the solution to our oil

addiction and now roundly condemn biofuels in light of high food prices and recent studies that show how biofuel can increase global warming pollution and contribute to environmental degradation. While these concerns should certainly motivate greater efforts to get biofuels right, we need to be careful not to throw the baby out with the bathwater. We should go beyond all or nothing headlines and pursue a transition to biofuel strategies that realize the compatible objectives of replacing oil, expanding opportunities for existing producers, and securing both food supplies and a sustainable future.

The updated RFS does more to promote careful development of biofuels than it is generally given credit for. The RFS will dramatically expand the use of renewable transportation fuels and is a major step forward for biofuels policy in that it contains the minimum performance standards and incentives needed to promote biofuels that are part of the solution, rather than part of the problem. The challenge before us is to ensure that this law is implemented aggressively and effectively so that biofuels actually meet these standards.

I'd like to call your attention to four requirements under the updated RFS that were particularly far sighted of Congress to embrace and are critical to the law's success:

- Requiring conventional biofuels from all new facilities to achieve at least a 20 percent reduction in lifecycle greenhouse gas emissions compared to conventional gasoline and advanced biofuels to achieve at least a 50 percent reduction.
- Defining lifecycle greenhouse gas emissions to include the full cultivation, production, and combustion cycle of fuels and both the direct and indirect emissions caused by this cycle.

- Encouraging production of plentiful biofuels feedstocks—including woody-biomass—while ensuring the RFS mandate does not result in the loss of old-growth forest, native grasslands, “critically imperiled”, “imperiled”, “vulnerable” ecosystems pursuant to a State Natural Heritage Program, the degradation of our federal forests<sup>3</sup>, or conversion of natural forests on non-federal lands.
- Requiring the vast majority of new biofuels required under the law to be advanced biofuels derived from renewable cellulosic biomass with 60 percent reduction in lifecycle greenhouse gas emissions.

### **The importance of the RFS's minimum lifecycle GHG requirements**

Section 201 of the RFS established minimum lifecycle GHG requirements for advanced and cellulosic biofuels. Section 202 established similar standards for conventional biofuel. To the best of my knowledge, these are the first lifecycle GHG standards established under any federal law. Under these standards, all renewable fuels from new facilities have to have lifecycle GHG emissions that are at least 20 percent lower than gasoline or diesel, depending on which they are replacing. In order to comply with the “advanced biofuels” definition, fuels need to have emissions that are at least 50 percent lower and to comply with the “cellulosic biofuels” definition, fuels need have emissions that are 60 percent lower.

This is the first time that biofuels policy in the US has required renewable fuels to proactively show an environmental benefit in return for benefiting from a government incentive program such as the RFS. Nowhere is the need for better performance more evident and urgent than when considering the global warming pollution impacts of biofuels. It is possible to produce ethanol derived from corn in a way that produces less than the lifecycle greenhouse gas emissions of gasoline

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<sup>3</sup> Biomass obtained from the immediate vicinity of buildings and other areas regularly occupied by people, or of public infrastructure, at risk from wildfire is exempted from these restrictions, on both federal and non-federal lands.

(per BTU of delivered fuel). Conversely it is possible to produce ethanol from cellulosic feedstocks in a manner that produces far more CO<sub>2</sub> than gasoline. Unless our policies value, encourage and ultimately require biofuels to produce greenhouse gas reductions as the RFS has done for the first time, the market will provide whatever is cheapest and fastest. There is no reason to believe that such fuels will be better than gasoline and plenty of reason to believe they could be worse.

**The RFS gets the definition of lifecycle GHG emissions right**

Of course, the minimum lifecycle GHG standards for biofuels in the RFS would mean little without a good definition of lifecycle emissions. This is an area of the law where Congress showed particular foresight. Section 201(1)(H) of the RFS defines lifecycle GHG emissions as follows:

*(H) LIFECYCLE GREENHOUSE GAS EMISSIONS.—The term ‘lifecycle greenhouse gas emissions’ means the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.<sup>4</sup>*

Less than two months after this definition became law, two articles that appeared in *Science* made it clear that the direct and indirect emission associated with changes in land-use could dominate the lifecycle emissions of biofuels. The first article, "Land Clearing and the Biofuel Carbon Debt," addresses the direct greenhouse gas emissions from growing biofuel feedstocks on land recently converted from natural

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<sup>4</sup> "Energy Independence and Security Act of 2007," Title II, Section 201(1)(H), signed into law on December 17, 2007.



ecosystems to managed agriculture.<sup>5</sup> This article is authored by a team from the Nature Conservancy and the University of Minnesota including Dr. David Tilman. The second article, "Use of U.S. Croplands for Biofuels Increases Greenhouse Gases through Emissions from Land Use Change," addresses the emissions from land use change induced by the economic pressures when crops and land are diverted from food, feed, and fiber to fuels.<sup>6</sup> This article is authored by a team lead by Tim Searchinger now from Princeton, the Woods Hole Research Center, and Iowa State's CARD.

While there is little controversy over the notion that the emissions from lands converted specifically to produce biomass for renewable fuels should be accounted for in the lifecycle of those fuels, the first of these articles showed how large these emissions could be. The second article broke newer ground, pointing out that land conversion could be induced by biofuels when they increase the competition for land and thus lifecycle accounting needs to look beyond just direct conversion of land for biofuels. Devoting an increased share of U.S. agricultural output to fuel production rather than food and livestock feed will result in increased demand for animal feed from sources abroad. If any significant portion of this additional feed is obtained by converting mature forests into pasture or cropland the CO<sub>2</sub> emissions from this land use change could greatly exceed the emission reductions from the use of biofuels. The Argonne GREET model and most lifecycle analyses conducted to

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<sup>5</sup> Fargione, J., et al., "Land Clearing and the Biofuel Carbon Debt," *Science* [DOI: 10.1126/science.1152747] February 7, 2008.

<sup>6</sup> Searchinger, T., et al., "Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land Use Change," *Science* [DOI: 10.1126/science.1151861] February 7, 2008.

date have either ignored these land use related emissions or minimized them. These emissions, however, are caused by using certain crops and types of land for biofuels feedstocks, and they have the potential to negate all of the global warming benefits of poorly designed biofuels policies.

A recent letter in *Science* does a particularly good job of showing how complicated but important these indirect land-use impacts can be. The letter explains how increased demand for corn to make ethanol is reducing domestic production of soy beans and thus driving up the production of soy beans in Brazil. The letter details how increased Brazilian soy farming leads directly and indirectly to clearing of Brazilian rainforests:

*Some Amazonian forests are directly cleared for soy farms. Farmers also purchase large expanses of cattle pasture for soy production, effectively pushing the ranchers farther into the Amazonian frontier or onto lands unsuitable for soy production. In addition, higher soy costs tend to raise global beef prices because soy-based livestock feeds become more expensive, creating an indirect incentive for forest conversion to pasture. Finally, the powerful Brazilian soy lobby is a key driving force behind initiatives to expand Amazonian highways and transportation networks in order to transport soybeans to market, and this is greatly increasing access to forests for ranchers, loggers, and land speculators. [Footnotes not included.]<sup>7</sup>*

Not all biomass material leads to increased demand for new agricultural lands and not all lands brought into production are rainforests. Nevertheless, it is important to understand the scale of impact that greenhouse gas emissions from these indirect land-use changes can have. Looking at a number of estimates, new very efficient corn ethanol refineries should be able to produce about 420 gallons of ethanol from

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<sup>7</sup> Laurance, W.F., "Switch to Corn Promotes Amazon Deforestation," *Science* (Letters), December 14, 2007, Vol. 318, page 1721.

an average acre of corn. Putting aside emissions from land-use change, this ethanol would reduce greenhouse gas emissions by about 37 percent per gallon or about 2,500 pounds worth of CO<sub>2</sub> per acre each year. Now, according to another article in *Science*, one acre of tropical rainforest if cleared and used to grow crops will release about 655,000 pounds worth of CO<sub>2</sub> over 30 years or an average of nearly 22,000 pounds per year.<sup>8</sup> In other words, if the conversion of an acre of corn from food and feed to fuel resulted indirectly in the conversion of just one-tenth of an acre of rainforest all the greenhouse gas emissions benefits of the ethanol would be whipped out for the first 30 years.

Of course, there are many more types of land being converted to agriculture than just rainforests. And the marginal impact of land-use changes here in the United States on land-use in the rest of the world is extremely hard to predict with economic equilibriums and agricultural and trade policies all interacting in complex ways. But to ignore these indirect emissions is to assume they are zero, which could easily lead to the government subsidization of fuels that are worse for global warming than gasoline or diesel.

While these two articles have already stirred a lot of debate about the specific amounts of carbon released from different land types, the amounts of different lands being cleared, and the exact economics driven by growth in biofuels production, three conclusions are clear now: 1) absent the GHG standards in the RFS and the carefully crafted definition of lifecycle emissions, these two dynamics make it very

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<sup>8</sup> Righelato, R. and Spracklen, D., "Carbon Mitigation by Biofuels or by Saving and Restoring Forests?" *Science*, August 17, 2007, Vol. 317, page 902.

likely that most biofuels would be responsible for greenhouse gas emissions significantly higher than gasoline or diesel; 2) the fundamental dynamics addressed by these two articles (direct land use emissions and economically induced land use emissions) are driven by the fundamentals of soil science and the laws of supply and demand; and 3) the importance of implementing the minimum GHG emissions standards and land-use safeguards in the RFS aggressively and effectively is clearer than ever. I return to this last point later in my testimony.

Under the RFS, EPA is directed to promulgate regulations to implement these GHG performance standards and the environmental safeguards by the end of 2008. Perhaps the most complicated part of this is developing the accounting protocol to measure and certify the lifecycle greenhouse gas emissions of different renewable fuels. Fortunately, EPA has a head start in this effort. Early in 2007, President Bush directed EPA, in coordination with other federal agencies, to promulgate regulations to reduce US gasoline use by 20 percent within 10 years and to do so in a way that complied with the federal court ruling that CO<sub>2</sub> is a pollutant. Before the passage of the EISA07, EPA was on track to issue a notice of proposed rulemaking to implement the so called 20-in-10 executive order around the end of 2007. As part of these draft rules, EPA had done significant work developing a lifecycle accounting methodology.

**The RFS includes critical land and wildlife safeguards**

In addition to the minimum GHG standards, the RFS includes a definition of renewable biomass that provides essential safeguards for wildlife, native

grasslands, old-growth, natural forests, and federal forests. At the same time, it is broadly inclusive of the kind of material that typically provides the biggest sources of biomass, assuring diverse opportunities for landowner participation and a wide diversity of feedstocks.

- ***Eligible Biomass***

The renewable biomass definition includes:

- All crops and crop residue from current agriculture land and non-forested, fallow land
- All crops and crop residue from any non-forested land cleared prior to the enactment of EISA, including newly established tree plantations<sup>9</sup>
- All trees and logging residue from non-federal tree plantations, excluding those converted from natural forests after passage of EISA07 (See below)
- “Slash and pre-commercial thinnings” from non-federal natural forests, which, importantly, constitute the lion’s share of woody-biomass from natural working forests that would typically be used for biofuels, while keeping forests from being converted
- All material removed from the immediate vicinity of homes and communities at risk from wildfire, on federal and non-federal lands
- Animal waste and animal byproducts
- Waste material, including separated yard waste, food waste, and cooking and trap grease.

- ***Protecting Wildlife***

The definition of renewable biomass ensures the RFS does not encourage biomass harvesting from sensitive wildlife habitat. The RFS employs the State Natural Heritage programs to identify critically imperiled, imperiled and vulnerable wildlife habitat. The Natural Heritage programs are readily accessible, widely recognized,

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<sup>9</sup> While I recognize that the term “plantation” carries negative historical connotations, it is used throughout my testimony because “tree plantation” it is a technical term distinct from “tree farm”. “Tree plantation” is also the term used in the Renewable Biomass definition legislative text.

and embraced by all 50 states. They are the leading sources on the precise locations and conditions of rare and threatened species and ecological communities found within each state. These databases and ranking systems are used effectively for forest management and in partnership with many forest-product industry leaders.

The ecosystems identified by the RFS as off-limits are home to our most rare, threatened, and imperiled wildlife. While tree plantations and young forests are increasing in parts of the United States, older forests that provide critical wildlife habitat and store tremendous amounts of carbon are disappearing faster than they are being regrown, both nationally and globally, and loss of native habitat is the greatest threat to biodiversity here and abroad. Animals are currently going extinct at a rate nearly 1,000 times higher than they have historically, and under current trends that may increase to 10,000 times over the next century.<sup>10</sup> Moreover, as global warming escalates, wildlife is increasingly threatened by loss of safe harbors and migration routes, making habitat protection even more important. The RFS safeguards ensure that the law's new demand for feedstocks does not translate into irreversible loss of these at risk habitats.

- ***Native Grasslands and Old-Growth Forest***

The RFS safeguards also protect against the use of biomass harvested from native grasslands and old-growth and late successional forest. Native grasslands represent one of the most threatened ecosystems in the world. Less than 4 percent of our

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<sup>10</sup> "Environmental Science and Engineering for the Twenty-First Century: The Role of the National Science Foundation," National Science Foundation, February 2000; Peter Raven, "Plants in Peril: What Should We Do?" Missouri Botanical Garden, 1999.

country's original native prairies exist today. These imperiled ecosystems represent a last remnant of our natural heritage and provide invaluable habitat for migrating birds and other endangered species. Similarly, our remaining old-growth trees constitute a rare and vulnerable ecosystem type that provides unique wildlife habitat, water filtration, and ecosystem resiliency. Nationally, old-growth forests are severely diminished. In the lower 48 states, old growth forest makes up just 2 percent of the remaining forest.<sup>11</sup> As we struggle to maintain and restore these ancient forests, it is imperative that federal policy not further their endangerment.

- ***Conversion of Natural Forests***

Loss of forests is one of the greatest threats to biodiversity worldwide and a major contributor to global warming.<sup>12</sup> Natural forests are under severe threat from unsustainable logging practices, global warming, and real estate development. While deforestation is the most dramatic example of this growing crisis, equally critical is the conversion of natural forests to single-species tree plantations. Plantations may look like "forests," but they are biological deserts when compared to the natural forests that they replace—lacking the diversity of species, structure, and ecological functions that make natural forests so important.

A potent example of conversion's sweeping impacts can be found in the forests of the Southern United States which contain some of the most biologically rich forests in North America, housing an abundance of plant and animal diversity that exist

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<sup>11</sup> Palmer, T., *The Heart of America: Out Landscape, Our Future*, Island Press, 1999.

<sup>12</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report Summary for Policymakers*, pg. 5. Available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)

nowhere else in the world. Unfortunately, these unique forests are under increasing pressure from the wood products industry as well as urban sprawl and development. Pine tree farms have been displacing natural forests for the past 50 years and now occupy 32 million acres (15 percent) of the current Southern "forest."<sup>13</sup> Seventy-five percent of the pine plantations established in the last two decades were carved out at the expense of natural forests. Moreover, 40 percent of the region's native pine forests have already been converted to single-species plantations, eliminating the rich diversity that the area is known for.

The RFS definition of renewable biomass does not by any means exclude woody biomass, but does ensure that federal policy is not making this bad situation worse. The RFS renewable biomass definition includes all biomass from existing tree plantations, new tree plantations established on previously cleared non-forested lands, and "slash and pre-commercial thinnings" from natural forests. In concert, these provisions allow woody-biomass to contribute to biofuels, while protecting against the clearing of forests or the conversion of natural forests to monoculture tree plantations, thus losing their natural ecosystem functions. It is important to emphasize that the terms "slash and pre-commercial thinning" are interpreted with substantial flexibility - allowing the use of all harvest byproducts, as well as small and low-value trees from natural forests, as long as the forest is naturally regenerated after harvest as opposed to converted into a tree plantation or other crop.

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<sup>13</sup> See USFS SFRA 2001 Summary--Section 3.2.2



Sustainable forestry practices that identify and protect high conservation values such as old-growth or late successional forest and specific wildlife habitat, and avoid conversion, are well established. These practices allow natural forests to remain working forests, without sacrificing critical wildlife habitat and other important environmental values. For example, Forest Stewardship Council certification, a global standard used in the forest products industry, incorporates these considerations.

- ***Federal Forests***

Our federal forests represent unique reservoirs of biologic diversity, genetic diversity, significant carbon stores, and many other ecological services, and stand to play a critical role in the face of global warming's growing impacts, including loss of biodiversity, decreased ecosystem resilience, and the spread of invasive species.<sup>14</sup> It is therefore becoming commensurately more important that our federal forest resources are managed and preserved for their numerous non-commodity values and that we assiduously avoid policies that would impose additional pressures on these already stressed, and increasingly crucial, public resources.

In this context, proposals to use "preventative thinnings" from national forests as a biofuels source make little economic or ecologic sense. First, it is important to understand that preventative thinning—the removal of forest biomass including anything from small brush to large trees to address forest health—is essentially logging and thus not devoid of ecological impacts, such as soil compaction, spread of

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<sup>14</sup> See, for example, Lovejoy, Thomas, *Climate Change and Biodiversity*, Yale University Press, August 2006.

invasive species, hydrologic disruption, and in the case of associated road building, increased fire risk due to lost resiliency and increased human traffic.<sup>15</sup>

The argument for the production of biofuels from national forest preventative thinnings hinges on three basic assumptions, all three of which would have to be valid for the proposition to add up: first, preventative thinnings based biofuels do not negatively impact global warming; second, preventative thinnings will safely and sustainably produce a meaningful volume of biofuels; and third, biomass removal is beneficial to addressing wildfire. Unfortunately there is uncertainty and debate around each of these assumptions.

The GHG benefit of preventative thinnings for biofuels is highly uncertain. As noted above, preventative thinning represents the removal of biomass—or stored carbon—through mechanical harvest. For preventative thinnings to make sense from a GHG perspective, the fuel produced would have to be “better” than the lost carbon storage, including soil carbon, the emissions resulting from the removal, transportation, and processing of the biomass, and the burning of the final fuel. It is also important to note that fire risk reduction thinning, even where appropriate (see below), is successful only to the extent that occasional intense burns are replaced by cooler burns that occur perhaps 20 to 25 times more often. While ecotype specific

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<sup>15</sup> The literature on the ecologic impacts of logging and road-building is extensive. For a collection of independently reviewed material, see <http://www.nrdc.org/land/forests/roads/eotrinx.asp>. See also USDA. “Roadless Area Conservation Final Environmental Impact Statement.” US Forest Service. Vol. 1. (November, 2000). pp. 3-116. Eastman, J. C., et al. “Roadless Areas and Forest Fires in the Western United States.” American Geographical Union Spring Meeting. (May 29, 2002). Pyne, S. J. *Tending Fire: Coping with America's Wildland Fires*, Island Press, 2004, p. 208.

data are still not available, on the face of it, the much more frequent burns are likely, if anything, to result in greater emissions.

Even if preventative thinning were ecologically necessary, most scenarios indicate a limited supply of material within economic haul distances, making biofuels from preventive thinning at best a drop in the overall bucket.<sup>16</sup> Preventative thinnings are single-entry activities pursued for restoration purposes and do not provide a renewable resource from any given location. Thus they are severely constrained by the energy and economic costs of transporting biomass from individual sites to central processing facilities. Incenting the establishment of a whole industry in order to supply a negligible volume of fuel from a time-limited supply of any arguably legitimate feedstock presents likely negative outcomes, including either a boom-bust cycle, or future pressure to shift to an unsustainable scale of extraction. This is particularly unappealing considering there are other, proven, and more readily scalable uses for harvest and preventative thinning byproducts where it is economic to remove them from the woods, such as community heat and electricity production and manufactured products. These factors are particularly important when considering utilization of slash and byproducts from sources other than preventive thinning, including any backlog like slash piles. While this material may

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<sup>16</sup> For example, the DOE "Billion Ton Study" available at [http://www1.eere.energy.gov/biomass/pdfs/final\\_billionton\\_vision\\_report2.pdf](http://www1.eere.energy.gov/biomass/pdfs/final_billionton_vision_report2.pdf) reports only 11.7 million dry tons of biomass available from national forest preventative thinnings. Even this estimate may be optimistic due to economic costs, haul distances, and serious questions regarding ecological impacts.

be available for the short term, it would soon be exhausted, representing a nonrenewable supply far more appropriate for more scalable uses than biofuels.<sup>17</sup>

Finally, while intuitively appealing, the empirical evidence is mixed at best on whether backcountry logging and preventative thinning effectively reduces fire risk<sup>18</sup>, and indicates it may in fact increase the chances of uncharacteristic fire.<sup>19</sup>

Furthermore, it is a mistake to conceive of national forests as uniformly overgrown thickets in need of preventative thinning to restore prior forest structure and fire

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<sup>17</sup> See DOE "Billion Ton Study" estimate of only 1.5 million dry tons of national forest logging residue, under future optimistic conditions.

<sup>18</sup> See, Martinson, E. J. and P. N. Omi. 2003. Performance of Fuel Treatments Subjected to Wildfires, in Omi, P. N.; Joyce, L. A., technical editors. Fire, fuel treatments, and ecological restoration: Conference proceedings; 2002 16-18 April; Fort Collins, CO. Proceedings RMRS-P-29. Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. pp. 7-8. *See also* Carey, H. and M. Schumann. 2003. "Modifying Wildfire Behavior-The Effectiveness of Fuel Treatments." The Forest Trust. p. 16. Available at [www.theforesttrust.org/images/swcenter/pdf/WorkingPaper2.pdf](http://www.theforesttrust.org/images/swcenter/pdf/WorkingPaper2.pdf). p. 15 ("The proposal that commercial logging can reduce the incidence of canopy fire appears completely untested in the scientific literature"). *See also* Cram, D.S., T.T. Baker, and J.C. Boren. 2006. Wildland Fire Effects in Silviculturally Treated vs. Untreated Stands of New Mexico and Arizona. Research Paper RMRS-RP-55. Fort Collins, CO. U.S. Forest Service, Rocky Mountain Research Station. p. 1. ("information comparing fire behavior and fire effects on treated versus untreated forest stands following wildland fire remains largely anecdotal.")

<sup>19</sup> Martinson and Omi, *supra* note 1. p. 7. U.S. Forest Service. 2000a. Final Environmental Impact Statement for the Roadless Area Conservation Rule ("FEIS"), volume 1. Online at: <http://www.roadless.fs.fed.us/documents/feis>. p. 3-110. Collins, B.M. et al. 2007. Spatial patterns of large natural fires in Sierra Nevada wilderness areas. *Landscape Ecology* 22:545-557. p. 554. Whitehead, R.J. et al. 2006. Effect of a Spaced Thinning in Mature Lodgepole Pine on Within-stand Microclimate and Fine Fuel Moisture Content, in Andrews, P. L. and B.W. Butler, comps., Fuels Management-How to Measure Success: Conference Proceedings. 28-30 March 2006; Portland, OR. Proceedings RMRS-P-41. Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. Online at [http://www.fs.fed.us/rm/pubs/rmrs\\_p041/rmrs\\_p041\\_523\\_536.pdf](http://www.fs.fed.us/rm/pubs/rmrs_p041/rmrs_p041_523_536.pdf). p. 529. Keeley, J.E., D. Lubin, and C.J. Fotheringham. 2003. Fire and grazing impacts on plant diversity and alien plant invasions in the southern Sierra Nevada. *Ecological applications* 13:1355-1374. p. 1370. FEIS, *supra* this note, Fuel Management and Fire Suppression Specialist's Report. Online at: [http://www.roadless.fs.fed.us/documents/feis/specprep/xfire\\_spec\\_rpt.pdf](http://www.roadless.fs.fed.us/documents/feis/specprep/xfire_spec_rpt.pdf). p. 21 ("Fahnstock's (1968) study of precommercial thinning found that timber stands thinned to a 12 feet by 12 feet spacing commonly produced fuels that 'rate high in rate of spread and resistance to control for at least 5 years after cutting, so that it would burn with relatively high intensity;'" "When precommercial thinning was used in lodgepole pine stands, Alexander and Yancik (1977) reported that a fire's rate of spread increased 3.5 times and that the fire's intensity increased 3 times"); id. At 23 ("Countryman (1955) found that 'opening up' a forest through logging changed the 'fire climate so that fires start more easily, spread faster, and burn hotter").

regimes. While evidence suggests some lower elevation, dry forests could benefit from restoration treatments, many other sites across the country, including lodgepole pine, spruce-fir forests, subalpine forests, piñon-juniper, mixed conifer systems, and ponderosa pine, are adapted to intense, stand-replacing fires, and in these dense stands preventative thinning is contraindicated.<sup>20</sup> The empirical evidence on both the efficacy and necessity of preventative thinning suggests it is still experimental, poses significant risks, is constrained to limited areas at best, and therefore should be pursued only on an investigational basis.

In sum, none of three underlying assumptions related to producing biofuels from preventative thinnings reflect the best available science or pragmatic, on the ground scenarios. To contribute a negligible amount of fuel, we would have to risk further degraded forests, exacerbating fire risk, reducing carbon storage, increasing GHG emissions, and establishing an unsustainable industrial demand for continued commercial exploitation of vital public resources.

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<sup>20</sup> See Christensen, N, et al. 2002. Letter to President George W. Bush [http://docs.nrdc.org/land/lan\\_07062801g.pdf](http://docs.nrdc.org/land/lan_07062801g.pdf); Romme, W. et al. 2006. Recent Forest Insect Outbreaks and Fire Risk in Colorado Forests: A Brief Synthesis of Relevant Research. Colorado State University, Fort Collins, CO. Online at [http://www.cfri.colostate.edu/docs/cfri\\_insect.pdf](http://www.cfri.colostate.edu/docs/cfri_insect.pdf). Schoennagel, T., T.T. Veblen, and W.H. Romme. 2004. The interaction of fire, fuels and climate across Rocky Mountain forests. *BioScience* 54: 661-676. p. 666. Romme, W., et al. 2003. Ancient Piñon-Juniper Forests of Mesa Verde and the West: A Cautionary Note for Forest Restoration Programs, in Omi, P. N.; Joyce, L. A., technical editors. *Fire, fuel treatments, and ecological restoration: Conference proceedings; 2002 16-18 April; Fort Collins, CO. Proceedings RMRS-P-29.* Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. Baker, W.L. and D.S. Ehle. 2003. Uncertainty in Fire History and Restoration of Ponderosa Pine Forests in the Western United States, in Omi, P. N.; Joyce, L. A., technical editors. *Fire, fuel treatments, and ecological restoration: Conference proceedings; 2002 16-18 April; Fort Collins, CO. Proceedings RMRS-P-29.* Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station. p. 330.

**The RFS correctly focuses primarily on biofuels from renewable cellulosic biomass**

While the RFS requires 36 billion gallons of biofuels by 2022, only 28.5 of this is additional to the previous RFS and only about 24 is in addition to what the market would have almost certainly provided on its own. The new RFS requires that at least 22 billion gallons of the 36 billion total be “advanced biofuels,” which are basically defined as not being ethanol from corn. As mentioned earlier, these advanced biofuels must provide at least a 50 percent reduction. Of the advanced biofuels, at least 16 billion must be from cellulosic feedstocks and at least 1 billion must serve as an alternative to petroleum diesel. The advanced biofuels from cellulosic feedstocks must provide at least a 60 percent reduction in GHG emissions.

Much has been written and said about the promise of advanced, second generation biofuels technologies. These technologies do appear poised to greatly increase the amount of biofuels we can produce and make it easier to produce them in a sustainable way. It is critical to realize, however, that these technologies will not be available overnight and just because we can produce biofuels sustainably does not mean that we will.

When I first started looking at biofuels in 2002, all of the cutting edge expertise was in academia and the national energy labs. You could talk to these experts and they would tell you where the technology stood. Over the last 2 years, however, all of the cutting edge research has moved into the private sector and is proprietary. So while it's now much harder to know where things stand, we know that a lot of investor

dollars are being bet on near-term commercialization. The research is being driven by venture capitalists and private investors.

Combine these developments with the very impressive number of projects proposed in response to recent government solicitations, and it's hard not to believe that things are moving along quickly. Within the past year, New York issued a solicitation for two pilot cellulosic biofuels projects and DOE issued a solicitation for six small commercial scale cellulosic projects and seven more pilot scale cellulosic projects. All of these solicitations required significant private sector investment and a number of major market players responded. Cellulosic biofuels projects announced in recent weeks include a new pilot cellulosic plant in Nebraska that will be built by Abengoa, a plant using switchgrass as a feedstock that will be constructed in Tennessee by Mascoma and a commercial line of cellulose processing enzymes by Genencor. International developments include a recent announcement by Royal Nedalco in the Netherlands that it will skip the pilot scale and go straight to building a small commercial scale 50 million gallon a year cellulosic plant. There are also advances being made in radically different technologies including the use of microorganisms in existing ethanol facilities to produce fuels similar to gasoline such as biobutanol, bacterial and catalytic conversion of biomass into renewable diesel and gasoline, and the use of algae to make a synthetic diesel fuel.

It is my understanding, however, that none of these projects will come on line until late next year at the earliest. Assuming a few of them perform very well, they could be expanded, but it is really the second generation plant that investors will consider

a potential cookie-cutter model. Being optimistic, assume that we go into 2013 with three different technologies that can compete with corn ethanol or gasoline, each with an operating second generation plant of about 50 million gallon per year capacity. Even if the technologies are so promising that orders for more plants are actually placed in 2012, how fast will capital and engineering capacity flow into the sector? How long will siting and permitting lead times be? One billion gallons of capacity by 2016 seems reasonable to me assuming we have at least one clear success on line by 2010. Three billion would be absolutely fantastic. Such a result would require that by 2013 the cellulosic industry grows as fast as the corn ethanol industry grew from middle of 2006 to middle of 2007.

The ability to convert cellulose into fuels opens up the possibility of using new feedstocks such as cellulosic crops—including switchgrass—that use significantly less chemical inputs and water, agricultural residues and organic waste. However, as we discussed earlier, it is also possible to cultivate and harvest cellulosic biomass in extremely destructive and carbon intensive ways. One of the easiest ways to do cellulosic biofuels wrong is by harvesting feedstocks from inappropriate areas such as our public forests, old growth forests, or other imperiled and fragile ecosystems. While I'm not aware of any projects proposing to use such feedstocks, federal policies should not incentivize the future use of such feedstocks. Environmental safeguards and performance standards are necessary to ensure that federal policy promotes the best production standards for biofuels, such as well-managed cultivation of corn or switchgrass.



**The studies required under the RFS will provide much needed guidance**

I would like to emphasize the importance of the environmental studies included in the bill, an often overlooked feature of considerable importance.

We are learning everyday the varied impacts of biofuels, from land-use change, to invasive species spread, to water quality and quantity. These factors require careful study and ongoing monitoring, and the results and recommendations of the studies stand to provide critical input going forward. Biofuels, particularly next generation, are taking its first baby steps, and we must ensure that a cautionary approach is taken, while leaving open the possibility to learn as we go.

**The RFS's environmental safeguards must be effectively implemented by EPA**

While Congress deserves much credit for carefully crafting the standards, safeguards, and study provisions of the RFS, none of these will amount of a fill of beans unless they are aggressively and effectively implemented by EPA. EPA's task is complex. Tracking and enforcing the law's environmental safeguards will be challenging. EPA is up to the task but will require significant resources. Congress must make sure EPA is fully funded to both develop the implementing regulations and then carry out the enforcement and studies.

Our discussions with staff within EPA give us confidence that the agency is make real progress towards a workable, science-based set of regulations. Under EISA07, technically EPA should promulgate these regulations by the end of this calendar year. Given the genuine complexity of the issues that have to be addressed, this timing seems unrealistic, but given the progress that we see EPA making, we're

confident that they're on track to finish the rules within a reason period.

Nevertheless, we encourage Congress to monitor their progress closely to ensure that science rather than politics drives the resulting regulations.

The effectiveness of EPA's implementation of the RFS will entirely determine the law's success.

**Congress should build on the foundation laid by the RFS**

Congress should build on the foundation of the RFS by:

- ***Congress should adopt a low carbon fuel standard like California and Massachusetts are doing***

Adopting a low-carbon fuel standard (LCFS) that require progressive reductions in the average greenhouse gas emissions per gallon of all transportation fuels sold, as California and Massachusetts are planning to do. The LCFS is a technology-neutral, performance based approach to reducing the greenhouse gas emissions from transportation energy. This would be an important improvement over the technology specific, volume incentives and mandates that until recently dominated US biofuels policies.

The way a LCFS works is that the full lifecycle GHG emissions from the fuels each oil company is selling are added up and divided by all the energy in that fuel. This becomes the company's average fuel carbon intensity. Overtime under the LCFS, the oil companies have to reduce this average carbon intensity by mixing in sources of transportation energy with lower lifecycle GHG emissions. In California, which was

the first to move towards a LCFS and is now in the process of developing the regulations, the goal of the LCFS is to require a 10 percent reduction in carbon intensity by 2020. In other words, a company could replace all of their current fuel with an alternative that has 10 percent lower lifecycle GHG emissions, or half with a 20 percent lower alternative, and so on. The LCFS rewards the sources of energy that have the lowest lifecycle GHG emissions. Just as importantly, it penalizes high carbon fuels such as liquid coal.

This is in contrast to the original RFS, which was a simply volume mandate that almost totally ignored how the biofuels were produced. Our current tax credits for ethanol and biodiesel and our import tariff on ethanol are similarly blunt, ignoring the impacts or benefits of the fuels' lifecycle. While the current RFS is the first step towards setting performance based requirements, it is still a volume mandate for a specific set of fuels and these standards are floors. Electricity and natural gas can't be used to comply and there's no incentive for producing biofuels that perform better than minimum standards.

- ***Congress should pass comprehensive climate legislation adopting a carbon cap and trade system***

It is much harder to get biofuels right in the context of a broader economy where greenhouse gas emissions are not regulated. In order to meaningfully level the field between oil and renewable fuels and encourage the economy-wide changes in practices needed to drive a sustainable transportation sector, we need comprehensive approach to global warming. In addition to a low carbon fuel

standard this should include an economy-wide carbon cap and trade system. Senate bill S.2191, the Lieberman-Warner bill, includes both, Congress should pass this bill and the President should sign it as soon as possible.

- ***Congress should reform our existing biofuels tax credits and tariffs into a single technology-neutral, performance based incentive***

As I mentioned earlier, our existing biofuels tax credits and import tariffs are blunt, volume based policies that try to pick winners and in doing so fail to encourage the most beneficial practices and technologies. For instance, the volumetric ethanol excise tax credit (VEETC) gives a fixed tax credit of \$0.52 per gallon of ethanol regardless of how the ethanol is produced. Furthermore this tax credit is unavailable to butanol or biomass derived synthetic gasoline. Similarly the biodiesel blending tax credit is awarded on a per gallon basis regardless of whether the biodiesel is derived from palm oil grown in just cleared rainforests or waste grease diverted from a landfill. It's also not available to synthetic diesel. And our ethanol import tariff is similarly blunt.

All of our biofuels tax credits and tariffs should be re-crafted into a single technology-neutral performance based incentive. Building off of the lifecycle GHG accounting protocol being developed for the RFS, it would be relatively easy to link these incentives to improved GHG emissions, but I suggest that we go further. After all the RFS already starts us down the path towards biofuels with better GHG emissions and there are plenty of other ways that biofuels can help or hurt our environment. I recommend that we use the tax credits and tariffs to encourage

water efficiency, reduced water pollution, better soil management, and enhanced wildlife management. Developing accurate and workable accounting metrics for these impacts would be a non-trivial challenge, but many of the tools we have developed to implement farm bill conservation programs could be used here.

As the RFS ramps up the existing tax credits will become extremely expensive and could well end up increasing water pollution, soil erosion and degrading the modest wildlife habitat provided by our crop lands. While the farm bill is the best place to deal with agriculture's environmental impacts on a broad basis, our biofuels policies should be exacerbating these challenges. Furthermore, while the RFS will drive improvements to the performance of biofuels from new facilities, a revamped tax credit could drive improvements to our existing production. It's time to start paying for performance from our biofuels producers.

### **Conclusion**

Renewable fuels hold great promise as a tool for reducing global warming pollution, breaking our dangerous oil addiction, and revitalizing rural economies, as long as appropriate standards and incentives are used to shape the nascent bioenergy industry to provide these benefits in a sound and truly sustainable fashion. Congress deserves credit for the foresight it showed in starting to build these standards and safeguards into the new RFS. We should build on this foundation by making over the rest of our biofuels policies to be technology neutral and performance based. I look forward to working with the EPA to implement the RFS and with the Committee to continue to improve our biofuels policies.

Mr. BOUCHER. Thank you very much, Mr. Greene.  
Mr. Dinneen.

**STATEMENT OF BOB DINNEEN, PRESIDENT, RENEWABLE  
FUELS ASSOCIATION**

Mr. DINNEEN. Thank you, Mr. Chairman, Ranking Member Upton, members of the committee. I really appreciate the fact that you are holding this hearing today, Mr. Chairman. It gives us an opportunity to address some of the overblown hyperbole about this issue.

Mr. Chairman, the RFS made sense when you passed it in December and gasoline prices were \$90 a barrel. It makes more sense today with gasoline prices or crude oil prices at \$120 a barrel. When I said \$120, I am sorry. Just while this hearing has been going on, the market has increased. We are now looking at \$122-a-barrel oil. Ethanol is the only tool that we have today that can address the Nation's most serious economic issue: our dependence on imported oil and the rising price of gasoline and crude oil. A Merrill Lynch analyst recently had concluded that ethanol today reduced gasoline prices 15 percent. They would be 15 percent higher were it not for ethanol. An Iowa State University study said that consumers were saving between 29 and 40 cents a gallon, depending on where you were in the country, as a result of the use of ethanol.

Ethanol reduces gasoline costs for two reasons. One, it is cheaper than gasoline today. Today gasoline is trading at about \$3.07. Ethanol is trading for about \$2.50. It is also adding supply to a tight market. Ethanol today represents 7 percent of the U.S. motor fuel market. Ethanol is also the only tool that we have today to begin to address global warming. An analysis using the GREET model that DOE has developed demonstrated that the ethanol produced last year, some 6 billion gallons of high-quality motor fuel, reduced greenhouse gas emissions by somewhat 14 million tons. That is the equivalent of taking 2.5 million vehicles completely off the road.

Ethanol today is also the best tool that we have to create economic opportunities across rural America. Indeed, ethanol is revitalizing small towns across this country. There are 147 ethanol plants in operation today that are producing some 8.5 billion gallons of ethanol and 14 million metric tons of distillers feed. Ethanol has become a critical component of both the fuel and the feed markets. That is something that some critics of the ethanol industry don't recognize today, that we are just utilizing the starch, and what is left behind in ethanol product is a very high-value, high-protein feed product that is sold to dairy and cattle and poultry markets. We produce feed and fuel.

The causes of food price inflation today, as has been discussed, are complicated. They include rising demand, changing dietary habits, weather, droughts in Australia, in Europe, and floods in Indonesia that have devastated the rice crops, speculation in the market that is driving all commodities, and most certainly, the cost of oil. You can't produce \$2.50 corn with \$4.50 diesel fuel. Energy prices are driving agriculture commodity markets today. They are driving food markets today.

Take this in perspective. People want to say that this is about corn-derived ethanol, and indeed, ethanol has been growing. Corn farmers took the market signal a year ago. They planted more acres than they ever have, 93 million acres. They produced more corn than ever, 2.7 billion bushels more than the previous year. The increased demand for ethanol for that corn was just 600 million bushels. That means that there was 2.1 billion bushels grown last year over and above the increased demand for corn-derived ethanol. The increased ethanol demand or corn used for ethanol production last year was just 2 percent of the world corn supply. We are not driving that market. USDA suggests that their analysis concludes 3 percent of the total world food inflation is caused by ethanol, maybe. I think it might be overstated but I will accept that, but that means 97 percent is caused by other things.

Now, Scott Faber is going to tell you that well, that is true, there are these other things, but the only thing that we can do anything about is ethanol. Wrong. The single most important factor driving food price inflation today is oil and you are doing something about that. The RFS is doing something about that. We are reducing crude oil costs. We are reducing gasoline costs. Governor Perry from Texas, as has been discussed, has submitted a waiver request from this program. Our analysis suggests that if he is successful and he waives half of the renewable fuels standard so that 4.5 billion gallons of ethanol has to come out of the marketplace, gasoline prices will increase \$1.14 from \$3.68 to \$4.79. That is severe economic harm.

You will not have food security in this country unless and until you have energy security in this country. Ethanol is not the only answer. It is not the silver bullet but it is an extraordinarily important first step. The first-generation ethanol plants that are in production today are setting the foundation for the second generation of ethanol production. You need to make sure that we continue the investment that we have made toward domestic renewable fuels. We cannot allow the manufacturer hysteria about corn biofuels to derail the important progress that we are making toward a more energy-secure nation.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Dinneen follows:]



**Subcommittee on Energy and Air Quality  
of the Committee on Energy and Commerce  
United States House of Representatives**

**Hearing on**

**The Renewable Fuels Standard: Issues, Implementation, and Opportunities**

**Testimony of**

**Bob Dinneen  
President & CEO, Renewable Fuels Association**

**May 6, 2008**

Good morning Chairman Boucher, Ranking Member Upton, and Members of the Subcommittee. My name is Bob Dinneen and I am president and CEO of the Renewable Fuels Association (RFA), the national trade association representing the U.S. ethanol industry. I am pleased to be here this morning to discuss the positive impacts ethanol and other renewable fuels are having on our economy and environment, and the role of the Renewable Fuels Standard (RFS) in realizing those benefits.

The RFS was first established by the Energy Policy Act of 2005. The passage of this bill was an important step towards this country's energy independence, as well as providing economic and environmental benefits. By expanding the RFS, the Energy Independence and Security Act of 2007 ("2007 Energy Act") capitalizes on the substantial benefits that renewable



fuels offer to reduce foreign oil dependence and greenhouse gas emissions and to provide meaningful economic opportunity across this country.

### **Background**

Today's ethanol industry consists of 147 ethanol plants nationwide that have the capacity to turn more than 2 billion bushels of grain into 8.5 billion gallons of high octane, clean burning motor fuel, and more than 14 million metric tons of livestock and poultry feed. There are currently 55 ethanol plants under construction and 6 plants undergoing expansions. It is a dynamic and growing industry that is revitalizing rural America, reducing emissions in our nation's cities, and lowering our dependence on imported petroleum. America's domestic ethanol producers are providing significant economic, environmental and energy security benefits today.

In an overall environment of slowing economic growth, the U.S. ethanol industry stands out in sharp contrast. According to a report by economist John Urbanchuk of LECG, LLC, dated February 20, 2008, the American ethanol industry is a job creating engine. The increase in economic activity resulting from ongoing production and construction of new ethanol capacity supported the creation of 238,541 jobs in all sectors of the economy during 2007. These include more than 46,000 additional jobs in America's manufacturing sector -- American jobs making ethanol from grain produced by American farmers.

Ethanol is also helping to stem the tide of global warming, today. The use of low carbon fuels like ethanol is reducing greenhouse gas emissions from the more than 200 million cars on American roads. The 9 billion gallons of ethanol we will produce in 2008 will reduce

greenhouse gas emissions by more than 14 million tons, or the equivalent of taking 2.5 million vehicles off the road.<sup>1</sup> These benefits will only increase as new technologies, new feedstocks and new markets for renewable fuels are created.

#### **Renewable Fuels Standard – Promoting Investment in Cleaner Alternatives to Fossil Fuels**

The RFS provides meaningful incentives for investment in the production and infrastructure for biofuels in the U.S. to reduce this country's use of fossil fuels. By expanding the RFS, requiring that 36 billion gallons of renewable fuel be used annually by 2022, the 2007 Energy Act represents a significant moment in history when America chose a new energy policy path. The path includes reducing this country's dependence on fossil fuels in favor of renewable fuels that are better for the environment. An analysis conducted for the RFA using the U.S. Department of Energy's (DOE) existing GREET model shows that increasing the use of ethanol and other renewable fuels to 36 billion gallons annually by 2022 could reduce greenhouse gas emissions by some 176 million metric tons, equal to removing the annual emissions of more than 27 million cars from the road.<sup>2</sup>

Although some critics recently attempted to discount the benefits regarding greenhouse gas emission reduction that can be achieved through increased use of renewable fuels, the support for these claims are based on a questionable analysis of alleged international land use changes. Michael Wang with the Argonne National Laboratory and Zia Haq with the DOE, among others, have explained some of the many problems with this analysis, noting that they had found no indication that U.S. corn ethanol production has so far caused indirect land use changes

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<sup>1</sup> Air Improvement Resources, Inc., Feb. 2008.

<sup>2</sup> *Id.*

in other countries.<sup>3</sup> While more work needs to be done to understand the varying factors that may play a role in international land use changes, “conclusions regarding the GHG emissions effects of biofuels based on speculative, limited land use change modeling may misguide biofuel policy development.”<sup>4</sup> Moreover, ethanol production has significant benefits over fossil fuel use. For example, it was recently reported that greenhouse gas emissions from oil refineries in the Midwest are expected to increase by as much as 40 percent in the next decade because of the extra energy required to process heavy crude extracted from the tar-soaked clay and sand lying under the swampy forests of northern Alberta.<sup>5</sup>

Domestic agricultural and ethanol production continues to develop very effective conservation measures that assure that biofuels are being produced in the most efficient and sustainable way. The ethanol industry itself is moving toward cleaner energy use and is reducing its water consumption.<sup>6</sup> The expanded RFS and the 2007 Energy Act includes additional measures to promote conservation and provide protections for the environment.

In particular, the RFS will greatly enhance the climate change benefits attributable to today’s renewable fuels industry by encouraging more sustainable technologies and reducing the carbon footprint of future energy production. The expanded program requires that 21 billion gallons out of the 36 billion gallons come from advanced biofuels. Advanced biofuels, such as cellulosic ethanol, must have more than 50 percent reduction in lifecycle greenhouse gas emissions over gasoline. As such, Congress has provided the necessary assurance for ethanol producers and investors that a market for their product will exist. As a result, the

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<sup>3</sup> Michael Wang, Argonne’s Transportation Technology R&D Center, and Zia Haq, Department of Energy’s Office of Biomass, Response to February 7, 2008 Scienceexpress Article.

<sup>4</sup> *Id.*

<sup>5</sup> Michael Hawthorne, “Refinery pollution may soar Midwest projects would increase emission up to 40%,” Chicago Tribune, Feb. 12, 2008.

<sup>6</sup> May Wu, Argonne National Laboratory, Analysis of the Efficiency of the U.S. Ethanol Industry 2007, Mar. 27, 2008, at 1.

commercialization of these important next generation ethanol technologies will develop far sooner than conventional wisdom suggests.

For example, last November, Range Fuels, Inc. broke ground on a commercial cellulosic ethanol plant located in Treutlen County, Georgia. The facility will use wood and wood waste from Georgia's pine forests and mills as its feedstock. Verenum is operating a cellulosic ethanol pilot plant and research and development facility in Jennings, Louisiana, and expects to complete later this year a demonstration-scale facility using plant matter and farm scraps like sugarcane bagasse and wood chips as feedstock to produce cellulosic ethanol at the same site. Abengoa Bioenergy operates a cellulosic biomass-to-ethanol pilot plant in York, Nebraska that will research and test proprietary technology for use in commercial-scale conversion of biomass into ethanol. POET Energy will expand an existing corn-based ethanol facility in Emmetsburg, Iowa into a bio-refinery that will include production of cellulosic ethanol from corn cobs and stover. And Iogen plans to build a cellulosic ethanol facility utilizing wheat and barley straw. These are just some examples of projects in the works to develop cellulosic ethanol.

In addition to the RFS, many of the other biofuels programs authorized by the 2007 Energy Act make the expanded RFS absolutely achievable. The 2007 Energy Act moves ethanol and renewable fuels beyond being just a blending component in gasoline, and guarantees that sufficient volumes of ethanol will be available to support the meaningful expansion of E-85 and flexible fuel vehicle technology.

**Renewable Fuels Standard – Promoting the U.S. Economy and Energy Independence**

Expansion of the domestic biofuels industry will provide significant economic benefits in terms of a larger and more robust economy, increased income, new job creation in all sectors of the economy, and enhanced tax revenues at both the Federal and State levels. Increased biofuels production and use stimulated by the expanded RFS will also enhance America's energy security by displacing imported crude oil.

Specifically, expansion of the U.S. biofuels industry will<sup>7</sup>:

- Add more than \$1.7 trillion (2008 dollars) to the U.S. economy between 2008 and 2022;
- Generate an additional \$366 billion (2008 dollars) of household income for all Americans over the next 15 years;
- Support the creation of as many as 987,000 new jobs in all sectors of the economy by 2022;
- Generate \$353 billion (2008 dollars) in new Federal tax receipts; and
- Improve America's energy security by displacing 11.2 billion barrels of crude oil over the next 15 years and reduce the outflow of dollars to foreign oil producers by \$1.1 trillion (2008 dollars).

A recent report by the U.S. Department of Commerce's Bureau of Manufacturing and Services, *Energy in 2020: Assessing the Economic Effects of Commercialization of Cellulosic Ethanol*, noted the commercial viability of cellulosic ethanol will strengthen the competitiveness of many domestic industries and have a positive effect on the U.S. economy. In fact, the report found that annual benefits for American consumers would total \$12.6 billion if cellulosic ethanol production increased; U.S. crude oil imports would fall 4.1 percent if 20 billion gallons of cellulosic ethanol were produced in 2020, which is approximately 40 percent of current crude oil

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<sup>7</sup> John M. Urbanchuk, LECG LLC, "Economic Impact of the Renewable Fuel Standard Provisions of the Energy Independence and Security Act of 2007," Apr. 18, 2008, at 1-2.

imports from Venezuela; and, the global price of oil and the domestic U.S. fuel price would be 1.2 percent and 2.0 percent, respectively, lower than projected.

#### **Renewable Fuels Standards - Benefits to the Consumer**

With the ever-increasing price of oil, ethanol is helping to give consumers some relief. Using ethanol in the U.S. transportation fuel market helps lower gasoline prices by expanding gasoline supplies and reducing the need for importing expensive, high-octane, petroleum-based gasoline components or more crude oil from unstable parts of the world.

The Consumer Federation of America noted last fall in an analysis of the energy bill that at \$3.00 per gallon of gasoline, the 36 billion gallon RFS would save consumers approximately \$180 billion.<sup>8</sup> In response to calls to scale back the Missouri E10 mandate, which began this year, a study for the Missouri Corn Merchandising Council also found that the mandate will result in substantial savings to the consumer: “The price for an E-10 blend is projected to be 7.2 cents per gallon below that of conventional gasoline over the next ten years resulting in annual savings of nearly \$214 million, or \$54 per driver per year, at the consumer level with no loss in revenue for the state from gasoline taxes.”<sup>9</sup> A Merrill Lynch analyst recently told the Wall Street Journal that world oil prices would be 15 percent higher without the expansion of biofuel production.<sup>10</sup> Another recent study by the Center for Agriculture and Rural Development at

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<sup>8</sup> Consumer Federation of America, “No Time to Waste: America’s Energy Situation is Dangerous, but Congress Can Adopt New Policies to Secure Our Future,” Oct. 2007, at 4.

<sup>9</sup> John M. Urbanchuk, Director, LECG LLC, “Impact of Ethanol on Retail Gasoline Prices in Missouri,” Apr. 2, 2008, at 3.

<sup>10</sup> Patrick Barta, “As Biofuels Catch On, Next Task is to Deal with Environmental, Economic Impact,” The Wall Street Journal, Mar. 24, 2008, at A2.

Iowa State University estimates that ethanol production and use has caused gasoline prices to be \$.029 to \$.040 lower than they otherwise would have been.<sup>11</sup>

Recently, ethanol has received harsh criticism for allegedly driving up the price of corn and contributing to a rise in food prices. However, the evidence does not support that conclusion. A host of reasons play a role in driving food prices higher, including, for example, record oil prices, soaring global demand for commodities from oil to grains, poor weather conditions, a collapsing dollar, and restrictive agricultural policies around the world.

A report by Informa Economics, Inc. found the “marketing bill” -- the portion of final food costs that excludes grains or other raw materials -- is a key driver of the consumer price index (CPI) for food, largely due to rising energy and transportation costs.<sup>12</sup> There has been a sharp rise in marketing costs, which account for approximately 80 percent of food prices today.<sup>13</sup> This is up from 67 percent in the 1970s. Labor costs are the biggest component of the retail food dollar and are expected to continue to fuel food price increases. The farm commodity share of food prices, on the other hand, has diminished. The share has reduced from approximately 33 percent in the 1970s to approximately 20 percent today.<sup>14</sup> As the Informa Economics report concludes, “the statistical evidence does not support a conclusion that the growth in the ethanol industry is driving consumer food prices higher.”<sup>15</sup> Informa Chairman and Chief Executive Officer Bruce Scherr stated: “The statistical analysis plainly details that energy-intensive activities such as processing, packaging and transporting, as well as the cost of labor, have a far greater impact on consumer food bills than the price of grain. It may be politically convenient to

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<sup>11</sup> Xiaodong Du and Dermot J. Hayes, “The Impact of Ethanol Production on U.S. and Regional Gasoline Prices and on the Profitability of the U.S. Oil Refinery Industry,” Working Paper 08-WP 467, Apr. 2008, at 13.

<sup>12</sup> Informa Economics, “Analysis of Potential Causes of Consumer Food Price Inflation,” Nov. 2007, at 4.

<sup>13</sup> Federal Reserve Bank of Kansas City, *What is Driving Food Price Inflation?* The Main Street Economist: Regional and Rural Analysis, 2008, Vol. III, Issue I, at 2.

<sup>14</sup> *Id.*

<sup>15</sup> Informa Economics, *supra* note 12, at 5.

blame ethanol for rising food prices but it doesn't make it factually accurate. As far as Informa is concerned, this debate is settled."<sup>16</sup>

In fact, energy prices are a large component of the retail food dollar: "Surging energy costs will also translate into higher food prices in 2008."<sup>17</sup> The U.S. Department of Agriculture's Economic Research Service estimates direct energy and transportation costs account for 7.5 percent of the overall average retail food dollar; "This suggests that for every 10 percent increase in energy costs, the retail food prices could increase by as much as 0.75 percent if fully passed on to consumers."<sup>18</sup> In fact, oil prices have twice the impact on rising consumer food prices than does the price of corn.<sup>19</sup>

Ethanol production also provides highly valuable feed co-products, keeping food production costs down. A modern dry-mill ethanol refinery produces approximately 2.8 gallons of ethanol and 17 pounds of distillers grains from one bushel of corn. The distillers grains are a protein-rich animal feed that can be supplemented by low-cost bulk foods like alfalfa, keeping the farmer's costs down.

Critics of the ethanol industry have also failed to recognize the advances that the agricultural and ethanol industries have made to meet demand in the most efficient and environmentally sensitive manner. Technological advances have enabled farmers to boost agricultural productivity to meet demands, including rising global demands with continuing increases in population around the world. "[W]hile corn ethanol production increased almost 30-fold between 1980 and 2006, the number of corn farming acres held steady—at around 80

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<sup>16</sup> Informa Economics, Inc., "Marketing Costs and Surging Global Demand for Commodities are Key Drivers of Food Price Inflation," News Release Dec. 10, 2007, <http://www.informaecon.com/NewsReleaseDec10.pdf>.

<sup>17</sup> Federal Reserve Bank of Kansas City, *supra* note 13, at 3.

<sup>18</sup> Statement of Joseph Glauber, Chief Economist, USDA, Before the Joint Economic Committee, U.S. Congress, May 1, 2008.

<sup>19</sup> See, e.g., John M. Urbanchuk, LECG LLC, "The Relative Impact of Corn and Energy Prices in the Grocery Aisle," June 14, 2007, at 1.



million acres.”<sup>20</sup> “[A]s in the past, stronger agricultural productivity could help keep higher food price inflation at bay.”<sup>21</sup> In addition, a recent analysis provided to RFA by May Wu with the Argonne National Laboratory found that from 2001 to 2007, ethanol yield per bushel of corn increased 6.4 percent for dry mills and 2.4 percent for wet mills; total energy use (fossil and electricity) decreased 21.8 percent in dry mills and 7.2 percent in wet mills; and grid electricity use decreased 15.7 percent in dry mills.<sup>22</sup>

As summarized by the former Secretary of Agriculture John Block at an April 30, 2008 press conference: “A complex set of factors are at work helping to drive food prices higher around the world. ... Singling out biofuels like ethanol for all or even the majority of the blame misses the boat. Ethanol production and use is helping to keep oil and gasoline prices lower than they might otherwise be and preventing the situation from getting worse.”<sup>23</sup>

#### **Renewable Fuels Standard - The Need for Greater Investment in Renewable Fuel Infrastructure**

##### *Transportation and Distribution*

As the demand for fuel ethanol grows, the infrastructure available to transport, store and blend ethanol into gasoline has expanded as well. The U.S. ethanol industry has been working to expand a “Virtual Pipeline” through aggressive use of the rail system, barge and truck traffic. As a result, we can move product quickly to those areas where it is needed. Many ethanol plants have the capability to load unit trains of ethanol for shipment to ethanol terminals in key

<sup>20</sup> Michael Wang, et al., Life-cycle energy and greenhouse gas emission impacts of different corn ethanol plant types, *Environ. Res. Lett.* 2 (April–June 2007), available at [http://www.iop.org/EJ/article/1748-9326/2/2/024001/erl7\\_2\\_024001.html](http://www.iop.org/EJ/article/1748-9326/2/2/024001/erl7_2_024001.html).

<sup>21</sup> Federal Reserve Bank of Kansas City, *supra* note 13, at 5.

<sup>22</sup> May Wu, *supra* note 6, at 1.

<sup>23</sup> See National Corn Growers Association, “Increasing Food Prices: It’s All About Oil, Speculation, Drought and Worldwide Demand (4-30-08),” <http://www.ncga.com/news/notd/2008/April/043008a.asp>.

markets. Unit trains are quickly becoming the norm, not the exception, which was not the case just a few years ago. Railroad companies are working with our industry to develop infrastructure to meet future demand for ethanol. We are also working closely with terminal operators and refiners to identify ethanol storage facilities and install blending equipment. We will continue to grow the necessary infrastructure to make sure that in any market we need to ship ethanol, there is rail access at gasoline terminals, and that those terminals are able to take unit trains.

A new ethanol trading and distribution center recently opened in Manley, Iowa, for example, that will help the industry distribute ethanol more efficiently. There will be more than 75 ethanol plants within 275 miles of the Manley terminal in operation by the end of 2009 – representing approximately 5.1 billion gallons. The Manley Terminal LLC will have storage capacity for 20 million gallons of renewable fuels. The facility will improve the efficiency of ethanol distribution by consolidating shipment in larger 70 to 95-car unit trains, and by improving utilization of ethanol suppliers' tank cars.

Today, there is limited shipment of ethanol via pipeline. However, several major pipeline owners are considering various ethanol pipeline shipment scenarios. And the U.S. Department of Transportation has initiated a project to work with the industry to overcome barriers to pipeline shipments. Looking to the future, completion of a study on the feasibility of transporting ethanol by dedicated pipeline from the Midwest to the East and West Coasts, as was provided for in the 2007 Energy Act, will be critical.

*Retail - E85 and Mid-level Blends*

There are more than 230 million cars on American roads today that are capable of running on 10 percent ethanol blended fuel, while only 6 million vehicles are flexible fuel vehicles that are capable of using up to 85 percent ethanol (E85). America's automakers and the

ethanol industry continue to work to develop the infrastructure and provide the vehicle fleet necessary to grow the E85 market. A key to the expanded use of E85 will be a significant increase in E85 refueling infrastructure. In recognition of the need and importance of E85, the 2007 Energy Act included an expansion of the Petroleum Marketing Practices Act ("PMPA") to ensure that E85 infrastructure could be installed at stations run by franchisees, if they chose to. Specifically, the amendment prohibits restrictions by franchisors on franchisees or any affiliate of the franchisee related to the installation of renewable fuel infrastructure and advertising and sale of such renewable fuel. However, renewable fuel is defined in the amendment to the PMPA to include only E85 and certain biodiesels. Thus, the 2007 Energy Act's amendments to the PMPA do not address mid-level blends of ethanol. In addition to E85, fuels with lower ethanol content, such as E15 or E20, may play an important and key role in meeting the new renewable fuel standard requirements.

The ethanol industry today is engaged in testing of higher blend levels of ethanol, beyond E10. There is evidence to suggest that today's vehicle fleet could use higher blends. The State of Minnesota and the RFA recently completed a yearlong study on the effect and performance of gasoline blended fuels containing 20 percent volume fuel ethanol. The study was comprised of three main areas of investigation: drivability, materials compatibility, and emissions. The yearlong project resulted in four separate and distinct materials compatibility reports demonstrating that 20 percent ethanol blended fuels are not harmful to current automotive or fuel dispensing equipment. The drivability study proved the 20 percent blend not only performed as well as currently available fuels, but also operated effectively irrespective of outside air temperature. However, more work needs to be done, and the RFA is continuing to work with the DOE and other stakeholders to resolve other issues in order to make mid-level blends available.

**Renewable Fuels Standards - Implementation and Technical Corrections**

The U.S. Environmental Protection Agency (EPA) is currently working on regulations to implement the expanded RFS. RFA commends EPA for its prior efforts in promulgating the current regulations and believes that these regulations form a good starting point. However, much work still needs to be done to incorporate the new requirements, particularly those regarding renewable biomass and greenhouse gas emission reductions, to address potential inconsistencies with the 2007 Energy Act amendments, and to ensure a workable and practical program. For example, EPA's treatment of imports and application of key provisions to foreign producers of renewable fuels are of particular importance due to the added difficulties in enforcement. The RFA looks forward to continuing to work with EPA on developing its regulations to ensure that the volume requirements are met without imposing undue obligations on renewable fuel producers here at home.

As with any new law, however, there will be technical corrections and other adjustments necessary to allow the expanded RFS to function as intended. For example, the 2007 Energy Act provides for public notice and comment in other determinations by the Administrator regarding lifecycle greenhouse gas emission, except for those provided in the definitions for "cellulosic biofuel" and "lifecycle greenhouse gas emissions." Notice and comment should be required for all lifecycle emissions determinations.

The 2007 Energy Act excludes the possibility for plants using corn starch, which is defined as "conventional biofuel," to qualify as "advanced biofuel." Advanced biofuels must meet a 50 percent reduction in greenhouse gas emissions. However, one pathway for the use of

cellulosic feedstocks is for corn stover and other cellulosic material to be co-processed with corn starch. The existing provision could be interpreted as precluding the ethanol produced from such a facility from being considered advanced biofuel. Moreover, with new more sustainable technologies, it is quite possible that corn-derived ethanol may one day meet the 50 percent reduction in greenhouse gas emissions benchmark of advanced biofuels. Corn starch ethanol plants should be incentivized to reduce their greenhouse gas emissions, and reaching the targets established for other processes should be rewarded. One option is to delete the term “conventional biofuel” and the exceptions for corn ethanol from the definition of advanced biofuels. Given the strict requirements in the 2007 Energy Act, there is no reason to preclude any facilities from the benefits otherwise provided for achieving a 50 percent reduction in greenhouse gas emissions.

To address potential supply issues of cellulosic and biomass-based diesel to meet the required volumes, the 2007 Energy Act includes specific waivers of their required volumes. However, the 2007 Energy Act also states that the Administrator may reduce the overall renewable fuel and advanced biofuel volume requirements, potentially solely in light of the reductions of these particular biofuels. These provisions arguably conflict with the criteria for such waivers under Section 211(o)(7)(A) of the Clean Air Act and appear to be without regard to whether other renewable fuel or advanced biofuels are available to make up the difference. Under these provisions as written, interested parties may also lose the ability to participate in the process. There is no policy reason to allow for reductions of the overall advanced biofuel or renewable fuel requirements if there is more than adequate supply of other renewable fuels or advanced biofuels.

Any reductions of the advanced biofuel and renewable fuel requirements should be limited to the criteria under Section 211(o)(7)(A) and any amounts of cellulosic biofuel or biomass-based diesel that are waived should be made up with other advanced biofuels or renewable fuels. In other words, any necessary waivers of cellulosic biofuel or biomass-based diesel should not reduce the required volumes for advanced biofuel or renewable fuel if other biofuels can make up the difference. This preserves the incentives for cellulosic biofuels, but accounts for the potential that the industry cannot keep pace, while preserving the overall goal of the 2007 Energy Act to require a specific amount of renewable fuel be sold each year to reduce greenhouse gas emissions and dependence on foreign oil.

Of increasing concern, however, is the application of the waiver provisions regarding the overall RFS in Section 211(o)(7)(A). The 2007 Energy Act did not change the standard for granting such waivers, but did expand the provision, starting in 2009, to allow any obligated party and EPA, on its own motion, to seek such a waiver. In passing the RFS, Congress expressly intended that the volume of gasoline used be reduced and increasingly replaced by renewable fuels. Congress provided for limited waivers in the case of inadequate domestic supply or where implementation of the requirement would *severely harm* the economy or environment of a State, a region, or the United States.

On April 25, 2008, Governor Rick Perry of Texas requested that EPA issue a waiver of 50 percent of the RFS for 2008, citing alleged economic impacts on Texas and food price increases. Governor Perry's request is based on data purportedly demonstrating that implementation of the RFS is having a negative impact on Texas' economy due to increased price of corn, an economy that the Governor also claims to be "the strongest in the nation." The Governor also references the costs at the grocery store, but in the Texas A&M study the

Governor himself cites as support, it was concluded that relaxing the standard would not affect food prices.

Governor Perry's request acknowledges that reducing the mandate will result in increased gasoline prices. Indeed it will. Removing 4.5 billion gallons of ethanol from the market, as envisioned by Governor Perry's waiver request, would increase gasoline prices in the short term (up to one year) by up to 31 percent.<sup>24</sup> This means that the current average retail price of \$3.65 per gallon would increase to \$4.79 per gallon! Such an increase in gasoline prices across the country would be devastating to all Americans. The longer-term response would be smaller, approximately 13 percent, but still a crippling impact on the U.S. economy.

Under the statute, EPA has 90 days to respond to this request and provide the public with an opportunity to comment. So that the public will have a meaningful opportunity to participate in this process, EPA should consider outlining the requirements for submitting future requests and the criteria EPA will use in making its determination. EPA must keep in mind the strict limits Congress imposed on granting such waivers.

### **Conclusion**

The RFS is a testament to what we can do when we work together toward a shared vision of the future. By increasingly relying on domestically produced renewable fuels, including next generation technologies such as cellulosic ethanol, we can begin the hard work necessary to mitigate the impact of global climate change, reduce our dependence on foreign oil, and leave a more stable and sustainable future for generations that follow.

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<sup>24</sup> Dr. John Urbanchuk, LECG, LLC. May 2, 2008.

Without question, EPA has a substantial amount of work ahead of it to implement this important program, and the U.S. ethanol industry stands ready to work with you to assure the journey you embarked upon with passage of the 2007 Energy Act is realized.

Thank you.



Mr. BOUCHER. Thank you, Mr. Dinneen.  
Mr. Drevna, we will be happy to hear from you.

**STATEMENT OF CHARLES T. DREVNA, PRESIDENT, NATIONAL  
PETROCHEMICAL AND REFINERS ASSOCIATION**

Mr. DREVNA. Thank you, Chairman Boucher, Ranking Member Upton and members of the subcommittee.

Twenty years ago this week, NPRA testified at a hearing of three House subcommittees and the hearings were entitled "The Role of Ethanol in the 1990s." In that testimony, NPRA cautioned, and I quote, "Broad national mandates of ethanol use represent poor public policy. Such mandates will impose significant costs on consumers and on the Nation." NPRA's statement 20 years ago went on to warn of the potential of increased costs of both food and fuel under a national ethanol mandate. The testimony also raised concerns regarding distribution, pointing out that our Nation lacked the transportation infrastructure to move large volumes of ethanol. And finally, the statement referenced consumers' concerns about the possible harmful effects of ethanol-blended fuels on their motor vehicles.

Twenty years later, the concerns about ethanol mandates remain. Today we are faced with a massive biofuel mandate that in our opinion is unsustainable, untenable and unworkable for all the reasons pointed out 20 years ago and then some.

Mr. Dinneen just mentioned that corn took the market signal. There was no market signal. It was a direct signal from Congress mandating how much ethanol was to be used. A free market would have done otherwise. Mr. Dinneen also mentioned the fact that ethanol is cheaper than gasoline. Well, it may be cheaper at the pump to put it in but the American taxpayer pays for it again every April 15. That has to be taken into consideration too.

These issues and concerns are described in detail in our written testimony so I won't address all of them here, but the topic we are hearing most about today is the impact of biofuels on food prices. Not even 5 months after the enactment of the new biofuels mandate, the chickens are coming home to roost and we literally can't afford to feed them. The price of corn, the source of 97 percent of ethanol in the United States, and also the main ingredient in chicken feed, has tripled over the past 2 years. The other primary ingredient in chicken feed, soybeans, has nearly doubled in cost just the past year. So in fact, we can't afford eggs either. According to the U.S. Bureau of Labor Statistics, the price of eggs has gone up 35 percent since March 2007.

Now, again, I will agree with Mr. Dinneen that all this cannot be attributed to biofuels but a Purdue University study released in September of 2007 found that of the estimated \$22 billion in additional food costs in the United States in 2007, about two-thirds of the increase, or about \$15 billion, is directly related to biofuels. Yet as a May 1st article in the Washington Post points out, the pain that American consumers are feeling due to high grocery prices "pales when compared with the challenges faced by those in the developing world." Studies by the Organization of Economic and Co-operation Development found out that "the rush to energy crops threatens to cause food shortages and damage to the biodiversity."

World Bank President Robert Zoellick stated recently that biofuels is a significant contributor to rising fuel costs. The list goes on.

Mr. Chairman, these are just a few of the things that have been said recently regarding biofuels and food prices, and while the relationship between the two is significant and not receiving the necessary scrutiny, we should also consider the negative effects on both water quality and quantity as well as the land-use issue including greenhouse gas emissions that scientists, including a Nobel laureate, have expressed concerns with.

Now here in the United States, more and more members of this body from both sides of the aisle across the Nation are beginning to speak out against new biofuels mandates. The governors of the State of Texas, and also, not mentioned yet today, the State of Connecticut, have already requested waivers from the RFS, so this is not a southwestern oil-producing kind of concern. There are no refineries in Connecticut.

Last December, despite warnings from scientists, economists, environmentalists, food producers, and others, Congress passed a new renewable fuels standard. We along with many others from a broad range of interests hope that Congress is now willing to heed those warnings and repeal a well-intentioned but clearly misguided policy.

I want to take my remaining 15 seconds again to say, as the refining industry, we support the use of ethanol, we support the use of advanced biofuels, but what we have done since December with the mandate is so frontload, these requirements, and we are basing a lot on the advent of technology for cellulosic, which is fine, but there is a gap. There is a huge gap between what we can and what can't be done in producing ethanol from any source, let alone cellulosic or advanced fuels. Now, at a hearing that Mr. Dinneen and I were at on the Senate side on February 7, he continually mentioned "we look forward to", "we hope to", "we have faith that we will get cellulosic." Well, I guess this is some new faith-based initiative. Unfortunately, we in the refining industry have to comply with this or we face \$32,000-a-day penalties.

So we ask that Congress take a long, hard look at this and I appreciate it, and I am sorry for running over time, Mr. Chairman, but again, thanks for letting me state what we think the current situation is.

[The prepared statement of Mr. Drevna follows:]



Written Statement of the  
**National Petrochemical & Refiners Association**

delivered by  
**Charles T. Drevna**  
**President, NPRA**

before the  
**United States House Energy and Commerce Committee**  
**Subcommittee on Energy and Air Quality**

concerning  
Implementation of the Renewable Fuel Standard

**May 6, 2008**  
**Washington, DC**

Chairman Boucher, Ranking Member Upton, and members of the subcommittee, I am Charles T. Drevna, President of NPRA, the National Petrochemical and Refiners Association. NPRA is a national trade association with more than 450 members, including those who own or operate virtually all U.S. refining capacity, as well as most of the nation's petrochemical manufacturers who supply "building block" chemicals necessary to produce products ranging from pharmaceuticals to fertilizer to Kevlar. I am grateful for the opportunity to share our views on the significant, and unfortunately negative, impacts that the recently enacted renewable fuel standard increase is having on energy markets, consumers and the American economy.

There is little doubt that alternative fuels will continue to be a significant component of our nation's transportation fuel mix. However, as we have stated on many occasions, including last year before this Committee, NPRA opposes the mandated use of alternative fuels and supports the sensible and workable integration of alternative fuels into the marketplace based on market principles. Energy policy based on mandates is not a recipe for success. There is no free market if every gallon of biofuels – including those that do not exist – is mandated. Mandates distort markets and result in stifled competition and innovation.

Last year, 6.49 billion gallons of ethanol was produced domestically and 0.43 billion gallons of ethanol was imported. Biodiesel consumption was about 0.3 billion gallons. Therefore, total renewable fuels for transportation purposes in the U.S. in 2007 was about 7.2 billion gallons.

Ethanol is currently used in about two-thirds of U.S. gasoline supplies. And despite the misperceptions, our industry supports the use of renewables. In fact, we are currently the largest consumers of ethanol and will continue to rely on ethanol as a vital gasoline blend stock. However, we believe that allowing the market to operate is the best way to address consumer needs at reasonable prices.

Before Congress passed the Energy Independence and Security Act of 2007 (H.R. 6) and sent it to the President for his signature, the facts about ethanol mandates and the unintended consequences for both American consumers and the environment were fully disclosed. Unfortunately, these warnings were ignored.

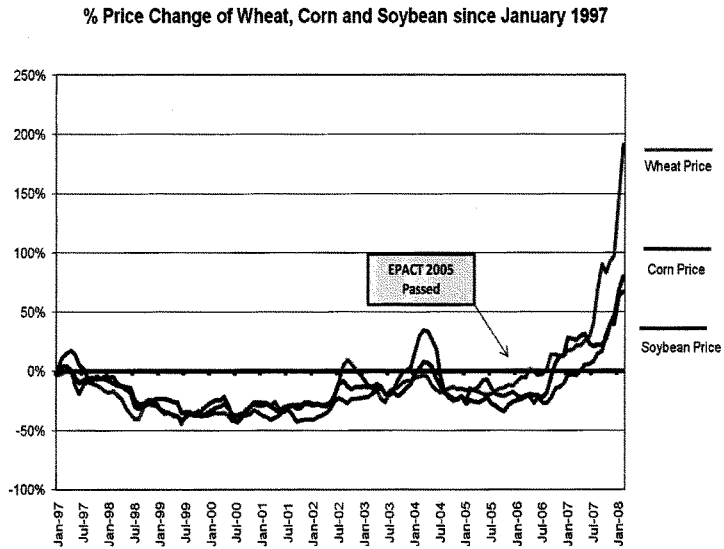
Recent studies and reports have confirmed that biofuels mandates have led to price increases for food. Grocers, restaurant owners and cattlemen have noted how biofuels mandates have dramatically increased the price of corn, making feed for livestock and cattle more expensive. This situation translates directly into higher food prices for American consumers. A FarmEcon.com study noted: "The ethanol subsidy program is now increasing the cost of food production though side effects on major crop prices and plantings. The cost increases are already starting to show up in the prices of meat, poultry, dairy, bread, cereals and many other products made from grains and soybeans."<sup>1</sup> On April 25, USDA reported weekly average corn prices ranging \$5.29-5.59/bushel, compared to \$3.22-4.41/bushel 12 months ago for Iowa, Nebraska, and South Dakota;<sup>2</sup> this is a substantial one year increase for these states, about 60%.

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<sup>1</sup> Dr. Thomas Elam, *Fuel Ethanol Subsidies: An Economic Perspective*, FarmEcon.com, September 19, 2007, p. 2.

<sup>2</sup> USDA Livestock & Grain Market News, April 25, 2008

The chart below shows USDA data on wheat, corn and soybean price changes before and after EPAct05 was passed.



A June 2007 GAO report highlighted the higher costs associated with biofuels. Among several findings, the report noted: "According to NREL (National Renewable Energy Laboratory), the overall cost of transporting ethanol from production plants to fueling stations is estimated to range from 13 cents per gallon to 18 cents per gallon, depending on the distance traveled and the mode of transportation. In contrast, the overall cost of transporting petroleum fuels from refineries to fueling stations is estimated on

a nationwide basis to be about 3 to 5 cents per gallon.”<sup>3</sup> The dramatic increase in the biofuels mandate under the new law continues to increase the strain on our already congested transportation infrastructure that could very likely drive the costs of shipping ethanol up even further. In addition to these costs being passed on to consumers, strained transportation avenues could create fuel supply problems.

The costs and strains of these transportation challenges are only some of the problems associated with dramatically increased mandates of renewable fuels. Ethanol-powered vehicles also have lower fuel efficiency (due to ethanol’s lower energy content compared to regular gasoline), as well as limited availability and infrastructure. According to the Department of Energy’s Office of Energy Efficiency and Renewable Energy, flex fuel vehicles (FFVs) – cars that can run on either gasoline or a mixture of 85 percent ethanol and 15 percent gasoline (known as E85) – get “about 20-30% fewer miles per gallon when fueled with E85.”<sup>4</sup> Given this situation, AAA releases an “E85 MPG/BTU Adjusted Price” in its daily fuel gauge report. It has not been uncommon for this report to show an E85 adjusted price that exceeds the price of a gallon of gasoline by as much as 80 cents.<sup>5</sup>

The limited number of FFVs is also a problem if significantly larger volumes of renewable fuels are to be forced into the market. The only vehicles that can operate on fuel blended with more than 10 percent ethanol (known as “E-10”) are flex fuel vehicles. The Alliance of Automobile Manufacturers’ website ([www.discoveralternatives.org](http://www.discoveralternatives.org)) notes there are currently 11 million alternative fuel vehicles on American roads – a small fraction of the 240 million plus vehicles Americans are driving today.<sup>6</sup> The National Ethanol Vehicle Coalition estimates about 6 million of these are FFVs.<sup>7</sup> In addition, over the next several years, automakers have indicated that while they intend to produce more FFVs, they will still

<sup>3</sup> U.S. Government Accountability Office, “Biofuels: DOE Lacks a Strategic Approach to Coordinate Increasing Production with Infrastructure Development and Vehicle Needs,” GAO-07-713, June 2007, p. 23.

<sup>4</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, [fueleconomy.gov: http://www.fueleconomy.gov/feg/flextech.shtml](http://www.fueleconomy.gov/feg/flextech.shtml).

<sup>5</sup> For daily price information from AAA, see <http://www.fuelgauge.com/>.

<sup>6</sup> U.S. Department of Transportation, Bureau of Transportation Statistics, “National Transportation Statistics 2007”: [http://www.bts.gov/publications/national\\_transportation\\_statistics/html/table\\_01\\_11.html](http://www.bts.gov/publications/national_transportation_statistics/html/table_01_11.html)

<sup>7</sup> National Ethanol Vehicle Coalition website: [http://www.e85fuel.com/e85101/faqs/number\\_ffvs.php](http://www.e85fuel.com/e85101/faqs/number_ffvs.php)

be producing gasoline-only vehicles at a rate of about seven or eight to one in relation to FFV production. The new ethanol mandate will most likely require fuel blends in excess of E-10 possibly as early as 2010. However, in addition to existing legacy fleets (e.g. cars that have been purchased up to this point in time that run only on gasoline and won't be retired for several years), there will be a new class of vehicles that may be unable to operate on required fuel blends. This is particularly important given the fact engine and fuel pump makers will not provide warranties for fuel-related equipment malfunctions if blends greater than E-10 are used with those products. I will address this in greater detail later in my testimony.

While many point to cellulosic ethanol as a potential solution to problems, that particular fuel poses its own set of challenges. Cellulosic ethanol technology is still very costly and is not commercially available – let alone produced at levels adequate to meet the new mandates in the new energy law. Early last year, the Energy Information Administration noted, “Capital costs for a first-of-a-kind cellulosic ethanol plant with a capacity of 50 million gallon per year are estimated by one leading producer to be \$375 million (2005 dollars), as compared with \$67 million for a corn-based plant of similar size, and investment risk is high for a large-scale cellulosic ethanol production facility.”<sup>8</sup> The report noted that given those costs, no cellulosic plant had been built or was in operation at that time (February 2007). At that same time last year, the Department of Energy announced they were allocating \$385 million to help fund six cellulosic ethanol plants that would produce about 130 million gallons annually, but it is highly unlikely those plants will be producing at full capacity in time to meet the new law's 2010 mandate of 100 million gallons, and will not produce enough for the 250 million gallon target for 2011.<sup>9</sup>

The Energy Policy Act of 2005 included a cellulosic ethanol mandate of 250 million gallons starting in 2013. The Food and Agriculture Policy Research Institute (FAPRI), however, projects only

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<sup>8</sup> U.S. Energy Information Administration, “Biofuels in the U.S. Transportation Sector,” February 2007: <http://www.eia.doe.gov/oiaf/analysispaper/biomass.html>

<sup>9</sup> Wong, Jetta, “U.S. Bioenergy Policies: What is Currently Being Done and What Needs to be Done?”, Environmental & Energy Study Institute, May 8, 2007, p. 13: [http://www.eesi.org/publications/Presentations/2007/jw\\_swedish\\_5-8-07.pdf](http://www.eesi.org/publications/Presentations/2007/jw_swedish_5-8-07.pdf)



about 213 million gallons of cellulosic may be produced in that year.<sup>10</sup> This adds little support to the argument that a mandate will drive the technology and economics of producing a certain product. As previously mentioned, the new energy law mandates 100 million gallons of cellulosic in 2010 – only a year and a half from now. FAPRI's estimate on cellulosic production for that year is only 27 million gallons – 27 percent of what is required in the law. That's a lot of ground to make up in a short time frame. Failure to meet these figures will prevent refiners from complying with the law's targeted volumes, leading not only to cost increases from unavoidable and onerous financial penalties, but potentially creating significant supply shortages.

The new energy law calls for a Renewable Fuels Standard with not one but four different mandates that will equal 36 billion gallons by 2022. It requires that 9 billion gallons of renewable fuel be blended into the transportation fuel supply *this year* (a large increase from a total of 7.2 billion gallons in 2007), ratcheting up to 36 billion gallons in 2022. In addition, it contains three other subset mandates: an "advanced biofuel" requirement of 600 million gallons in 2009, scaling up to 21 billion gallons in 2022; a specific cellulosic biofuel mandate of 100 million gallons in 2010, ratcheting up to 16 billion gallons in 2022; and a biodiesel mandate of 500 million gallons in 2009 moving up to 1 billion gallons in 2012. We understand that this is the law of the land and you have the commitment of the domestic refining industry that we will do our very best to comply. However, this mandate will have significant detrimental effects to our country and its consumers that extend beyond what could be accomplished through any sort of legislative change short of repeal.

### ***The Petroleum Industry Faces Compliance Problems Now***

The Energy Policy Act of 2005 created the first mandatory Renewable Fuel Standard (referred to as RFS1 later in this testimony). It required 7.5 billion gallons of ethanol to be blended into our nation's fuel supply by 2012, with refiners responsible for showing compliance with the mandate through a credit

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<sup>10</sup> Food and Agricultural Policy Research Institute, "World Biofuels: FAPRI 2007 Agricultural Outlook," p. 319.

program. EPA promulgated comprehensive regulations (72 FR 23900; 5/1/07) implementing this law and the regulatory program began on September 1, 2007. It requires that the mandated volumes of renewable fuels for the appropriate compliance year (i.e. ethanol and biodiesel) be used in transportation fuel supply through a credit trading and banking program. EPA created an averaging program with a calendar year compliance period that stipulates what percentage of RFS credits refiners must hand over in relation to their contribution to our country's fuel supply in order to comply with the law.

The new energy bill requires 9.0 billion gallons of renewable fuels in 2008. Assume hypothetically for the moment that 12 billion gallons of renewable fuels *actually will* be produced and imported in 2008 (at best a problematic assumption). This does not help a refiner's RFS compliance in 2008 unless at least 9.0 billion gallons is actually blended in gasoline or diesel. It is most doubtful there is enough infrastructure available for that to happen.

Gasoline is a hydrocarbon. When gasoline is combusted in a vehicle, a small portion of the exhaust emissions that come from the tailpipe consist of hydrocarbons. Hydrocarbon emissions also evaporate from a vehicle's gasoline tank on a hot day. Such emissions are a precursor to the formation of ground-level ozone, or smog. One strategy to reduce ozone concentrations is to limit hydrocarbon emissions from the use of gasoline. This can be accomplished by a maximum standard on the Reid vapor pressure (RVP) of summer gasoline. RVP is an indicator of gasoline's volatility. Lower RVP reduces gasoline's hydrocarbon emissions. Summer RVP standards are usually a per-gallon maximum 9.0, 7.8, or 7.0 pounds per square inch (psi). EPA and states have controlled summer gasoline RVP for over 15 years.

When ethanol is added to gasoline, the gasoline-ethanol blend has a higher RVP than gasoline without ethanol. Therefore, adding ethanol to gasoline can exceed RVP limits. Section 211(h)(4) of the Clean Air Act provides a 1 psi RVP waiver (i.e. fuel blends can be 1 psi higher than the applicable maximum 9.0, 7.8, or 7.0 psi) for conventional gasoline blended with 9-10 vol% ethanol. This means that

gasohol can exceed the applicable RVP limit by 1 psi if the blend contains between 9 and 10 vol% ethanol, leading to the formation of more smog-creating emissions.

If a delivery truck pulls up to a retail station in the summer with a load of gasohol (E10 – 10 percent ethanol, 90 percent gasoline) and the underground retail tank has had no E10 deliveries before, then the RVP regulation may be violated because the retail tank would have less than 9 vol% ethanol (the average of summer conventional gasoline without ethanol still in the tank and the new delivery of E10 could result in less than E9 after the new delivery). Therefore, if the retail station starts the summer with conventional gasoline without any ethanol, it cannot readily convert to E10 until the summer season ends and the summer RVP regulation does not apply. This obviously constrains the conversion of conventional gasoline retail stations to E10 this summer.

As previously noted, the current RFS program includes credit banking and trading. RFS credits are called renewable identification numbers (RINs). Each volume of renewable fuel produced is assigned a RIN that is separated from that physical volume when it is blended into the fuel supply. Refiners then buy that RIN credit from the terminal doing the blending and use it for RFS compliance. Refiners also detach the credits themselves as obligated parties. RINs cannot be used for compliance by a refiner until it is detached from a barrel of ethanol or biodiesel (usually when it is blended with gasoline or diesel). Speculators are currently allowed to buy these RINs for later resale to a gasoline refiner or importer.

One RFS compliance option for refiners in 2008 is carryover of a 2008 RFS deficit to 2009. However, that refiner cannot carry over a deficit for two consecutive years (see Clean Air Act section 211(o)(5)(D), inserted by the Energy Policy Act of 2005, and RFS1 regulations at 40 CFR 80.1127(b)). It is not clear that that refiners can fully comply in 2009 with 2009 RINs and purchase additional RINs in 2009 to also meet its RFS deficit for 2008. The RIN supply in 2009 may not be large enough. Lots of ethanol may be produced and imported in 2009, but not all of it may be blended in gasoline in 2009 and release RINs that be used by a refiner to demonstrate compliance.

Certainly it is possible that some refiners will meet their RFS obligation in 2008 without a deficit carryover. However, it is unlikely that all refiners will meet their RFS obligation in 2008 without one. It may also be unlikely that all refiners will be able to meet out year obligations given the limitations on deficit carryovers.

### ***The Current Global Food Crisis Cannot Be Ignored***

Governments, NGOs (i.e., World Bank, IMF, the UN, and OECD), federal agencies among others have highlighted the association between biofuels and the current global food crisis.

- “Meanwhile, by diverting grain and oilseed crops from dinner plates to fuel tanks, biofuels are jacking up world food prices and endangering the hungry. The grain it takes to fill an SUV tank with ethanol could feed a person for a year.”<sup>11</sup>
- “But now a reaction is building against policies in the United States and Europe to promote ethanol and similar fuels, with political leaders from poor countries contending that these fuels are driving up food prices and starving poor people. Biofuels are fast becoming a new flash point in global diplomacy, putting pressure on Western politicians to reconsider their policies, even as they argue that biofuels are only one factor in the seemingly inexorable rise in food prices. . . . Even if biofuels are not the primary reason for the increase in food costs, some experts say it is one area where a reversal of government policy could help take pressure off food prices.”<sup>12</sup>

#### Individual countries

- “Prices for basic food supplies such as rice, wheat and corn have skyrocketed in recent months, driven by a complex set of factors including sharply rising fuel prices, droughts in key food-

<sup>11</sup> “The Clean Energy Scam,” March 27, 2008: <http://www.time.com/time/magazine/article/0,9171,1725975,00.html>

<sup>12</sup> “Fuel Choices, Food Crises and Finger-Pointing,” April 15, 2008: [http://www.nytimes.com/2008/04/15/business/worldbusiness/15food.html?\\_r=2&adxnnl=1&oref=slogin&ref=washington&adxnnlx=1209484974-c9lllHwmmXp0bPyZwzF15g](http://www.nytimes.com/2008/04/15/business/worldbusiness/15food.html?_r=2&adxnnl=1&oref=slogin&ref=washington&adxnnlx=1209484974-c9lllHwmmXp0bPyZwzF15g)

producing countries, ballooning demand in emerging nations such as China and India, and the diversion of some crops to produce biofuels. . . . The increasing use of crops to produce biofuels has been criticized as contributing to food shortages.”<sup>13</sup>

- “The leaders of Bolivia and Peru have attacked the use of biofuels, saying they have made food too expensive for the poor.”<sup>14</sup>
- “Among other targets, they singled out U.S. policies pushing corn-based ethanol and other biofuels as deepening the woes. ‘When millions of people are going hungry, it’s a crime against humanity that food should be diverted to biofuels,’ said India’s finance minister, Palaniappan Chidambaram, in an interview. Turkey’s finance minister, Mehmet Simsek, said the use of food for biofuels is ‘appalling.’”<sup>15</sup>
- India and African nations are calling on the Western world to rethink the diversion of huge amounts of food for biofuel, which has created shortages and driven up prices in poorer countries.”<sup>16</sup>

#### NGOs

- “Biofuels were developed as part of plans to limit and reduce greenhouse gas emissions, held responsible for global warming, but since they take up land that would otherwise be used for food

<sup>13</sup> “Food Crisis Is Depicted As ‘Silent Tsunami,’” April 23, 2008, Page A01: <http://www.washingtonpost.com/wp-dyn/content/article/2008/04/22/AR2008042201481.html>

<sup>14</sup> “Biofuels starving our people, leaders tell UN,” April 22, 2008: <http://www.guardian.co.uk/environment/2008/apr/22/biofuel.crisis>

<sup>15</sup> “Food Inflation, Riots Spark Worries for World Leaders,” *The Wall Street Journal*, April 14, 2008, Page A1 (subscription required): [http://online.wsj.com/article/SB120813134819111573.html?mod=hps\\_us\\_whats\\_news&mod=WSJBlog](http://online.wsj.com/article/SB120813134819111573.html?mod=hps_us_whats_news&mod=WSJBlog)

<sup>16</sup> “Stop using food for fuel, West told,” April 10, 2008: <http://www.nationalpost.com/news/story.html?id=434170>

production, they have been increasingly blamed for soaring food prices. The World Bank said earlier this month that increased biofuel production had contributed to the rise in food prices.”<sup>17</sup>

- An article written by the Managing Director of the International Monetary Fund: “Higher food prices over the past few years in part reflect well-intentioned, yet misguided policies in advanced economies, which attempt to stimulate biofuels made from foodstuffs through subsidies and protectionist measures.”<sup>18</sup>
- “Hailed until only months ago as a silver bullet in the fight against global warming, biofuels are now accused of snatching food out of the mouths of the poor. . . . But as soaring prices for staples bring more of the planet’s most vulnerable people face-to-face with starvation, the image of biofuels has suddenly changed from climate saviour to a horribly misguided experiment. . . . On Friday, the head of the International Monetary Fund (IMF) said biofuels ‘posed a real moral problem’ and called for a moratorium on using food crops to power cars, trucks and buses.”<sup>19</sup>
- National Public Radio interviewed World Bank President Robert Zoellick who stated that biofuels are a major contributor to higher food prices.<sup>20</sup>
- “But no factor gets more consistent credit for food price turmoil than the international biofuels stampede. . . . Warnings that ethanol programs, brought on by absurd national energy policies and myths about reducing the risk of climate change, could severely disturb food production and

<sup>17</sup> “Thai PM lashes out at World Bank over biofuel criticism – UPDATE,” April 22, 2008:

<http://www.forbes.com/markets/feeds/afx/2008/04/22/afx4916972.html>

<sup>18</sup> “A Global Approach is Required to Tackle High Food Prices,” April 21, 2008:

<http://www.imf.org/external/np/vc/2008/042108.htm>

<sup>19</sup> “Biofuels under attack as food prices soar,” April 20, 2008 :

[http://news.yahoo.com/s/afp/20080420/ts\\_afp/foodbiofuelsclimatewarming\\_080420093611;\\_ylt=AmNpNnkByd.unYnQSTZFIUVrAIMA](http://news.yahoo.com/s/afp/20080420/ts_afp/foodbiofuelsclimatewarming_080420093611;_ylt=AmNpNnkByd.unYnQSTZFIUVrAIMA)

<sup>20</sup> “World Bank Chief: Biofuels Boosting Food Prices,” April 11, 2008:

<http://www.npr.org/templates/story/story.php?storyId=89545855>

prices, have been issued for years. . . . The United Nations, previously a big booster of biofuels, is now issuing warnings.”<sup>21</sup>

- The OECD has also expressed concern over the “food-vs-fuel” conflict that has arisen from biofuels mandates.<sup>22</sup>

*The Boston Globe* printed an editorial. “CORN should be used for food, not motor fuel, and yet the United States is committed to a policy that encourages farmers to turn an increasing amount of their crop into ethanol. . . . Greater use of ethanol means more greenhouse gases and more expensive food for people and livestock, hardly a fair exchange.”<sup>23</sup>

USDA estimates that the share of U.S. corn production for 2007/2008 for feedstock use at ethanol plants is 25% and will be 33% next year.<sup>24</sup> This is significant, not de minimis or inconsequential during a global food crisis.

#### ***NPRA Recommends Repeal of the Renewable Fuel Mandate***

There are serious questions whether or not to continue a mandate for increasing amounts of corn ethanol and biodiesel in the midst of a global food crisis. The *Miami Herald* printed an editorial. “Given the current global food crisis, decisions by the United States, Europe and other countries to convert corn and other food crops into fuel are beginning to look like good intentions gone awry. The biofuels push is beginning to have harmful unintended consequences, contributing to shortages of basic foods in Haiti, Egypt, Italy and countries in Africa and Southeastern Asia. The European Union is reconsidering its goal

<sup>21</sup> “Who caused the world food crisis?,” April 8, 2008:

<http://www.financialpost.com/analysis/columnists/story.html?id=75d38e8e-7d7e-440e-a318-9b60687e11a1&k=55279>

<sup>22</sup> Richard Doornbosch and Ronald Steenblik, *Biofuels: Is The Cure Worse Than The Disease?*, Organisation for Economic Co-operation and Development, September 2007.

<sup>23</sup> “Can’t eat ethanol,” April 13, 2008:

[http://www.boston.com/bostonglobe/editorial\\_opinion/editorials/articles/2008/04/13/cant\\_eat\\_ethanol/](http://www.boston.com/bostonglobe/editorial_opinion/editorials/articles/2008/04/13/cant_eat_ethanol/)

<sup>24</sup> Joseph Glauber, USDA’s Chief Economist, presentation at the 2008 Agricultural Outlook Forum, February 21, 2008:

<http://www.usda.gov/oce/forum/2008Speeches/PDFPPT/Glauber.pdf>

of using biofuels in 10 percent of its transportation fuels -- and the U.S. Congress should do the same. . . . it can reverse its mandate to use food crops for fuel.”<sup>25</sup>

On April 25, Texas Governor Perry requested a waiver from EPA for a portion of the RFS. Governor Perry’s “request is for a waiver of 50 percent of the mandate for the production of ethanol derived from grain.” He cites “the unintended consequences of harming segments of our agricultural industry and contributing to higher food prices.” The Governor of Connecticut has now likewise called for a waiver of the RFS. EPA is required by section 1501(a) of the Energy Policy Act of 2005 (revision to section 211(o)(7) of the Clean Air Act) to approve or disapprove, after public notice and opportunity for comment, the State petition within 90 days after receipt. NPRA looks forward to this discussion and debate.

Rather than debating whether there is a large or small correlation between the current global food crisis and the renewable fuels mandate in the U.S., Congress should act quickly to repeal the renewable fuel mandate.

### ***First Generation Biofuels Have Environmental Impacts***

“But several new studies show the biofuel boom is doing exactly the opposite of what its proponents intended: it’s dramatically accelerating global warming, imperiling the planet in the name of saving it. Corn ethanol, always environmentally suspect, turns out to be environmentally disastrous.”<sup>26</sup>

Congress inexplicably exempted or “grandfathered” renewable fuel produced from production facilities either in existence or under construction at the time of EISA’s enactment from the lifecycle greenhouse gas emissions reduction requirements. Many of these plants are coal fired plants. This has the effect of making billions of gallons of ethanol and biodiesel exempt from any GHG emissions reduction

<sup>25</sup> “Using food for fuel disrupts food supply. OUR OPINION: CONGRESS SHOULD RETHINK ITS CORN-SUBSIDY POLICY,” April 18, 2008: <http://www.miamiherald.com/opinion/editorials/story/500518.html>

<sup>26</sup> “The Clean Energy Scam,” March 27, 2008: <http://www.time.com/time/magazine/article/0,9171,1725975,00.html>



requirement. Several recent studies have now quantified the GHG impacts of first generation biofuels and concur that they create an exponentially larger carbon “footprint” than conventional gasoline. As a result, it now appears that there will be billions of gallons of ethanol and biodiesel produced over the next decade that *must* be blended into our nation’s fuel supply and that could dramatically *increase* GHG emissions.

Ethanol and biodiesel are hydrocarbons – they are not carbon-free. Biofuels are often perceived as carbon-neutral because the carbon released when combusted is recycled as the biomass feedstock is grown. However, many scientists are concerned that the greenhouse gas emissions resulting from biofuel production and associated agricultural practices could effectively negate or even reverse any reduction in emissions that could be achieved by significantly expanding the use of ethanol as a transportation fuel. Biofuels are not a silver bullet for reducing greenhouse gas emissions and their impacts to the overall GHG emissions should not be ignored.

There is growing consensus in the scientific community that first-generation biofuels do more harm than good in terms of GHG emissions. Nobel Prize winner Paul Crutzen concluded that increased biofuels production is accompanied with a dramatic increase of nitrous oxide (N<sub>2</sub>O) emissions, which have nearly 300 times greater warming potential than CO<sub>2</sub>.<sup>27</sup> This would offset all greenhouse gas emissions reductions from the displaced petroleum fuels and actually result in a net increase in total greenhouse gas emissions. The European Union recently passed a law that may essentially ban certain biofuels due to environmental impacts.<sup>28</sup>

A large increase in the production of biofuels could lead to further deforestation and release of soil carbon. Clearing land to grow crops as a feedstock for biofuels can increase greenhouse gas emissions. Carbon in the soil and plants is released when land use is changed and can be higher than the reduction in carbon releases by replacing fossil fuel combustion with biofuel combustion. It would take many years for

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<sup>27</sup> P. J. Crutzen, A. R. Mosier, K. A. Smith, and W. Winiwarter, “N<sub>2</sub>O Release from Agro-Biofuel Production Negates Global Warming Reduction by Replacing Fossil Fuels,” *Atmospheric Chemistry and Physics Discussions*, August 1, 2007.

<sup>28</sup> John W. Miller, “EU is Planning Measures to Protect Biofuels Industry,” January 23, 2008, P.A11.

the increased GHG emissions from land use change to be offset by the decreased GHG emissions from the replacement of fossil fuel with biofuel combustion – a biofuel carbon debt. This biofuel carbon debt is substantial and is projected to take decades or centuries from which to recover.

Several analyses outline the deleterious land-use impacts from biofuels production. The following are excerpts from two studies published in 2008:

Ethanol from corn produced on newly converted U.S. central grasslands results in a biofuel carbon debt repayment time of ~93 years. . . . At least for current or developing biofuel technologies, any strategy to reduce GHG emissions that causes land conversion from native ecosystems to cropland is likely to be counterproductive. . . . Our results demonstrate that the net effect of biofuel production via clearing of carbon rich habitats is to increase CO<sub>2</sub> emissions for decades or centuries relative to the emissions caused by fossil fuel use.<sup>29</sup>

To produce biofuels, farmers can directly plow up more forest or grassland, which releases to the atmosphere much of the carbon previously stored in plants and soils through decomposition or fire. The loss of maturing forests and grasslands also foregoes ongoing carbon sequestration as plants grow each year, and this foregone sequestration is the equivalent of additional emissions. Alternatively, farmers can divert existing crops or croplands into biofuels, which causes similar emissions indirectly. . . . As land generates more ethanol over years, the reduced emissions from its use will eventually offset the carbon debt from land-use change, which mostly occurs quickly and is limited in our analysis to emissions within 30 years. We calculated that GHG savings from corn ethanol would equalize and therefore “pay back” carbon emissions from land-use change in 167 years, meaning GHGs increase until the end of that period. Over a 30-year period, counting land-use change, GHG emissions from corn ethanol nearly double those from gasoline for each km driven. . . . As part of our sensitivity analysis, we found that, even if corn ethanol caused no emissions except those from land-use change, overall GHGs would still increase over a 30-year period.<sup>30</sup>

In addition, a recent University of California, Berkeley memo to the California Air Resource Board affirms these earlier studies. This memo states that estimates of greenhouse gas emissions from direct land

<sup>29</sup> “Land Clearing and the Biofuel Carbon Debt,” Joseph Fargione, *et al.*; *Science* 319, 1235 (2008); DOI: 10.1126/science.1152747.

<sup>30</sup> “Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change,” Timothy Searchinger, *et al.* *Science* 319, 1238 (2008); DOI: 10.1126/science.1151861.

use changes are very large and are much larger than the emissions associated with the fuel itself because there are large amounts of carbon stored in ecosystems of all sorts.<sup>31</sup>

The biofuel carbon debt summarized in these studies refutes the perception that biofuels are part of the solution to quickly reduce greenhouse gas emissions.

EISA section 201 addresses this land use change issue by requiring, in the definition of renewable biomass, that “planted crops and crop residue harvested from agricultural land cleared or cultivated at any time prior to the enactment of this sentence that is either actively managed or fallow, and nonforested.” This may not be enforceable because of the fungibility of an ear of corn. This restriction would not prevent land use change with its associated large biofuel carbon debt when the international agricultural community increases crop production to address the global food crisis and to replace for food consumption crops used as feedstock in domestic or foreign biorefineries. Furthermore, this legislative provision is not yet effective and will not be effective until EPA promulgates RFS2 regulations next year; in the meantime, there is no land use change restriction.

Recent studies have noted the negative impacts biofuels mandates are having on the environment. An Environmental Defense report revealed how a dramatic increase in ethanol plants is draining the Ogallala Aquifer, which stretches from Texas to Wyoming.<sup>32</sup> The National Academy of Sciences has also written a report on the negative water supply impacts of increased biofuels production.<sup>33</sup> Press reports from last year described how an increase in farm waste from the corn boom flowing into the Mississippi River has created an area off the Louisiana coast where shrimp and other sea life cannot survive.<sup>34</sup>

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<sup>31</sup> Memo from Alex Farrell and Michael O’Hare (U. of California Berkeley professors) to the California Air Resources Board, “Greenhouse gas (GHG) emissions from indirect land use change (LUC),” January 12, 2008.

<sup>32</sup> Martha G. Roberts, Timothy D. Male, Theodore P. Toombs, “Potential Impacts of Biofuels Expansion on Natural Resources: A Case Study of the Ogallala Aquifer Region,” Environmental Defense, October 2007.

<sup>33</sup> National Academy of Sciences, “Report in Brief: Water Implications of Biofuels Production in the United States,” October 2007

<sup>34</sup> Tony Cox, “Ethanol Demand Seen Harming U.S. Fishermen,” Bloomberg, July 23, 2007

While these studies are relatively new, all point in one direction— waiver of the RFS should occur until at least further science validates sustainability and ability of the program to deliver on the intended objective.

#### **RINs Could Be Invalidated by EPA**

Section 202(a)(1) of EISA states: “. . . and, in the case of any such renewable fuel produced from new facilities that commence construction after the date of enactment of this sentence, achieves at least a 20 percent reduction in lifecycle greenhouse gas emissions compared to baseline lifecycle greenhouse gas emissions.” This is repeated in section 210(a)(1) with explicit guidance for this year: “For calendar year 2008, transportation fuel sold or introduced into commerce in the United States (except in noncontiguous States or territories), that is produced from facilities that commence construction after the date of enactment of this Act shall be treated as renewable fuel within the meaning of section 211(e) of the Clean Air Act only if it achieves at least a 20 percent reduction in lifecycle greenhouse gas emissions compared to baseline lifecycle greenhouse gas emissions.”

These two legislative provisions raise doubts about the validity of RINs generated by plants that commence construction after enactment in December 2007. That new facility will produce ethanol or biodiesel with RINs that could be declared later by EPA as invalid because the new facility does not comply with EPA’s new RFS rules (not yet promulgated and hereafter referred to as RFS2) to implement these legislative provisions. The refiner is required by the existing RFS regulations (hereafter referred to as RFS1) at 40 CFR 80.1131 to replace invalid RINs with valid RINs, “regardless of the party’s good faith belief that the RINs were valid at the time they were acquired.” The existing provision relating to RIN validity and lack of clarification on whether or not RINs will be good under RFS2 will contribute to market instability this year because of the lack of certainty that all RINs are valid.

Section 210(a)(1) of EISA states: “For calendar years 2008 and 2009, any ethanol plant that is fired with natural gas, biomass, or any combination thereof is deemed to be in compliance with such 20 percent reduction requirement

*and with the 20 percent reduction requirement of section 211(o)(1) of the Clean Air Act. The terms used in this subsection shall have the same meaning as provided in the amendment made by this Act to section 211(o) of the Clean Air Act.”* This does not apply to new biodiesel plants. Furthermore, this legislative provision ensures that new ethanol plants “fired with natural gas, biomass, or any combination thereof is deemed to be in compliance” in 2008 and 2009, but does not guarantee that they will be in compliance after 2009. Therefore, this legislative provision also creates the possibility that RINs from new plants could be declared invalid later by EPA.

This uncertainty will contribute to RIN market instability this year and in out years because of the lack of assurance that all RINs are valid.

#### ***Market Speculators Could Adversely Influence RIN Supplies***

Given the lack of supply, infrastructure and the mandate’s aggressive schedule, the RIN market will be extremely tight this year and for the foreseeable future, creating more impetus for speculators to try to profit from the creation of a “scarce” RIN market. Such an occurrence could contribute to an increase in RIN prices and impact prices consumers pay at the pump.

In 40 CFR 80.1128(b) of the RFS1 regulations, EPA permits any party that has registered with the Agency to hold title to an unassigned RIN. Therefore, a speculator who is not an RFS obligated party can buy RINs for later resale. This situation could take RINs off the market for a while and contribute to perceptions of short-term RIN shortages. In other words, speculators could hoard RINs for the sole purpose of trying to drive up their price.

#### ***New Cellulosic Biofuel Waiver Provisions Provide for Last-Minute Regulatory Changes***

The new energy law added a waiver provision for cellulosic biofuel (see Clean Air Act section 211(o)(7)(D)). EPA can reduce the applicable regulatory volume of cellulosic biofuel if the projected volume is expected to be lower than the statutory volume. If the Agency makes this decision, then it must

notify obligated parties “not later than November 30 of the preceding calendar year.” In addition, *“For any calendar year in which the Administrator makes such a reduction, the Administrator may also reduce the applicable volume of renewable fuel and advanced biofuels requirement established under paragraph (2)(B) by the same or a lesser volume.”*

The provision, as currently written, obviously does not give RFS obligated parties much lead time for compliance planning. They may not have more than 30 days notice of what the final regulatory volumes will be for the following calendar year.

***The New RFS Mandate Will Require Mid-Level Ethanol Blends, But There Are Several Barriers and Problems Associated with Getting These Blends Into the Marketplace and Consumers’ Ability to Use Them***

As previously mentioned, the large volumes of renewable fuels mandated in the recently enacted EISA will essentially force fuel blends greater than E-10 (10 percent ethanol, 90 percent gasoline) into our nation’s gasoline supply. Preliminary industry analysis indicates these blends may need to be produced to meet the mandate by as early as 2010 – less than two years away. The only vehicles capable of running such blends are E-85 vehicles. As discussed earlier, these vehicles represent only 6 million out of over 240 million registered vehicles on the road. The rest of the gasoline-only vehicles currently in the marketplace, and the approximately 16 million that will be produced annually over the next several years, cannot run on blends greater than E-10. The corrosive nature of ethanol eats away at automotive pipes and creates engine problems in these vehicles. In order for blends between E-10 and E-85 (i.e. blended gasoline that contains somewhere between 10 and 85 percent ethanol, called “mid-level ethanol blends”) to be viable in the fuel supply, automakers will have to certify that cars can run on these blends and warrantee those vehicles. This could pose cost challenges for automakers and potentially raise liability questions.

Ethanol infrastructure presents another barrier to RFS implementation. Existing fuel pumps and underground tanks cannot accommodate fuel blends greater than E-10 for reasons similar to those relating

to cars. In order for the volumes of renewable fuels mandated in the new energy law to make it into the market place, tank and pump makers have to certify and provide warranties for all the equipment needed to handle mid-level ethanol blends. This could be a timely process and the new mandate schedule fails to provide the market with that sort of time. Without certification and warranties, the infrastructure to accommodate mid-level ethanol blends won't get built. Refiners may then find themselves in a situation where they won't be able to comply with the law because of their inability to blend the requisite volumes of renewable fuels into the fuel supply. This could create a significant number of supply problems.

***The Primary RFS Compliance Fuels, Biodiesel and Ethanol, May Contribute to Increases in Ozone Levels (Smog) During the Summer***

EPA has concluded that biodiesel increases NO<sub>x</sub> emissions and reduces fuel economy because of its lower energy content. See <http://www.epa.gov/otaq/models/analysis/biodsl/p02001.pdf>. This will be a problem because NO<sub>x</sub> emissions are a ground-level ozone precursor.

As previously discussed, ethanol increases the Reid vapor pressure (RVP) of the fuel. More gasoline-ethanol blends result in higher volatile organic compound (VOC) emissions, another ozone precursor, in the summer months. Also, given that the revised 8-hour ozone National Ambient Air Quality Standards (NAAQS) will result in many new ozone non-attainment areas,<sup>35</sup> it is unlikely that the mandated level of ethanol can be distributed in summer 9.0 psi RVP conventional gasoline areas without exacerbating ozone problems in non-attainment areas or creating new non-attainment areas. The expansion of the number of non-attainment areas will impose costly fuel reformulation and/or constraints on the usage of ethanol that will result in increased costs because the distribution system will be pushed away from the low-cost solution. These additional costs will be borne by consumers. In addition, the de facto result of expanding the number of non-attainment areas is the creation of a significant conflict between the revised ozone NAAQS and the new RFS.

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<sup>35</sup> EPA notes that 345 counties violated the new ozone NAAQS (0.075 ppm) using 2004-2006 data.

***Congress Should Suspend the Tariff on Imported Ethanol***

Given the problems discussed above and the significant strain on our nation's fuel supply system associated with the dramatically increased ethanol mandate in HR 6, Congress should suspend the tariff on imported ethanol in order to maximize the supply of renewable fuels. This is not a new position for NPRA; NPRA advocated this position in testimony before the Senate Commerce, Science, and Transportation Committee in May 2006 and again before the Senate Energy and Natural Resources Committee in February. Removing the tariff is critical to providing refiners more flexibility that will be desperately needed to comply with the newly expanded ethanol mandate.

***Congress Should Preempt State Biofuels Mandates***

The present enthusiasm for renewable fuels has resulted in several states and even municipalities adopting local mandates. Local mandates will impose additional strain on the ethanol distribution system and increase costs for shipping and storage. The existing federal renewable fuels standard mandate with its credit-trading provisions contains a degree of freedom that allows the distribution system to operate at a low-cost optimum by avoiding infrastructure bottlenecks (such as lack of storage or rail capacity). Mandating biodiesel usage in specific areas forces a distribution pattern that is less flexible, and therefore has less capability to minimize costs. Further, these mandates create boutique markets requiring special fuel formulations and transportation logistics, thereby balkanizing the national fuel market. If Congress wishes to allow for as diverse a supply of alternative fuels as possible, and to promote as much flexibility in the system as possible, state and local biofuels mandates should be preempted.

***Conclusion***

NPRA members are dedicated to working cooperatively at all levels to ensure an adequate supply of clean, reliable and affordable transportation fuels. We stand ready to work with Congress to ensure a stable and effective fuels policy that utilizes a diversity of resources to improve our national security, assist



our consumers and protect our environment. As my testimony indicates, the new RFS creates several problems in the fuels marketplace – many of which may be insurmountable. In addition to consumer impacts, backlash from potential negative impacts of this law could ultimately end up threatening the availability of alternative fuels in the marketplace. I appreciate this opportunity to testify today and welcome your questions.

Mr. BOUCHER. Thank you very much, Mr. Drevna.  
Mr. Kramer.

**STATEMENT OF RANDY KRAMER, PRESIDENT, KL PROCESS  
DESIGN GROUP, LLC**

Mr. KRAMER. Mr. Chairman, ranking members, members of the committee, thank you for the opportunity to provide testimony on the implementation of the 2007 renewable fuels standard. I am Randy Kramer, president and cofounder of KL Process Design Group, a biofuels engineering and project development firm located in Rapid City, South Dakota. Our cofounder, Dave Litzen, is also here with me today.

Since 2001, KL has collaborated with researchers at the South Dakota School of Mines and Technology to privately fund and develop a thermal-mechanical process to make ethanol from ponderosa pine, which is found in abundance in the Black Hills. The research resulted in what we believe to be the first wood waste ethanol demonstration plant capable of commercial operations. With the Black Hills National Forest supervisor, our research is dedicated to forest stewardship that includes finding better uses for gathered forest and mill waste that otherwise provides added fuel to forest fires.

KL is uniquely qualified to discuss the implications and effects of cellulosic ethanol provisions legislated in the 2007 energy bill. Beyond our experience in corn- and cellulose-based ethanol plant designs, our engineers are veterans of oil exploration and refining and our project managers are veterans of combat operations in oil-rich areas of the world. Conversely, here in the United States, KL's technology has resulted in the construction of ethanol plants where farmers are paid market prices for their corn, which offset or eliminate farm subsidies. Our cellulosic technology also helps reduce particulate emissions resulting from controlled and uncontrolled fires in our national forest, costing the Federal government millions of dollars to manage.

Corn-based ethanol is the only large-volume biofuels bridge to the 2022 cellulosic ethanol goal. We must protect this bridge as a strategic component to allow companies like ours to improve cellulose technology and we take exception to the misrepresentations being touted by the media, special interest groups and United Nations, who cling to the baseless notion that ethanol is somehow displacing agricultural resources and linking the displacement of corn from food to fuel.

According to USDA statistics, in 2007 field corn used to produce ethanol increased by about 1 billion bushels but corn production also increased by 3 billion bushels. Specifically, between March 2007 and March 2008, there was a 13 percent increase in stored, uncommitted surplus corn, both on and off the farm. Today in South Dakota, there is still corn on the ground not being used for ethanol or export. We need corn-based ethanol as a bridging strategy, it is not the primary cause for rising food prices or shortages, and will always be an integral part of our energy policy, even as cellulose and other technologies advance. Incentives for both corn- and cellulose-based ethanol should be maintained just as incentives for oil discovery were put in place and maintained since 1925.

Last week President Bush stated that the United States has not built a refinery since 1976. KL takes a different approach. In the biofuels vernacular, there were in fact 84 new biorefineries built over the last 10 years that have effectively replaced the need for approximately eight new average-sized oil refineries.

To meet the requirements of the RFS, we know there will be a need to continue improving efficiencies in grain and cellulose-based designs to move us quickly to what we believe we call the glucose economy where starch or cellulose provide the sugars used to produce chemicals in biofuels. To sustain the momentum of building additional biorefineries that meet the intent and aggressive mandates of the RFS, administrative rules must allow for all forms of biomass without regard to its source.

As we plan to co-locate our second plant with a sawmill in the Black Hills, one specific clause of the 2007 energy bill inserted by special interests must be corrected. Specifically, credits intended for cellulosic ethanol produced from biomass harvested from our national forests through federal programs already in existence must be restored. The intent of this last-minute provision was to discourage the harvesting of material from the national forests for biofuels production. However, the drafters failed to understand that existing timber harvest and thinning programs already allow for the removal of material from the national forests. In the case of thinnings, any reasonable person would understand that processing this waste into a clean-burning fuel is less destructive to the environment than burning it in place. In the case of commercial timber harvested through this Federal programs, mill waste from these operations fit perfectly with our business model but the burden of segregating non-credit-qualifying bits of national forest mill waste from private or State timberland mill waste that do qualify is as impractical as it sounds. Our desire is not to clear-cut the forest to produce biofuels, but given existing harvest programs, credits from these operations are critical to the near-term success of cellulosic ethanol and the process improvements we make during this development period enable us to keep pace with the 2022 goals.

This concludes my testimony. Thank you for the opportunity.

[The prepared statement of Mr. Kramer follows:]

#### STATEMENT OF RANDY KRAMER

##### Testimony Outline:

Background: KL's Cellulose-Based Ethanol Technology and Operating Plant  
 Importance of All Forms of Bio-fuels Technology  
 Redefining United States Motor Fuels Refining Capacity  
 Defining the new "Glucose Economy"  
 Correcting RFS Cellulosic Credit Language Regarding our National Forests  
 Addressing other Bill Provisions: Mandated Studies on E85 Efficiency Improvements and Ethanol Pipeline Transport

Mr. Chairman, Ranking Members, Members of the Committee, thank you for the opportunity to provide testimony on the implementation of the 2007 Renewable Fuel Standard. I am Randy Kramer, President and co-founder of KL Process Design Group (KL), a biofuels engineering and project development firm located in Rapid City, South Dakota. Our co-founder, Dave Litzen is also here with me today. Since 2001, KL has collaborated with researchers at the South Dakota School of Mines and Technology to develop a thermal-mechanical process to make ethanol from ponderosa pine, which is found in abundance in the Black Hills. The research resulted in what we believe to be the first wood waste ethanol demonstration plant capable of commercial operations. With the Black Hills National Forest Supervisor our re-

search is dedicated to forest stewardship that includes finding better uses for gathered forest and mill waste that otherwise provides added fuel to forest fires.

KL is uniquely qualified to discuss the implications and effects of cellulosic ethanol provisions legislated in the 2007 Energy Bill. Beyond our experience in corn and cellulose-based ethanol plant designs, our engineers are veterans of oil exploration and refining and our project managers are veterans of combat operations in oil-rich areas of the world. Conversely, here in the United States, KL's technology has resulted in the construction of ethanol plants where farmers are paid market prices for their corn which offset or eliminate farm subsidies. Our cellulosic technology also helps reduce particulate emissions resulting from controlled and uncontrolled fires in our national forests, costing the Federal Government millions of dollars to manage.

Corn-based ethanol is the only large volume, biofuels bridge to the 2012 cellulose ethanol goal. We must protect this bridge as a strategic component to allow companies like ours to improve cellulose technology; and we take exception to the misrepresentations being touted by the media, special interest groups and the United Nations who cling to the baseless notion that ethanol is somehow displacing agricultural resources and linking the displacement of corn from food to fuel. According to USDA statistics, in 2007 field corn used to produce ethanol increased by about 1 billion bushels but corn production also increased by 3 billion bushels. Specifically, between March 2007 and March 2008 there was a 13% increase in stored, uncommitted surplus corn—both on and off the farm. Today, in South Dakota, there is still corn on the ground not being used for ethanol or export. We need corn-based ethanol as a bridging strategy, it is not the primary cause for rising food prices or shortages, and it will always be an integral part of our energy policy even as cellulose and other technologies advance. Incentives for both corn and cellulose based ethanol should be maintained just as incentives for oil discovery were put in place and maintained since 1925. Last week, President Bush stated that the United States has not built a refinery since 1976. KL takes a different approach. In the biofuels vernacular there were, in fact, 84 new bio-refineries built over the last 10 years that have effectively replaced the need for approximately eight new averaged-size oil refineries. This assumes 115,000 barrels per day of crude feed with 50% of the crude converted to gasoline. The difference is crude oil will only be extracted once where bio-refining feedstocks replenish every year. This new RFS is the only responsible energy plan that requires even more bio-refineries by 2012. As cellulose-based ethanol technology improves, our business model departs from the current paradigm of large grain-based ethanol plants in the Midwest. While grain-based plants are an important part of the future bio-refining strategy, cellulosic ethanol plants will be smaller and decentralized throughout the US; co-locating with or close to biomass sources that are immune to the geo-agricultural constraints needed for grain based ethanol production, thereby eliminating or reducing the cost of transporting biomass material and in close proximity to populated biofuels demand. This design disarms critics who believe ethanol is too far from the end user and makes use of biomass that is either burned or land-filled.

To meet the requirements of the RFS, we know there will be a need to continue improving efficiencies in grain and cellulose based designs to move us quickly to what we call the "glucose economy" where starch or cellulose provide the sugars used to produce chemicals and bio-fuels. The United States possesses the biomass to meet the needs of a glucose economy and is well-documented in the Department of Energy's own "Billion Ton Study" conducted at the Oak Ridge Laboratory in April 2005. As noted in the study, much of this biomass is located on federal lands to include our national forests. To sustain the momentum of building additional bio-refineries that meets the intent and aggressive mandates of the RFS, administrative rules must allow for all forms of biomass without regard to its source. As we plan to co-locate our second plant with a sawmill in the Black Hills, one specific clause in the 2007 Energy Bill, inserted by special interests after lawmakers reviewed what they thought to be the final language, must be corrected. Specifically, credits intended for cellulosic ethanol produced from biomass harvested from our national forests through federal programs already in existence, must be restored. The intent of this last minute provision was to discourage the harvesting of material from the national forests for bio-fuels production. However, the drafters failed to understand that existing timber harvest and thinning programs already allow for the removal of material from the national forests. In the case of thinnings, any reasonable person would understand that processing this waste into a clean burning fuel is less destructive to the environment than burning it in place. In the case of commercial timber harvested through these federal programs, mill waste from these operations fit perfectly with our business model but the burden of segregating non-credit qualifying bits of national forest mill waste from private or state timberland mill waste

that do qualify is as impractical as it sounds. Imagine the complexity of separating mill waste for the sake of recovering valuable cellulosic ethanol credits. The cost would likely outweigh the credit. We live near a national forest and consider ourselves active stewards of the environment. Our desire is not to clear-cut the forest to produce biofuels but given existing harvest programs, credits from these operations are critical to the near term success of cellulosic ethanol; and the process improvements we make during this development period enable us to keep pace with the 2012 goals.

Whether ethanol comes from corn or cellulose, it is the near-term answer as it can fuel most combustion engines today. While 10 and 85 percent blends are standard, we have experience with a variety of blends and it is our conclusion that a blend between 20 and 30 percent would be the near-term answer for all gasoline-fueled vehicles. My point is simple. We do not expect ethanol to replace all fossil fuels in America, but complement them. Like Brazil, most all of our automobiles can operate with at least a 30% blend without modification. The EPA could allow these blends with the stroke of a pen. Related to this discussion, the 2007 Energy Bill calls for a study to improve the efficiency of flex fuel vehicles. As a start point, I would like to offer a recommendation. We know that ethanol burns cleaner and cooler than gasoline. What isn't well known is that ethanol has the potential to burn more efficiently than gasoline because of its high octane rating. Our experience through test trials with the American Lemans Racing Series and Harley-Davidson motorcycles shows E85 not only burns cooler and cleaner but also provides more horsepower and increased mileage over regular gasoline when burned in high compression, fuel-injected engines. There is no need to commit further federal dollars to a study that would likely result in directing the automobile industry to revive its design of high-compression engines that fell victim when leaded gasoline was banned. Simply put, ethanol is the modern day octane booster but burning ethanol in modern day low-compression engines results in lower gas mileage because the high octane is not used to its advantage and potential. Reverting to this simple engine design change will likely help the automobile industry meet CAFE standards without sacrificing performance. Finally, I also note that the 2007 Energy Bill calls for a study on pipeline transportation of ethanol. In the interest of saving costs and time, we have the results of a successful 1981 study conducted by Williams Pipeline Company and can provide that study to this Committee. This concludes my testimony. Thank you for this opportunity.

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Mr. BOUCHER. Thank you very much, Mr. Kramer.  
Mr. Faber.

**STATEMENT OF SCOTT FABER, VICE PRESIDENT, FEDERAL  
AFFAIRS, GROCERY MANUFACTURERS ASSOCIATION**

Mr. FABER. Thank you, Mr. Chairman. Let me just start by saying that I agree that there are many factors that are contributing to record food inflation that we are all seeing in the grocery aisles right now, including global demand, export restrictions, poor weather, the value of the dollar, but there is only one significant new factor that Congress can change and that is our decision last year to divert this year 25 percent of our corn into our fuel supplies, and in the coming years, 40 percent of our corn and about 30 percent of our vegetable oils to our fuel supplies, and in general, we think Congress should revisit these mandates and begin to reduce our reliance on food as an energy feedstock and instead accelerate the development of fuels that do not pit our energy needs against the needs of the hungry or the needs of the environment.

Let me just lay some of the groundwork. I am sure you have seen this in the grocery store. Food prices are now rising about twice as fast as the rate of inflation. They increased almost 5 percent in 2007, the largest increase that we have seen in 17 years, and more importantly, the price of basic staples—milk, meat, and eggs—has grown much more dramatically. In the case of eggs, for example, it has increased about 70 percent just in the last 3 years. This obvi-

ously poses a problem for all consumers but it really poses a particular challenge to the lowest 20 percent of Americans, who spend about a third of their after-tax income on food. Sudden increases in the price of basic staples are much harder for poor Americans to struggle through and certainly even more significant for people in the developing world, where they spend up to 70 percent of their income on food.

It is also important to note that for every farmer who is doing better as a result of these high commodity prices, and no one can blame farmers for trying to benefit from these high commodity prices, there are many more farmers who are losing money: our livestock producers. Many of these livestock producers are facing unprecedented losses and it is important to be fair. Many more jobs are being lost in rural communities because of the high price of feed than are being created as a result of these mandates. That is why we are hopeful that the Administration will act quickly to reduce the impact of these food-to-fuel mandates on our food prices, but this isn't merely a question of what we can do today to address the problems consumers are seeing in the grocery store. It is also a question of what we can do today to address the risk of even higher food prices in the next few years as again 40 percent of our corn and 30 percent of our vegetable oils are diverted to our food supplies. Let me just draw your attention to three charts.

[Chart shown.]

The first chart shows how much of our corn and how much of our soy oils will be diverted from our food supplies to our fuel supplies. This is a fairly simple calculation to do based on projected yields and projected acres. This is something even I could do on the back of an envelope.

[Chart shown.]

And then you can also see something that doesn't get nearly as much attention is the amount of our vegetable oils, which are also used throughout our food production systems, how much of our vegetable oils will be diverted in the next few years. These increases in the amount of food that is being diverted to our fuel supplies are certainly going to make today's prices look good by comparison.

[Chart shown.]

And then the last chart I just want to draw your attention to is what we are forecasting food price inflation will be in the next few years. We are forecasting—as you can see, it was 4.9 percent last year. We are forecasting it will be 7.5 to 8 percent in the next few years, and those are conservative numbers. Because of the delayed plantings that we have seen in the Midwest and the risk of drought, these numbers could actually look quite good by comparison.

Let me just close by saying I am the first to say that these mandates that are driving higher food prices might make sense if they were serving other goals, but the simple fact of the matter is that these mandates have very little impact on energy imports or prices. For example, diverting 25 percent of our corn crop this year has displaced about 7 billion of the Nation's 140-billion-gallon gasoline supply. What is more, we have heard food-to-fuel mandates are also increasing greenhouse gas emissions and pose other environmental challenges, including poor air and water quality and water

shortages in parts of the country where drought is a significant problem.

Let me just close by saying that at a time when thousands of Americans are losing their jobs or losing their homes, we don't think it makes much sense for Congress to artificially increase the price of food, and while certainly many Americans are worried about filling their gas tanks, many more are worried about filling their stomachs and so we urge the Committee to revisit these mandates and revisit the use of food as a feedstock and to accelerate the development of fuels that do not pit our energy needs against the needs of the hungry and the environment. Thank you.

[The prepared statement of Mr. Faber follows:]

#### STATEMENT OF SCOTT FABER

My name is Scott Faber and I am Vice President for Federal Affairs for the Grocery Manufacturers Association.

In light of dramatic increases in food prices and new questions about the environmental costs of fuels derived from food crops, we urge the Committee to revisit the food-to-fuel mandates included in the Energy Independence and Security Act of 2007.<sup>1</sup> Although there are many factors contributing to the sharp increase in US and global food prices—including increasing global food demand, export and other restrictions, adverse weather in some countries, commodity speculation, and higher energy prices—a significant new factor and the only factor affecting food and feed prices that is under the control of Congress is the food-to-fuel mandates and subsidies diverting food into fuel production.

Food prices are now rising at twice the overall rate of inflation. According to the Bureau of Labor Statistics, domestic food prices rose by 4.9 percent during 2007—the largest increase in 17 years. But the domestic price of basic staples such as eggs, milk, and meat have increased even more dramatically in the last 3 years. Egg prices have increased 69 percent, milk prices have increased 22 percent, and chicken prices have increased 12 percent.<sup>2</sup> The cost of feed grains and oilseed crops used to produce these animal products has increased at an alarming rate. Since the 2005 and 2006 crop years, farm-level corn prices have increased more than 150 percent, and farm-level soybean prices have increased more than 100 percent. Although other factors are affecting domestic food prices, growing demand for corn and soybeans has also contributed to tightening supplies of other major commodities, creating a ripple effect that has driven up the costs of food production.

Soaring food prices pose significant challenges for the poorest 20 percent of Americans, who spend roughly one-third of their after-tax income on food. Soaring food prices have contributed to a rising demand at food banks and a record number of Americans seeking food stamps. At a time when thousands of Americans are losing their homes and jobs, it makes no sense to artificially increase the price of food with policies that will divert food into our fuel supplies.

Rising food prices also pose significant challenges to the hungry in developing countries, where roughly 800 million<sup>3</sup> people are hungry and consumers spend as much as 70 percent of their income on food. Rising commodity prices have pushed global food prices up 83 percent over the last 3 years<sup>4</sup>—and by 57 percent in the last year alone—pushing millions of people into poverty. UN Secretary General Ban Ki-moon and World Bank President Robert Zoellick have both characterized rising food prices as “seven lost years in the fight against global poverty.” In combination, rising prices and declining commodity stocks have forced global food aid programs to ration food and have contributed to food riots and protests in more than 30 countries. Rising food inflation in the developing world is not merely a food security

<sup>1</sup> The Energy Independence and Security Act of 2007 increased the federal corn ethanol mandate from 5.4 billion gallons in 2008 to 9 billion gallons in 2009, 10.5 billion gallons in 2010, 12 billion gallons in 2011. In subsequent years, the mandate annually increases by 600 million gallons to 15 billion gallons in 2015. The Act also creates a 1 billion gallon bio-diesel mandate by 2012.

<sup>2</sup> Consumer Price Index data, Bureau of Labor Statistics

<sup>3</sup> C. Forde Runge and Benjamin Senauer. *How Biofuels Could Starve the Poor*. Foreign Affairs, May/June 2007.

<sup>4</sup> Bob Davis and Douglas Belkin, *Food Inflation, Riots Spark Worries for World Leaders*, Wall Street Journal, April 14, 2008. A1.

issue but is a national security issue. The World Bank warns that 33 nations are at risk of social unrest because of the rising price of food and energy.<sup>5</sup>

Rising feed prices pose significant challenges for livestock producers, which have contributed to the rising price of milk, meat and eggs. Although many crop farmers have benefited from high corn and soybean prices, many more livestock producers are facing unprecedented losses. Food-to-fuel mandates will increase the cost of livestock production by \$17.7 billion in 2008–2009<sup>6</sup>, and have already contributed to the loss of hundreds of jobs.

Food prices will continue to rise as more and more corn and soy oils are diverted to our fuel supplies. In particular, we estimate that food inflation will rise by 7 to 8 percent<sup>7</sup> over the next few years, as up to 40 percent of our corn and 30 percent of our vegetable oils are diverted from our food supplies to our fuel supplies.<sup>8</sup> The Producer Price Index for food has risen at an annualized rate of 10 percent over the past three months. Rising demand for basic commodities is also reducing fruit and vegetable production. Because stocks of basic commodities have fallen to low levels, a poor corn or soybean harvest in 2008 could result in even more dramatic increases in food prices. We are particularly concerned by reports that poor weather has delayed corn plantings in the Midwest.

Unfortunately, food-to-fuel mandates have little impact on energy import or prices. Diverting 25 percent of the US corn crop has displaced roughly 7 billion gallons of the Nation's 140 billion gallon gasoline supply—or less than 4 percent of our gasoline supplies, when relative energy values are considered.<sup>9</sup> Diverting 40 percent of our corn crop to produce 15 billion gallons of corn ethanol would replace less than 7 percent of our gasoline supplies, when relative energy values are considered.<sup>9</sup> When the global petroleum market is considered, ethanol consumption in 2007 represented only 1 percent of global oil consumption. In the United States, the Energy Information Administration reports that ethanol consumption accounted for only 2 percent of total US petroleum consumption. Ethanol's small share of petroleum markets, its significant transportation, blending, and storage costs, and its reduced energy content compared with gasoline reduce the likelihood that food-to-fuel mandates will affect gasoline prices and may even result in higher gasoline prices in some regions.

What's more, food-to-fuel mandates increase greenhouse gas emissions and pose other environmental challenges. Diverting food crops to our fuel supplies has artificially increased the price of commodities, accelerating the conversion of pasture and forest lands to crop production at home and around the globe. Current and expected conversion of pasture and forest lands will release carbon into the atmosphere and reduce the availability of carbon "sinks" that help sequester carbon. In addition, food-to-fuel mandates increase water and air pollution, compound water shortages, and contribute to the loss of habitat for wildlife. Increases in fertilizer use associated with expanded corn and soybean production will increase the amount of nitrogen and phosphorous being washed into rivers and bays, including the Chesapeake Bay, and will increase ground-level ozone at a time when more than 300 counties are struggling to meet Clean Air Act limits. Increasing the use of distillers grain—a byproduct of ethanol production that is fed to animals but has less nutritional value—increases the amount of phosphorous reaching our waterways like the Chesapeake.

Congress should revisit food-to-fuel mandate schedules and subsidies and accelerate the development of other bio-fuels. High crude oil prices are providing sufficient market incentives to produce corn ethanol, making government intervention unwarranted. We believe Congress should revisit and reform food-to-fuel mandate schedules and subsidies to gradually reduce our reliance on food as an energy feedstock and to accelerate the development of bio-fuels that do not pit our energy needs against the needs of the hungry or the environment. In particular, we believe that Congress should accelerate the development of cellulosic ethanol derived from crop wastes, grasses and other materials that do not increase food prices, hold significantly greater promise to displace traditional sources of gasoline, and could have less impact on the environment.

<sup>5</sup> "The World Food Crisis," New York Times, Editorial, April 10, 2008.

<sup>6</sup> Elam, Thomas, "Biofuels Support Policy Costs to the U.S. Economy," FarmEcon LLC, March 24, 2008.

<sup>7</sup> Lapp, Bill, "Back To The '70s? How Higher Commodity Prices Are Leading to the Return of Food Price Inflation," Advanced Economic Solutions, December 2007.

<sup>8</sup> Derived from USDA and EIA data

<sup>9</sup> derived from Energy Information Administration projections

<sup>10</sup> Ryan, Missy, "Commodity Boom Eats into Aid for World's Hungry," Reuters, September 5,



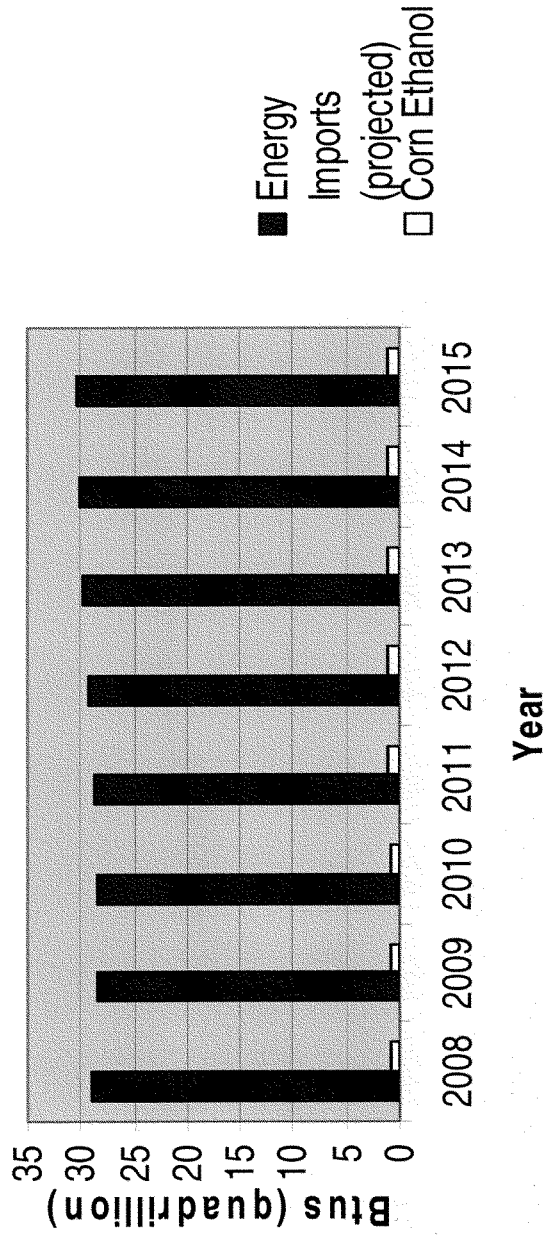
Congress should also take steps to address the needs of the hungry and to accelerate global agricultural development. At the same time that the number of hungry across the globe is increasing, donations to the world's hungry have fallen to the lowest level in 35 years.<sup>10</sup> Congress should take steps to expand domestic and international hunger assistance programs to help address the impacts of food inflation at home and abroad, including emergency assistance that can be immediately used to make regional purchases of commodities. And, Congress should also provide new funds to increase the productivity and sustainability of agricultural lands in the developing world. Between 2003 and 2007, global usage of coarse grains like corn grew by 3.4 percent, compared with a long-run rise in yields of just 1.5 percent, according to USDA.

In conclusion, we urge the Committee to revisit the food-to-fuel mandates in light of dramatic increases in food prices and new questions about the environmental costs of fuels derived from food crops. Although there are many factors contributing to record food inflation—including increasing global demand, export restrictions, changing weather patterns, commodity speculation, and higher energy prices—a significant new factor and the only factor affecting food and feed prices that is under the control of Congress is food-to-fuel mandates and subsidies diverting food into our fuel supplies.

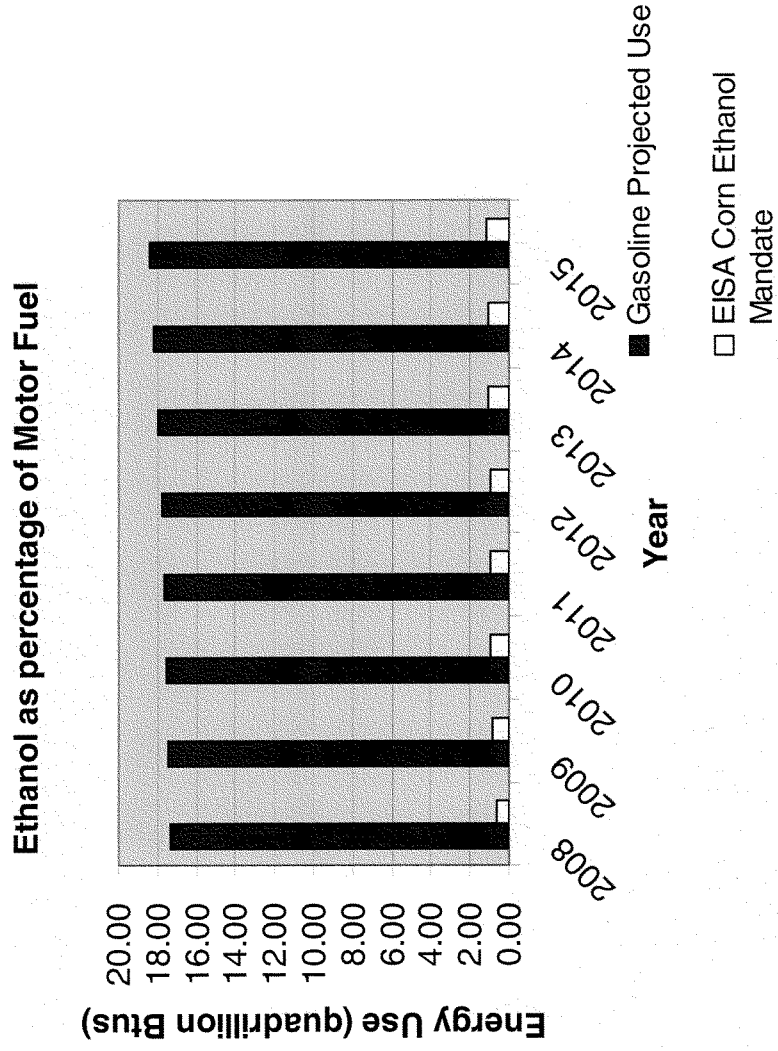
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<sup>10</sup>Ryan, Missy, "Commodity Boom Eats into Aid for World's Hungry," Reuters, September 5, 2007.

### Energy Imports

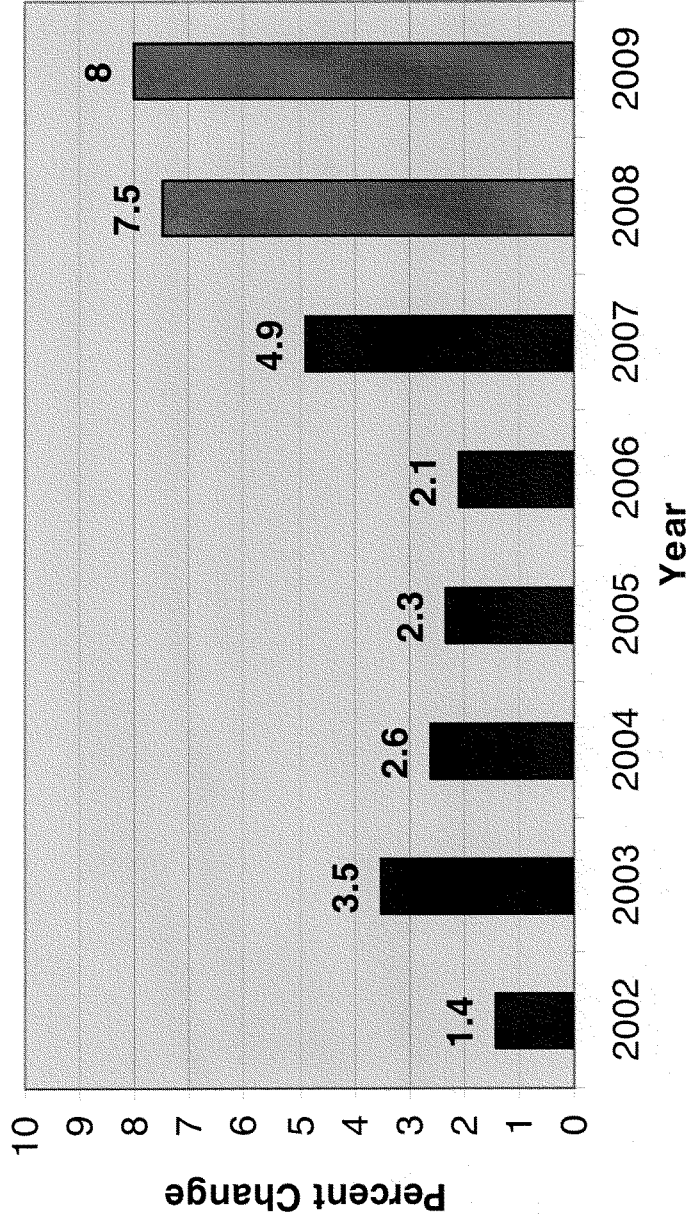


Source: Energy Information Administration, Energy Independence and Security Act of 2007



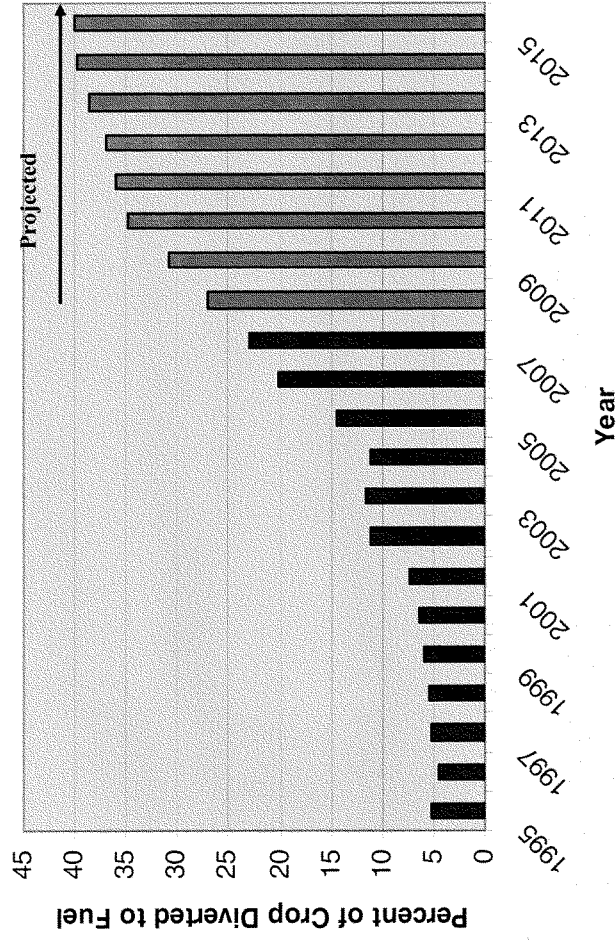
Source: Energy Information Administration, Energy Independence and Security Act of 2007

**Annual Consumer Food Inflation  
(%Change in CPI Food, 2008-2009 Forecast)**



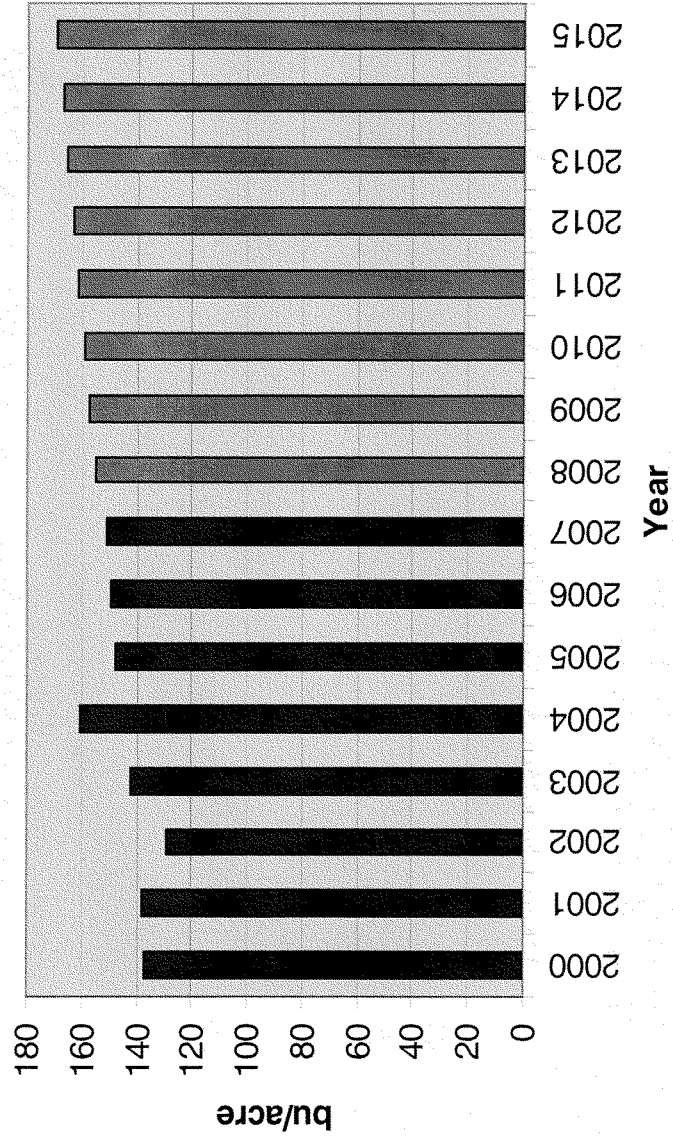
(Source: Bureau of Labor Statistics, Advanced Economic Solutions)

### Ethanol's Growing Share of Corn Crop

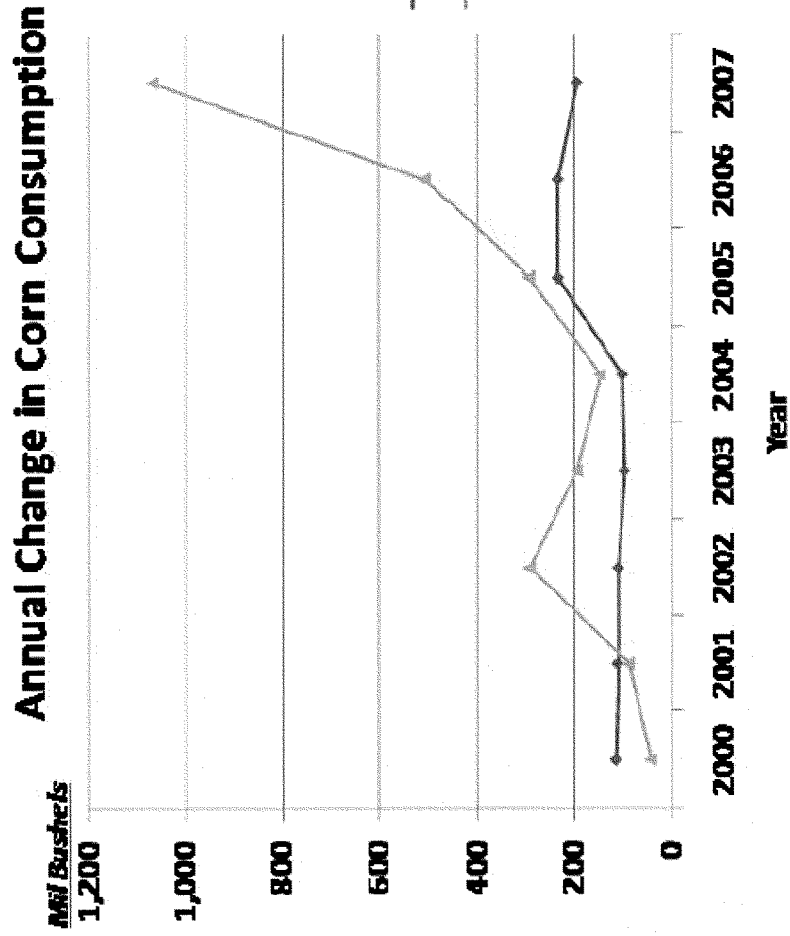


Source: USDA-ERS, projections derived from USDA yield projections and EISA mandates

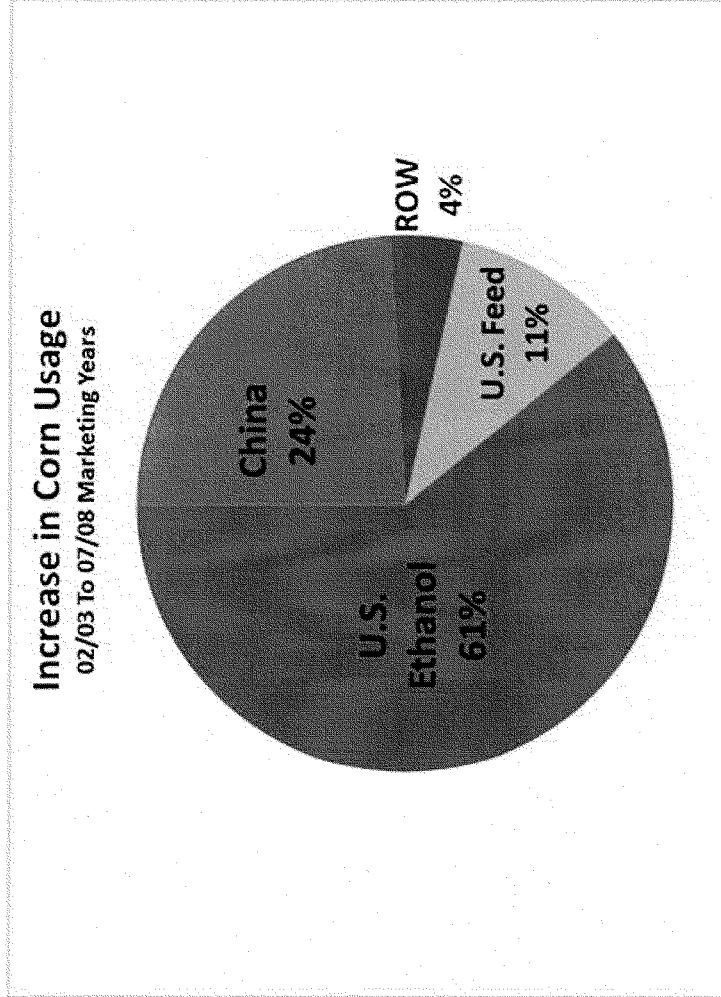
**Corn Yields 2000-2015 (projected)**



Source: USDA Projections



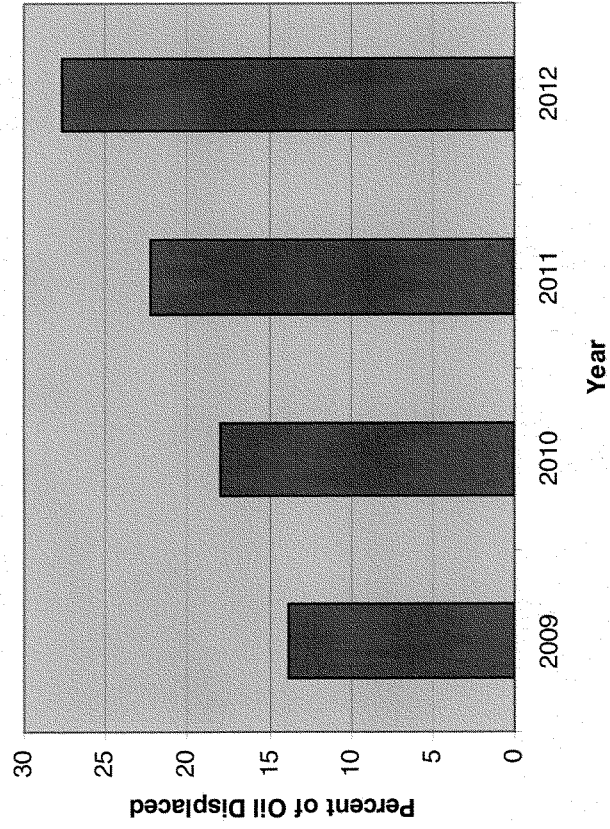
Source: USDA



Source: USDA



**Biodiesel's Growing Share of Domestic Soybean Oil Production**



Source: Data derived from USDA data, EISA mandate, based on 2007 production data

Mr. BOUCHER. Thank you very much, Mr. Faber.  
Mr. Tolman.

**STATEMENT OF RICK TOLMAN, CEO, NATIONAL CORN  
GROWERS ASSOCIATION**

Mr. TOLMAN. Thank you, Mr. Chairman, Ranking Member Upton and members of the Committee. I appreciate the opportunity to discuss the implementation of the newly enacted renewable fuels standard and the opportunities it has brought to rural economies and farmers across the Nation and to dispel some of the false assumptions about the role of corn in biofuels production.

My name is Rick Tolman. I am the CEO of the National Corn Growers Association, NCGA. We represent more than 32,000 dues-paying farmers from across 48 States as well as 300,000 farmers who contribute to corn check-off programs through our affiliated State organizations.

NCGA thanks Congress for their support and inclusion of the renewable fuels standard in the Energy Independence and Security Act of 2007, or EISA. This policy has been critical to the growth and economic development of rural America and has added value to our product, which for so long has been priced below the cost of production. EISA is sound energy policy that will encourage a diversification of our renewable resources and further reduce our dependence on foreign oil.

Biofuels have created investment and spurred economic development in many small towns that have suffered from depressed grain prices and flat demand. According to a recent study by a consulting firm, small and rural communities with ethanol facilities nearby see a dramatic economic boost. In 2007, an average 100-million-gallon-per-year ethanol biorefinery added \$367 million to the local GDP and created more than 2,400 new jobs across various sectors of the economy in that community.

Recently many critics have questioned the value and consequences of the renewable fuels standard. They are quick to point to biofuels as the primary reason for global food price increases. A look at the facts surrounding food prices simply doesn't support that logic. The effects of \$120-a-barrel oil have far more reaching effects on consumer prices for food. Petroleum is used in virtually every step of the food supply chain that begins with the farmer and ends at the consumer's table. In fact, just 19 cents of every consumer dollar can be attributed to the actual cost of farm products. Even when corn is priced at \$5 a bushel, a box of Corn Flakes contains less than 8 cents worth of corn. According to USDA, a 50 percent increase in the price of corn translates to an overall increase of retail food prices of less than 1 percent. In addition, a recent study by Texas A&M University stated, "Relaxing the renewable fuels standard does not result in significantly lower corn prices." The study went further to say, "The underlying force driving changes in the agricultural industry, along with the economy as a whole, is higher energy costs evidenced by \$100-a-barrel oil." Ethanol is not the primary factor in food price increases. It saves consumers at the pump, reduces greenhouse gas emissions and is being produced more efficiently, more economically and more sustainably every day.

In terms of global supply, contrary to the media, it is not a choice of food or fuel. USDA is projecting the corn industry to have a record export number this year for 2008 to satisfy growing demand for corn around the world, a record amount. We are exporting more this year than we have ever exported before so it is not a choice. It is disingenuous to say that ethanol is not a factor in heightened corn demand but how much of a factor is it? If we look purely at supply and demand numbers, we see that the corn supply has grown large enough to accommodate both food and feed and ethanol demand, and Bob and others have gone through those numbers with you.

I will set Mr. Faber's mind at ease. We in our analysis do not ever see the ethanol taking more than 27 percent of our corn supply, even out to 2015 when the corn portion hits its peak. That is because farmers are very productive. Meeting the needs of growing world population requires cutting-edge technology innovation. Last year farmers produced an average of 151 bushels of corn to the acre. Our corn yields have doubled in less than the last 40 years and they are projected to double again in the next 25 years. We are on the cusp of a very significant increase in technology and productivity. That means we don't have to significantly increase acres and we don't have to choose between food and fuel. We can do both in a reasonable and rational way.

Additionally, there is much misinformation being circulated today on agricultural land use and crop allocation. We hear misleading statements in the press that corn displaces wheat and soybeans and other acres. In fact, corn acres will be down in 2008, wheat and soybean acres will be up, and wheat acres have increased each of the last 3 years.

Congress directed EPA to examine the role of direct and indirect land-use changes in connection with the legislation. In that consideration, the impacts and interplays of numerous global, economic, social, political factors on land also need to be considered. In particular, it is imperative that the impact of global energy markets on agriculture, specifically land use, be understood and modeled. Further, the effects of population growth. According to USDA, the conversion of farmland in the United States to urban use is on the rise. Over the last 10 years we have lost an average of 2.2 million acres of farmland going to urban use.

In conclusion, NCGA sees the renewable fuels standard as a critical part of domestic energy security. Its inclusion has strengthened our energy policy and further diversified our Nation's fuel supply in a time of global volatility and increasing demand for energy. Corn growers will continue to meet the growing demands of food, feed, and fuel in an economic, rational, and environmentally responsible manner.

Thank you.

[The prepared statement of Mr. Tolman follows:]

#### STATEMENT OF RICK TOLMAN

Mr. Chairman, Ranking Member Upton and Members of the Committee, on behalf of the National Corn Growers Association (NCGA), I appreciate this opportunity to discuss the implementation of the newly enacted Renewable Fuels Standard and the

opportunities it has brought to rural economies and farmers across the Nation and to dispel certain assumptions about the role of corn in biofuel production.

My name is Rick Tolman; I am the CEO of the National Corn Growers Association. The National Corn Growers Association represents more than 32,000 corn farmers from 48 states as well as more than 300,000 farmers who contribute to corn check-off programs and 26 affiliated state corn organizations across the country. NCGA continues to be committed to creating new opportunities and markets for corn in the US and around the globe.

The National Corn Growers Association thanks the Committee for their support and inclusion of the Renewable Fuels Standard in the Energy Independence and Security Act of 2007 (EISA). This policy has been critical to the growth and economic development of rural America and has added value to our product, which for so long has been priced below the cost of production. EISA was sound energy policy that encouraged a diversification of renewable resources and further reduced our reliance on foreign oil.

Recently, many critics have been quick to point to biofuels as the primary reason for global food price increases as well as questioning biofuels ability to reduce greenhouse gas emissions and be produced in a sustainable manner on a world stage. Evidence strongly shows that ethanol is not the primary factor in modest food price increases, saves the American consumer at the pump, reduces greenhouse gas emissions and is being produced more efficiently, more economically and more sustainably everyday.

Agriculture has been the backbone of the American economy since the birth of the nation. US producers have consistently answered the call to provide feed, food and now fuel to the global marketplace. We have seen dramatic increases in corn yields on existing farmland due to advances in technologies, more environmentally efficient practices being utilized by farmers, and increases in demand across the globe continue to be met.

#### RURAL DEVELOPMENT

Renewable fuels policy has been instrumental in the rejuvenation of rural economies throughout the world. Biofuels has created investment and spurred economic development in many small towns that have suffered from depressed grain prices and flat demand. According to a study by consulting firm LECG, LLC, small and rural communities with ethanol facilities nearby see a much more dramatic economic boost. In 2007, an average 100 million gallon per year ethanol biorefinery added \$367 million to the local GDP, created more than 2,400 new jobs across all sectors of the economy including 50 at the biorefinery itself and more than 1,300 in the agricultural sector, and has boosted local household incomes by more than \$100 million.

Additionally, higher global grain prices and development of world biofuels trade are allowing small farmers in many parts of the world to earn a profit on their crops for the first time in years. For example, a \$115 million ethanol project in Nigeria is expected to empower 5,000 local peasant farmers, bring new investment and jobs to the area, and stimulate agricultural production. The project's coordinator, Mr. Tunji Awoniyi, says ethanol and crop production is "a huge weapon to fight deprivation, either financially or otherwise" in Nigeria, which currently imports ethanol from Brazil to satisfy its biofuels requirements .

The strong renewable fuels policies in the United States have not only created local, rural economic growth, but have increasingly promoted development and prosperity among third world farmers. The Renewable Fuels Standard and other biofuel programs have created opportunities for rural communities and subsistence farmers across the globe.

#### FOOD PRICES

Recently, the media and ethanol critics have demonized corn ethanol and attempted to solely blame higher commodity costs and government policies promoting renewable fuel on rising food costs.

In attempting to justify their opposition to the RFS and ethanol expansion, opponents continue to make the claim that higher corn prices are causing higher retail food prices. A look at the facts surrounding food prices simply doesn't support that logic. More so, the effects of \$120 barrel oil have far reaching effects on the consumer price for food. A recent study by the Oregon Department of Agriculture details the factors affecting food price: a growing middle class in Latin America and Asia, drought in Australia, low worldwide wheat stocks, increases in labor costs, a declining U.S. dollar, regional pests, diseases, droughts and frosts, and marginal impacts from ethanol demand for corn and sugarcane.

Again, numerous cost factors contribute to retail food prices. According to USDA, labor costs account for 38 cents of every dollar a consumer spends on food. Packaging, transportation, energy, advertising, profits and other costs account for 43 cents of the consumer food dollar. Petroleum is used in virtually every step of the food supply chain that begins at the farm and ends at the consumer's table. One recent study found that a \$1-per-gallon increase in the price of gas has three times the impact on food prices as does a \$1-per-bushel increase in the price of corn. Certainly the recent increase in diesel prices may have a more pronounced effect.

In fact, just 19 cents of every consumer dollar can be attributed to the actual cost of farm products like grains, oilseeds and meat. Retail food products such as cereals, snack foods, and beverages sweetened with corn sweeteners contain very little corn. Consider that even when corn is priced at \$5 per bushel, a standard box of corn flakes contains less than 8 cents worth of corn.

Corn is a more significant ingredient for meat, dairy, and egg production. Still, corn represents a relatively small share of these products from a retail price perspective. As an example, according to the National Cattlemen's Beef Association, it takes about 3 pounds of corn to produce one pound of beef. This equates to 27 cents worth of corn in a pound of beef when corn is \$5 per bushel. Similarly, there's about 16 cents worth of corn in a gallon of milk when corn is \$5 per bushel.

Because corn and other grains constitute such a small portion of retail food products, higher grains prices are unlikely to have any significant impact on overall food inflation, according to a number of experts. According to USDA economist Ephraim Liebtog, a 50% increase in corn prices translates to an overall increase of retail food prices of less than 1 percent. Similarly, a recent analysis by Informa Economics found that higher corn prices "explain" only 4 percent of the increase in retail food prices. This is corroborated by a fact sheet released by the White House last week that says, "Increased production of corn-based biofuels is estimated to account for only three percent of the 43 percent increase in global food prices."

And though we're hearing lots of news about "skyrocketing higher food prices," very few reporters have taken the time to see just how much higher food prices really are. According to the Bureau of Labor Statistics, the 25-year average annual inflation rate for food is 2.9%. That means \$100 worth of groceries in 2006 should have cost \$102.90 in 2007 under normal food inflation circumstances. But, as the news has widely reported, food inflation was above the 25-year average in 2007—but how high above normal? USDA estimates food inflation averaged 4% in 2007. So that means in 2007 the consumer spent \$104 on groceries that would have cost \$100 in 2006 instead of the \$102.90 that would have occurred under normal circumstances. So the net increase was really about \$1.10 for every \$100 worth of groceries, or 1 penny per dollar spent. According to USDA, projected food inflation for 2008 is likely to register between 4 and 5%.

Let's compare that to gasoline. In May 2006, \$100 would have bought you 37 gallons of regular unleaded gasoline. You would have had to spend \$116 to buy the same 37 gallons in May 2007; and this week, 37 gallons will cost you \$133.20. That's a 33% increase since 2006. And gasoline prices would be even higher without ethanol. A working paper released last week by Iowa State University says ethanol "has caused retail gasoline prices to be \$0.29 to \$0.40 per gallon lower than would otherwise have been the case." This conclusion is consistent with the findings of a recent Merrill Lynch analysis that determined gas prices would be 15 percent higher without ethanol.

A recent study by the Agricultural Food and Policy Center at Texas A&M University stated, "Relaxing the RFS does not result in significantly lower corn prices." The study went further to say, "the underlying force driving changes in the agriculture industry, along with the economy as a whole, is overall higher energy costs, evidenced by \$100 barrel oil."

More so, if policymakers are truly interested in determining the cause of higher corn prices, our suggestion would be that they start not with the ethanol industry, but with speculative investors in the commodity markets. As the stock market and other traditional investments began to stagnate in mid- to late-2007 and the credit crunch hit financial markets, index funds and "commodity pools" began to pour unprecedented amounts of capital into commodities. According to the March 31 edition of the financial publication Barron's, "The speculators' bullishness may be way overdone, in the process lifting prices far above fair value." According to Bloomberg, "commodity-index funds control a record 4.51 billion bushels of corn, wheat and soybeans through Chicago Board of Trade futures, equal to half the amount held in U.S. silos on March 1. The holdings jumped 29 percent in the past year as investors bought grain contracts seeking better returns than stocks or bonds. The buying sent crop prices and volatility to records and boosted the cost for growers and processors to manage risk."

Anecdotal reports from commodity analysts suggest that as much as one-quarter of the current price of nearby corn futures is due to speculative investment—primarily large index funds and commodity pools. This means if you take the speculators out of the market, corn futures would likely be in the \$4 to \$4.50 per bushel range.

Again, we know there are several other factors driving corn demand and price that are frequently overlooked. Consumers in nations like China and India are demanding more protein and more calories. Just as China and India are driving global energy markets, they are also a major demand driver in agricultural markets. Increased meat consumption is most significant in China where it has tripled in the last two decades and continues to grow at 4% to 5% per year. Globally, per capita meat consumption has grown from 30 kilograms in 1980 to an estimated 43 kilograms today.

In addition to increased meat exports to China, India and elsewhere, USDA is projecting the corn industry will export more corn than ever before in 2008 to satisfy increased feed demand in Central America, Asia and other regions.

Certainly, currency valuations play a role in surging exports. The relative weakness of the dollar is encouraging stronger exports and is making U.S. ag products a good buy on the world market. In 2007, the dollar weakened against the currencies of our largest trade competitors. The biggest reduction was versus Brazil, at over 17 percent, but the dollar also declined versus the euro (10 percent) and the Chinese yuan (5 percent).

And despite higher feed costs and tighter margins, the amount of corn demanded by the U.S. livestock and poultry sector will be 10 percent higher this year than last. This proves the livestock industry has not yet contracted and that meat demand is strong.

It would be disingenuous to say that ethanol is not a factor in heightened corn demand. But how much of a factor is it? If we look purely at supply and demand numbers, we see that the corn supply has grown large enough to accommodate increases in ethanol demand.

For example, in 2006, corn growers produced 10.5 billion bushels and used 2.2 billion bushels for ethanol, meaning 8.3 billion bushels were available for other uses. Additionally, the equivalent of 600 million bushels of corn was returned to the feed supply in the form of distillers grains. In 2007, corn farmers grew a record crop of 13.1 billion bushels and are expected to use 3.1 billion bushels for ethanol, meaning 10 billion bushels are available for other uses. Nearly 900 million bushels of corn equivalent feed will be returned to the feed market in the form of distillers grains this year. So, yes, the amount of corn used for ethanol is growing, but so is the amount of corn available for other markets and so is the amount of distillers grains—one of the major benefits of using corn as a feedstock in ethanol production.

#### TECHNOLOGY ADVANCES

Furthermore, meeting the food and energy needs of a growing world population requires cutting-edge technology and innovation. New technologies are allowing U.S. corn farmers to produce substantially more corn per acre of land in a sustainable way, and with more countries adopting biotechnology, yields globally will be substantially higher, further helping to meet growing demand for food and fuel.

Today's corn seeds are produced using the latest advances in plant biotechnology and plant breeding. The best traits from one corn variety are combined with complementary traits from other varieties to produce more productive and stronger corn plants. Last year, corn farmers produced an average of 151.1 bushels of corn per acre. Consider that 10 years ago in 1998, the average production per acre was 134.4, and 20 years ago in 1988, the average was 84.6 bu./acre.

Corn productivity per acre is increasing at an accelerated rate because of new advances in marker-assisted breeding, biotechnology and improved farming practices. Increased yield per acre allow growers to harvest considerably more corn without significantly increasing acreage. Based on past performance, average production per acre is projected to hit 175 bu./acre by 2015. However, if productivity gains continue to increase at the rate of recent years, average yield per acre could easily reach 180 bu./acre by 2015. Seed technology providers have stated corn production could reach 250 to 300 bushels per acre by 2030. Improved management practices also play an important role in increased productivity, and the increased adoption of tools like GPS yield mapping and precision nutrient application are helping farmers grow more corn per acre while conserving inputs.

## INPUT COSTS

Another factor that is often overlooked in this debate is the soaring price of energy on farmers. Due to surging energy prices, the cost of producing corn has increased tremendously in recent years. Though our energy efficiency is constantly improving, a considerable amount of fossil fuel energy is required to produce our bountiful grain harvests.

According to the Energy Information Administration, the cost of diesel fuel averaged \$4.18 last week, an increase of 48.6% over the same time last year and more than double the price from April 2004.

Undoubtedly, the main factor driving production costs to unprecedented levels is skyrocketing fertilizer costs. The farm price for nitrogen fertilizers—most of which are derived from natural gas—has increased more than 60 percent just since 2006. Additionally, between January 2007 and February of this year, the price of two other important fertilizers—potash and diammonium phosphate—increased 139 percent and 155 percent respectively.

In fact, the Center for Farm Financial Management forecasts fertilizer costs per acre in 2008 will be double 2002 costs. And because fertilizer costs represent about 40 percent of a farmer's variable production costs, these price increases are having a tremendous effect on profit margins and risk.

Higher natural gas prices also increase the farmer's cost of drying grain and, in some cases, irrigation. Land prices and cash rent prices have also increased tremendously due to the heightened value of agriculture products. Additionally, seed prices have nearly doubled in the last 4 years.

These sharply higher input costs make growing corn in 2008 a costly proposition. Though the farm price for corn is indeed higher than in the past, the farmer's profit margins are not all that much different than they've been historically.

## ACREAGE TRENDS

Additionally, there is much misinformation being circulated today on agricultural land use and crop allocation. We hear blatantly misleading statements in the press about corn acres displacing wheat, soybeans, and other crop acreage. We also hear the false rhetoric that increased demand for corn is leading to cultivation of grassland and other non-agricultural lands.

The truth is, farmers respond to signals from the marketplace when they make their planting decisions—they always have and they always will. In 2007, the market sent a clear signal to farmers to plant more corn and they did. Farmers planted 93.6 million acres of corn—the highest level since 1944—and produced a record crop of 13.1 billion bushels. In 2008, the market is calling for more wheat and soybeans, so farmers are expected to plant more of those crops and less corn.

It is notable that U.S. wheat acres are up for the third consecutive season and will be at their highest level in 10 years. U.S. soybean acres are likely to be 18 percent higher than last year. USDA's projection of 74.8 million soybean acres in 2008 would be the third-highest level of soybean acres in history. Additionally, barley acres are expected to be at their highest level in the last 4 years.

Corn acres will be down in 2008, but still at historically high levels. Given normal weather conditions during the growing season, it seems very likely that farmers will produce the second largest corn crop on record even with a reduction in corn acres.

Despite strong demand for U.S. crops, the number of acres enrolled in the Conservation Reserve Program has not departed from the norm. An estimated 34.6 million acres of land is currently enrolled in the CRP program. That is actually above the 10-year average of 33.6 million acres. It does seem likely that some of those acres will be brought back into production incrementally as 10-year contracts expire, but this transition is not something that will happen overnight.

The total area planted for all wheat, feed grains, oilseeds, and cotton is projected to be 252 million acres in 2008, just 1 percent above 2007 levels. This disproves the notion that increased demand for grains and oilseeds is driving significant expansion of cultivated land in the United States. For some additional perspective, consider that the annual area planted to wheat, feed grains, oilseeds, and cotton in the early 1980s was approximately 290 million acres, 15 percent more land than is used today for those crops.

## LAND USE CHANGES

Looking specifically at land use changes in relation to the increased RFS, Congress directed EPA to examine the role of direct and indirect land use changes in connection with expanded biofuels production. NCGA believes direct land use change as a result of biofuel production is a legitimate subject for environmental

analysis. In contrast, global indirect land use change caused by U.S. biofuel production is uncertain and speculative.

Recent papers in *Science* by Searchinger, et al., and by Farigone, et al., purport to connect increased demand for corn for biofuel production with large, indirect land use changes to satisfy the demand for animal feed left unfilled because of the increased demand for corn. These indirect land use changes are in turn linked to large emissions of greenhouse gases, thereby incurring a “carbon debt” that the authors believe may take many years to repay. Unfortunately, there is much that is speculative and uncertain about these claims. The simple fact that U.S. corn acres will be reduced and soybean acres will be increased significantly in 2008 demonstrates the flawed logic of these papers; that is, there are significant physical constraints on land use and expansion of agricultural area. It seems much of the current thinking on land use assumes land is readily convertible. Also, the role of the potential to increase corn yields on existing farmland, while at the same time increasing efficiency of fertilizer and water use and protecting water and soil quality must also be considered.

Land use changes cannot be looked at in the singular context of increased biofuel production. The impacts and interplay of numerous global economic, social and political factors on land use also need to be considered. In particular, it is imperative that the impact of global energy markets on agricultural markets (and specifically land use) are understood and properly modeled.

Even if there were such data connecting increased corn demand for ethanol with land use changes, ethanol produced in the United States would be responsible, in a strict lifecycle analysis sense, for anything but its own environmental profile. “New” corn produced in Brazil by clearing savannah to satisfy animal feed demand is responsible for its environmental profile as an animal feed, not as an ethanol feedstock.

For example, plastic bottles are made from ethylene. Ethylene can also be used to make carpets. If demand for ethylene to make plastic bottles grows, then more ethylene will be needed to satisfy the unfilled demand for ethylene carpets. But we do not make plastic bottle producers responsible for the environmental profile of carpet manufacturers. Likewise, it is unfair and unreasonable to make corn producers who are producing feedstock for biofuel production responsible for the speculative land use decisions of individuals tens of thousands of miles away who are producing corn or soy for animal feed.

More so, the debate appears to suffer from a lack of understanding of current tillage practices and crop yield growth. Further, the value, carbon intensity, and usage of biofuel coproducts (like distillers grains) needs more thorough analysis in the context of land use change. Additionally, continuous corn systems store more carbon than corn/soy rotation systems, a fact that seems to be lost on many academics considering these issues.

Further, the effects of population growth on physical land use changes (such as increased urban and suburban development and the associated loss of land for other uses) need to be considered in any analysis. According to USDA-ERS, conversion of farmland to urban uses—including residential, commercial, and industrial development is on the rise. On average, 2.2 million acres per year of farmland were converted to urban uses between 1992–2001, versus 1.1 million acres per year during previous decades. Developed area—which includes urban areas plus large lot development, development in rural areas, and rural roads and transportation-made up about 6 percent of US land in 2002. As illustrated, many factors need to be considered in a larger context when looking at land use changes dealing with biofuels and agriculture.

In conclusion, NCGA sees the Renewable Fuels Standard as a critical part of domestic energy security. Its inclusion has strengthened our energy policy and further diversified our Nation’s fuel supply in a time of global volatility and increasing demand for energy. Corn growers will continue to meet the growing demands of food, feed, and fuel in an economical and environmentally responsible manner.

#### SUMMARY OF TESTIMONY

The newly enacted Renewable Fuels Standard has created much needed economic opportunities in rural communities and to farmers across the Nation. Also, the National Corn Growers Association (NCGA) is here to dispel certain assumptions about the role of corn in biofuel production. Recently, many critics have been quick to blame biofuels for a host of supply and demand issues. Global food price increases coupled with the recent expansion of the Renewable Fuels Standard have been at the forefront of this biofuel debate. There are numerous factors that must be consid-

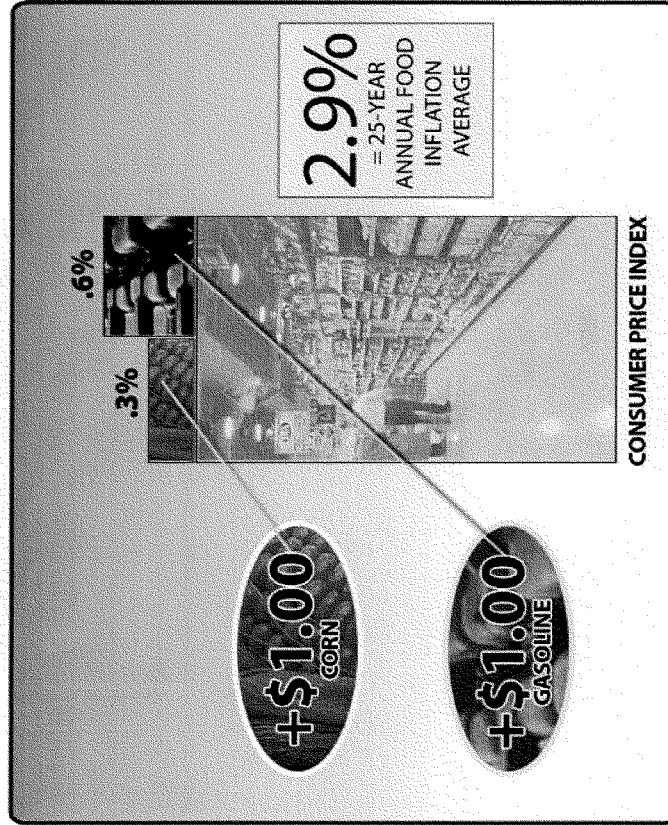


ered when weighing the value and consequences of the RFS. NCGA believes the RFS is a critical component of US energy policy.

Though many opponents claim that corn-based ethanol is the primary cause of increased food price, the logic simply does not add up. In fact, just 19 cents of every consumer dollar can be attributed to the actual cost of farm products like grain. More so, relaxing the RFS will have little impact on the price of corn and high energy cost play a far more reaching role. In addition, Congress must look at dramatic increases in demand world wide for grain, a weak dollar, and drought in Australia.

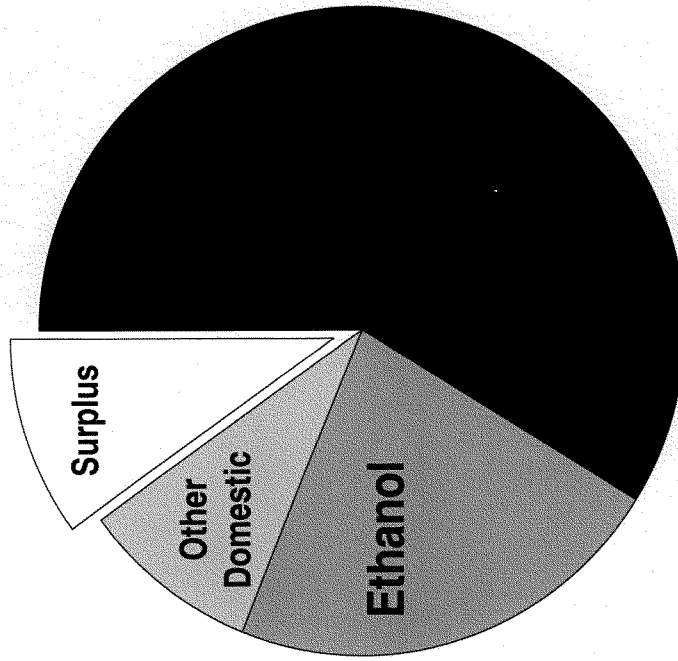
During this debate on the merits of biofuels, it is important to look at agriculture in more than a singular context. Looking specifically at advances in biotechnology, dramatic increases in input costs on farmers, acreage trends, and increased yields, and land use changes in relation to biofuels will provide a holistic view of the role corn plays in biofuel production.

# Increased Energy Costs Have Twice the Impact of Increased Corn Costs



Source: LECC, "The Relative Impact of Corn and Energy Prices in the Grocery Aisle"

# 2007 Corn Supply and Demand



**Total Supply:  
14.4 billion bushels**

**Feed: 42%**

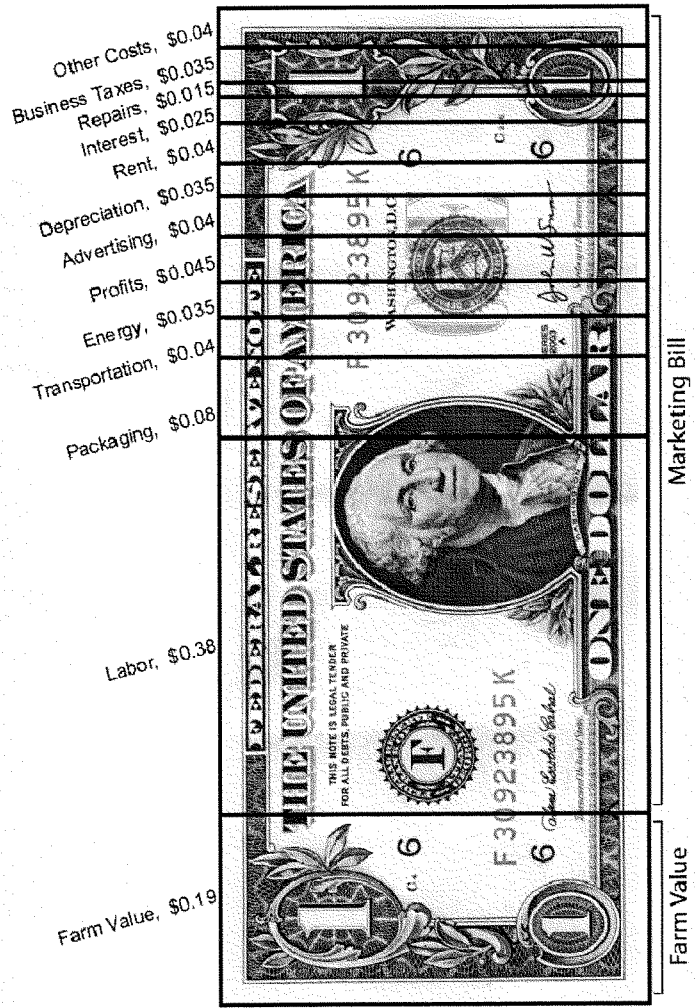
**Ethanol: 22%**

**Export: 17%**

**Other Domestic: 9%**

**Surplus: 10%**

# Farm Inputs a Small Share of Consumer Food Price



Source: USDA-ERS

Mr. BOUCHER. Thank you very much, Mr. Tolman.  
Dr. Stowers.

**STATEMENT OF MARK STOWERS, VICE PRESIDENT,  
RESEARCH AND DEVELOPMENT, POET**

Mr. STOWERS. Mr. Chairman, Ranking Member Upton, and distinguished committee members, thank you for the opportunity to visit with you today. My name is Mark Stowers. I am vice president of research and development at POET. I would like to talk to you about our company's commitment to cellulosic ethanol as well as the challenges and opportunities presented by that endeavor.

POET headquarters in Sioux Falls, South Dakota, is the largest dry mill ethanol producer in the United States. POET is an established leader in the biorefining industry and has built 29 ethanol production facilities and currently manages 23 plants in the United States, while marketing 1.3 billion gallons of ethanol and 3.3 million tons of distillers grain. POET's strategy in the cellulosic ethanol production involves the utilization of existing corn-to-ethanol plants. We are doing this in order to capitalize on the existing infrastructure, utilities, roads, rail lines, material handling, and so forth. Our focus is on corncobs as the primary cellulosic feedstock using corn ethanol plant's existing farmer and often investor network to collect cobs.

We are also looking to eliminate the use of fossil fuels by processing waste streams from cellulosic ethanol process to energy for the entire plant, both the corn-to-ethanol and the cellulosic portions. This approach would allow rapid deployment of the cellulosic ethanol process across an expansive corn ethanol base through a bolt-on approach. POET is implementing this strategy through what is called Project LIBERTY, an integrated corn cellulose biorefinery. Project LIBERTY will transform POET Biorefining-Emmetsburg, an existing dry mill ethanol plant located in northwest Iowa, into an integrated corn-to-ethanol and cellulose-to-ethanol biorefinery. Once complete, this facility will produce 125 million gallons of ethanol, 25 of which will come from the feedstock of corn fiber and corncobs. The impact of Project LIBERTY in terms of ethanol production will be 11 percent more ethanol per bushel of corn and 27 percent more ethanol per acre of corn produced by using corncobs. Project LIBERTY will require almost no fossil fuels to operate. The total cost of the project will be in excess of \$200 million and will create at least 30 new jobs at the facility. POET is partnered with the Department of Energy and Project LIBERTY whereby DOE, the Department of Energy, will contribute up to 40 percent, or \$80 million, in project costs. Project LIBERTY is expected to be operational in 2011.

There are three aspects of cellulosic ethanol production that are integral to Project LIBERTY: the cellulosic feedstocks, the process to make cellulosic ethanol, and then the use of alternative energy. I am not going to focus on alternative energy. They are in my remarks to the committee in written form. POET has selected corncobs as the first feedstock for the production of cellulosic ethanol because they offer significant technical, environmental, and economic advantages. Cobs are typically left on the field after corn harvest with low fertilizer value and can be removed with very lit-

tle environmental impact. Corncobs are rich in sugars and are heavier than corn stalks, allowing them to be easily separated, and lastly, they can be collected relatively easily by the same farmers that provide the corn grain. Although the cob market or cob production is small, we have projected that over 5 billion gallons of cellulosic ethanol could be produced from corncobs in the United States.

In 2007, POET collaborated with John Deere, Case IH, and a number of major farm equipment manufacturers to collect corncobs from 4,000 acres in southeastern South Dakota. We have developed our 2008 harvest plan for collecting cobs in South Dakota and Iowa to increase our understanding of the cob production process, educate growers, and continue our collaboration with farm machinery companies to ensure that the best technology is available.

In order to develop and validate the necessary process technology to convert these corncobs to cellulose, we have restructured our research effort in cellulosic ethanol, expanded our collaborations across major corporations and universities and research institutes. Our own research and development activities within the company have increased in terms of our lab capability by six-fold, and we are constructing our cellulose ethanol pilot plant as we speak that will be capable of processing corn fiber, corncob, corn stover, and other cellulosic feedstocks. Recent technological advances give us great confidence that we are able to produce cellulosic ethanol economically with great advances in the key technologies of pre-treatment, enzyme hydrolysis and fermentation. While these are very important breakthroughs, we will continue to evaluate and develop new technologies to further reduce the cost of cellulosic ethanol to that which is corn-based economics today. There are many companies that are also making significant investments in cellulosic ethanol.

If the development and commercialization of cellulosic ethanol is to continue, there are several things that need to happen. One is strong corn-to-ethanol business and infrastructure is crucial to the development of the cellulosic ethanol industry. Without it, cellulosic ethanol will be delayed. The next piece would be the RFS continues to provide an important target for cellulosic ethanol. It is a real and attainable target. We believe we can meet the RFS standards. Increased usage of ethanol and greater numbers of flexible vehicles will be required. Recent research indicates that inclusion of greater concentrations of ethanol as a gasoline replacement beyond its rule as a historical fuel oxygenate represents significant opportunity. We see also continued government support, especially in the early stages for farmer-level support in collecting cellulosic feedstocks, loan guarantees, and lastly, the importance of continued research and development is a critical factor.

I would like to thank you for allowing us to speak here.

[The prepared statement of Mr. Stowers follows:]

#### STATEMENT OF MARK STOWERS

#### “POET’S COMMITMENT TO CELLULOSIC ETHANOL”

##### PREAMBLE:

Mr. Chairman and distinguished committee members, thank you for the opportunity to visit with you today. My name is Dr. Mark Stowers. I am Vice President,

Research and Development for POET. I would like to talk with you today about our company's commitment to cellulosic ethanol as well as the challenges and opportunities presented by that endeavor.

#### POET—INTRODUCTION

POET, headquartered in Sioux Falls, South Dakota, is the largest dry mill ethanol producer in the United States. POET is an established leader in the biorefining industry through project development, design and construction, research and development, plant management, ownership, and product marketing. The 20-year old company has built twenty-nine (29) ethanol production facilities and currently manages twenty-three (23) plants in the United States while marketing more than 1.3 billion gallons of ethanol and 3.5 million tons of distillers grains annually.

Since 2000, POET has constructed twenty-one (21) green field ethanol plants in seven (7) states and completed six (6) major expansions of existing facilities. The value of our design build contracts since 2000 has exceeded \$1,000,000,000. Additionally, three (3) green field projects of similar size and scope are currently under construction with several others in development. Each project has been successfully designed, built and managed by POET. These projects have resulted in the addition of more than one billion gallons per year (BGPY) of new fuel ethanol capacity.

The POET development model is unique. It started on the Broin family farm in Minnesota and has been spurred by the investment of thousands of farmers and individual main street investors. POET's business model is to invest in, develop, design, construct, and manage ethanol production facilities. However, the facilities are independent limited liability companies (LLC) owned primarily by individuals and local farmers that provide the corn feedstock. POET employs the facility's general manager and on-site technical engineer. All other employees are employed by the LLC. POET also has Board of Director representation at each plant.

By leveraging business size and position, POET has created the most successful ethanol facilities in the industry. POET has achieved breakthrough progress beyond ethanol processing, extracting extraordinary new value from each kernel of corn and is focused on meeting the nation's needs for domestic transportation fuels through cellulosic ethanol.

#### IMPORTANCE OF CELLULOSIC ETHANOL

According to the recent U.S. Department of Commerce International Trade Administration Study, "Energy in 2020: Assessing the Economic Effects of Commercialization of Cellulosic Ethanol" there is enough cellulosic feedstock available in the United States to produce nearly 50 billion gallons of cellulosic ethanol by 2020. At this production rate over 1.2 million barrels per day of crude oil could be displaced while creating over 54,000 jobs in U.S. agriculture. In more practical terms at this level of ethanol production the U.S. could eliminate all oil purchases from OPEC and the Middle East—eliminating the \$1.4 billion per day export of U.S. dollars based on \$120 per barrel oil to overseas producers.

In addition to the economic benefits, there are significant environmental benefits to cellulosic ethanol. Gasoline produces 25 pounds of carbon dioxide equivalent greenhouse gas (GHG) emissions. By comparison cellulosic ethanol reduces GHG emissions by a little more than 21 pounds of carbon dioxide on per gallon of gasoline equivalent—an 85% reduction. In order to monetize that benefit we can assign a value of \$20 per ton of carbon dioxide equivalent based on current European futures prices for carbon dioxide equivalents. On that basis the GHG emission reductions resulting from the use of cellulosic ethanol would be worth about \$0.19 per gallon or about \$2.5 billion per year by using a little more than 20 billion gallons of cellulosic ethanol.

The value of cellulosic ethanol to the U.S. economy, the environmental benefits and ability to mitigate national security risks are substantial. At POET we believe that cellulosic ethanol is real and achievable and something worth pursuing.

#### COMMITMENT TO CELLULOSIC ETHANOL

POET's commitment to cellulosic ethanol started 8 years ago when our company developed proprietary fractionation and raw hydrolysis technologies for corn grain. These technologies allow POET to process corn starch more efficiently and economically. Corn fractionation technology or BFRAC is a POET proprietary process that separates the corn starch from the corn germ and corn fiber, the cellulosic casing that protects the corn kernel.

The corn germ can be processed to produce crude or refined corn oil which has multiple end uses ranging from cooking to biodiesel. The corn fiber, due to its high sugar content can be processed to ethanol.

The corn starch is processed without cooking using another proprietary process called BPXT, resulting in an 8–12% reduction in BTU consumption, greater conversion of corn starch to ethanol, and a high nutrient density animal feed product which we label Dakota Goldr. This technology is important in that it allows us to use less fossil fuel, get better yields of ethanol per acre of corn and provide an animal feed product that the animal agricultural sector can use to replace corn in livestock, dairy, swine, and poultry rations.

As you can see, corn ethanol plants are highly efficient, they produce more than just ethanol, and they serve as sources for cellulosic feedstocks. Integrating cellulosic ethanol plants with corn ethanol plants has some significant advantages, which will be addressed later.

The next step toward cellulosic ethanol production was to incorporate BFRACT and BPX into an existing biorefinery. In 2002, POET partnered with the U.S. Department of Energy to construct a “Second Generation Dry Mill Biorefinery.” This effort sought to incorporate corn fractionation into a dry mill ethanol plant, processing the cellulosic corn fiber into ethanol and producing higher protein animal feed products. POET was able to incorporate a corn fractionation system in to a dry mill ethanol plant and to produce a higher protein animal feed product, but the ability to process corn fiber to ethanol proved to be more difficult due to limitations in the ability breakdown the corn fiber into usable sugars and for the sugars to be fermented to ethanol by known microorganisms.

• In 2006 a new strategy for cellulosic ethanol production was developed at POET involving the utilization of existing corn ethanol plants to:

- Capitalize on existing infrastructure (utilities, roads, rail lines, materials handling and so forth);
- Focus on corn cobs as the primary cellulosic feedstock using the corn ethanol plant’s existing farmer and often investor network to collect cobs;
- Eliminate the use of fossil fuels by processing waste streams from the cellulosic ethanol process to provide energy for the entire plant, the corn to ethanol and cellulose to ethanol portions.

This approach would enable rapid deployment of the cellulosic ethanol process as across an expansive corn ethanol base through a “bolt-on” approach. POET is implementing this strategy through what it called Project LIBERTY, an integrated corn cellulose biorefinery.

Project LIBERTY will transform POET Biorefining—Emmetsburg, an existing corn dry mill ethanol plant located in Northwest Iowa, into an integrated corn-to-ethanol and cellulose-to-ethanol biorefinery. Once complete, the facility will produce 125 million gallons of ethanol per year (mgpy), 25 of which will come from a feedstock of corn fiber and corn cobs. Also, the facility will annually produce 80,000 tons of Dakota Gold Corn Germ Dehydrated and 100,000 tons of Dakota Gold HP animal feed. The impact of Project LIBERTY in terms of ethanol production will be 11% more ethanol from a bushel of corn through the corn fractionation process and 27% more ethanol from an acre of corn through the use of corn cobs. In addition, Project LIBERTY will require almost no energy from fossil fuels. The total cost of the project will be in excess of \$200 million and create at least 30 new jobs at the facility.

The primary project goal is to design, construct, and operate the commercial-scale, integrated cellulosic ethanol biorefinery. Technologies will be replicable. POET’s longer-term plans are to roll out the technologies to other existing dry mills or new biorefineries. POET is partnered with the Department of Energy in Project LIBERTY whereby DOE will contribute up to 40% or \$80 million in project costs. Project LIBERTY is expected to be operational in late 2011.

There are three aspects of cellulosic ethanol production that are integral to Project LIBERTY—cellulosic feedstocks, cellulosic ethanol process technology, and the importance of alternative energy generation at a cellulosic ethanol plant.

POET has established a leadership position in the collection of cellulosic feedstocks. These feedstocks can be agricultural residues such as corn cobs, rice straw, or corn stover. They can also be wood fibers such as forestry wastes or wood wastes or energy crops such as switchgrass or Miscanthus. Municipal waste can also be a cellulosic feedstock.

POET has selected corn cobs as the first feedstock for the production of cellulosic ethanol because they offer significant technical, environmental, and economic advantages. Cobs are typically left in the field after the corn harvest and, with low fertilizer value, can be removed with little environmental impact. Corn cobs are also rich in sugars and are heavier than the corn stalk, allowing them to be easily sepa-



rated. And lastly they can be collected relatively easily by the same farmers that provide the ethanol plant the corn grain. Although the cob is small, we have projected that over 5 billion gallons of cellulosic ethanol could be produced from U.S. corn cobs.

In 2007 POET collaborated with John Deere, Case IH, and a number of major farm equipment manufacturers to collect corn cobs from 4,000 acres in Southeastern South Dakota. It was a very exciting time. For example, one of our collaborators created over 6 different generations of equipment design while in the field—there was a great deal of excitement indeed. Corn farmers began to see the possibility of harvesting corn cobs and the potential to generate new farm income through the sale of corn cobs to the ethanol plant. Today, in our labs, we are analyzing the cobs that we collected. We are sampling the over 60 cob piles located at the farm to determine the cob quality: the rate of decomposition and the performance of stored cobs in the production ethanol. We have developed our 2008 cob research plan and expect to collect cobs in South Dakota and Iowa to increase our understanding of the cob production process, educate growers, and continue our collaboration with farm machinery companies to ensure that the best technology is available.

In order to develop and validate the necessary process technology for Project LIBERTY, POET restructured its research effort in cellulosic ethanol and expanded its collaborations across major corporations, universities, and research institutes. We expanded our internal research and development effort, are nearing the completion of a 6 fold increase in laboratory space in Sioux Falls, South Dakota, and will soon begin construction of a cellulosic ethanol pilot plant capable of processing multiple corn based cellulosic feedstocks such as corn fiber, corn cobs, and corn stover. So what has changed about the processing of cellulose to ethanol since 2002 to increase our confidence that cellulosic ethanol is achievable?

Through our collaborations, especially with enzyme companies, we have been able to continually improve the process. Recently we devised a process to break down corn cobs into simple sugars resulting in a 60% increase in the yield of ethanol from cobs compared to just 3 months ago. By using physical and chemical treatments, we have been able to make corn cobs more digestible by enzymes without creating toxic by-products. We are now able to produce significant amounts of sugars for fermentation to ethanol.

We have also made significant progress in producing ethanol from simple sugars through better microorganisms and a better fermentation process. And lastly, through our own cutting-edge process engineering expertise we have devised a synergistic concept for the integration of a corn ethanol plant with one using only cellulosic feedstock.

While these are very important breakthroughs we expect to be able to further optimize this process over the next few months to achieve the necessary economics to make the process profitable. Over time, we will continually improve the process, similar to what we are currently doing with the corn ethanol process.

Alternative energy plays an important role in the cellulosic ethanol process. The low value of cellulosic ethanol waste streams as animal feed products makes their most favorable use a feedstock for solid waste fuel boilers or anaerobic digestion.

POET is currently installing a solid waste fuel boiler at POET Biorefining—Chancellor. This boiler at our Chancellor, South Dakota plant will process up to 350 tons of dried wood chips from a waste pallet processor to produce steam for the plant. POET Biorefining—Chancellor has also reached agreement with the City of Sioux Falls to purchase landfill gas for the boiler. By using wood waste and landfill gas, the Chancellor plant can eliminate 100 percent of its need for fossil fuels.

POET's Project LIBERTY will also incorporate a solid waste fuel boiler in its design. The feedstock for the LIBERTY boiler will be solid wastes from the cellulosic ethanol operation and additional corn cobs collected as part of the cellulosic feedstock. When coupled to an anaerobic digestion system to process the liquid wastes from the cellulosic process nearly all of the energy needs for the cellulosic- and starch-based operations can be met.

There are many other companies that are also making significant investments in cellulosic ethanol. If the development and commercialization of cellulosic ethanol is to continue, there are several things that need to happen:

1. A strong corn-to-ethanol business and infrastructure is crucial to the development of cellulosic ethanol. Without it, cellulosic ethanol will be delayed. The corn-to-ethanol industry can provide existing grower networks, production knowledge, product, market, and logistics knowledge to emerging cellulose producers and a distribution infrastructure. Financial lenders will support cellulosic ethanol provided there is a strong corn to ethanol industry.

2. The importance of the Renewable Fuel Standard (RFS). The RFS provides an important target for cellulosic ethanol—a real and attainable target. Continued sup-

port of the RFS will be important in demonstrating to the ethanol, transportation fuel and financial industries that there will be a market for ethanol.

3. Increased Usage of Ethanol and Greater Numbers of Flexible Fuel Vehicles. Recent research supports the inclusion of greater concentrations of ethanol as a gasoline replacement—expanding the use of ethanol beyond its historical role as a fuel oxygenate. So called “Mid Level Blends” of E20 and E30 have shown to be equal and in some cases better in overall miles per gallon with little to no deleterious impact on vehicles that make up the current U.S. automotive fleet. The increased commercialization of flexible fuel vehicles could help drive the greater usage of these mid level blends further reducing our dependence on foreign oil, reducing our fuel costs and helping the environment.

4. Governmental support. Governmental programs are necessary, especially during the early stages of the cellulosic ethanol industry development to enable financing at the grower/farmer level as well as cellulosic ethanol producers in terms of incentives, loan guarantees and market assurances. The energy title of the House passed farm bill provides the support through loan guarantees and a pilot program for the harvesting, transporting, and storing of cellulosic material that will move cellulosic ethanol much quicker to commercialization.

5. Continued investment in research and development. Significant cost reductions in the cellulosic ethanol process are required. The cost of enzymes still remains one of the most significant variable costs associated with the process. Microorganisms are only 20% as efficient in converting biomass derived simple sugars into ethanol as their counterparts that convert starch to ethanol.

Thank you for the opportunity to submit recommendations. Poet looks forward to working in partnership with the Congress, DOE, and USDA to advance cellulosic ethanol to the marketplace in order to meet our renewable energy goals.

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Mr. BOUCHER. Thank you very much, Dr. Stowers.  
Mr. Kripke.

**STATEMENT OF GAWAIN KRIPKE, DIRECTOR, POLICY AND RESEARCH, OXFAM AMERICA**

Mr. KRIPKE. Thank you, Mr. Chairman. Thank you, Representative Upton and the members of the Subcommittee. Thanks very much for holding this hearing, which is very timely, and in particular for inviting Oxfam to testify and giving us the opportunity to bring our concerns and perspectives before you on this important issue.

I am here today representing Oxfam, which is a nonprofit international aid and development organization. We work to reduce hunger and poverty in more than 120 countries around the globe. We don't take U.S. government funding. Our support comes from American citizens and philanthropies that care about global poverty.

The reason we are concerned about the issues today is because of the rapid rise in food prices around the world. The international food price index has been increasing and accelerating in recent years. It grew by 9 percent in 2006, accelerated to 40 percent growth in 2007 and has been accelerating even faster in the first few months of this year. This confluence of commodity price spikes across all the major food commodities means that there are very few safety valves for consumers to switch foods. So this is creating what has been described as a perfect storm of stresses, and in addition, there is every indication that these price increases will be sustained over time and that we may be witnessing a structural change in the market.

While this hearing is about renewable fuels, I hope you will give me a minute to talk about poverty and hunger because I think these issues are related. The majority of the world's poor people are

food producers and so food price increases actually can have a beneficial effect, but all the world's poor people are food consumers and so higher food prices create stresses. On balance, the recent food price increases have been more negative for poverty and hunger than positive. The World Bank studied the issue and found that the recent food price hikes have probably increased global poverty by about 4.5 percent. In global terms, that is about 100 million people being pushed into absolute poverty. Put another way, that is about 7 years of progress in reducing poverty that has been turned back in 1 year.

Humanitarian agencies like Oxfam and the World Food Program are facing real stresses in meeting our fundamental mission. Those of us who distribute and use food in our programming are finding that our dollars go much less far than they used to and we are having to cut programs. Millions of people may be cut off of food assistance this year because of the high food prices, and the World Food Program and other agencies have put out specific appeals to deal with the high food prices.

Now, it is important to remember what these impacts are on poor people. In this country, households spend about 10 percent of their income on food but in developing countries; poor people can spend between 50 and 80 percent of their income on food. So even modest increases in food prices can have really devastating impacts on households. Food prices require changes in behavior that include reducing food consumption, switching to less nutritious food, reduced consumption of other needs like healthcare and education, and the sale of assets like livestock and land or some combination of these activities.

We believe that the diversion of corn to ethanol in this country is having a significant impact, not just on food prices on this country but globally. The scale of it is quite large. This year we are going to convert approximately a quarter of our corn harvest into biofuels. That is an increase from 20 percent last year and 14 percent the year before. The volume is almost doubled in 2 years of corn diverted from food and feed toward energy. Now, remember that 1.2 billion people around the world rely on corn as their preferred staple cereal and the United States is a major exporter. In fact, we export more corn than all world's other exporters combined, so what happens in the U.S. markets has big impacts on corn prices and other commodity prices in other countries. So by taking 3.1 million bushels of corn off the food market this year, we are taking about one-tenth of the global corn production off the food market this year, and that is having a global impact.

The IMF estimates that this year our ethanol mandates are generally one-half of the increased consumption in cereals. Now, we have heard other panelists say that they don't think that the ethanol mandates are having an impact on prices, but our ethanol mandates are generating half of the increase in consumption. More than China, more than other factors, is the diversion of corn into ethanol in this country. What is very worrisome is that these mandates are scheduled to escalate over coming years to approximately double within only a few years so the stresses that we are experiencing now could be magnified in future years.

I want to quickly shift to the recommendations, and I see my time is up, so I will make this quick. We have a range of responses that range from immediate to longer term. The first is that we have to deal with the humanitarian crisis and we recommend that Congress fully respond to the UN agency's appeal for added funds to deal with the higher food prices. The World Food Program estimates they need an additional \$755 million this year just to keep current operations.

Next, we believe that Congress really needs to sort out the impacts that the ethanol mandates are having. There isn't yet very good and agreed-upon information about what the interrelations are between the environment, the ethanol mandates and food prices, and so we recommend something along the lines of a blue ribbon commission or a consultation with experts to provide a clear analysis and recommendations for action, and if the result of that analysis is that biofuel mandates are driving up food prices and exacerbating hunger and poverty, we think that Congress should act very quickly to freeze or even roll back the biofuels mandates.

The last two recommendations are that if biofuels do offer benefits for energy security and for the environment, that we should consider making the market fair and open and allowing other competitors to compete for our market. Biofuels can offer economic benefits and opportunities for developing countries and there is no reason why they shouldn't also benefit from this new trend in the market.

[The prepared statement of Mr. Kripke follows:]



**Statement of**

**Gawain Kripke**

Director of Policy & Research  
Oxfam America

**before the**

**Subcommittee on Energy and Air Quality**

**hearing on**

**"The Renewable Fuels Standard:  
Issues, Implementation, and Opportunities"**

**May 6, 2008**

Good morning Chairman Boucher, Representative Upton and the members of the Subcommittee. Thank you for holding this hearing and for inviting Oxfam America to appear. We sincerely appreciate the opportunity to bring our concerns and perspectives before you on this important issue.

*Introduction*

I am here today representing Oxfam America, a non-profit international aid and

development organization working to reduce poverty and hunger in more than 120 countries around the globe. Oxfam America takes no US government funding—our support comes from American citizens and organizations that care about global poverty.

*State of the world on hunger*

While we are here today to discuss the renewable fuels standard, I hope you will permit me to say a few words about hunger.

After a very long and steady decline over the course of decades, the number of people facing chronic hunger globally took a disappointing turn upwards in the last few years. The reasons for this are various, but include the predictable causes: wars, unfair access to resources, failed governments.

It might seem obvious that lack of food is the cause of hunger. And while that's true it's actually much more complicated. The truth is that the world does not lack for food. Globally, we produce more than enough calories and nutritious food to sustain humanity. While there are droughts and other circumstances that create acute food scarcity, more usually hunger is caused by other factors.

The most important cause of hunger is poverty. Approximately 1 billion people – one-eighth of humanity -- survives on an income of less than \$1 a day. More than 2.5 billion people scrape by on less than \$2 a day. This is a vast pool of vulnerable people, spread out across the world. For these people and their families, hunger is a constant worry and a looming possibility. Approximately 850 million are malnourished,<sup>i</sup> For those who are not, hunger could be just one bad harvest away or a health crisis that requires expensive medicines or rising prices for food.

While the large majority (75%) of poor people are food producers, they are all food consumers. Higher agricultural prices can actually help many poor people by offering more money for the products they are involved in producing. But higher food prices can also drive people deeper into poverty if they are net consumers of food. The World Bank recently studied the issue and found that, while recent food

price increases have diverse impacts, in general they are negative for poverty. Overall, the study finds that the recent food price increases will increase absolute poverty by 4.5%. Projected across the globe, this is an increase of more than 100 million people in poverty.<sup>ii</sup>

Policy-makers actually have a very limited set of tools available to help these people. Food aid, for example, is critically important, but only reaches about 100 million people a year, less than one-eighth the number of those who are malnourished people.

This is why I believe this hearing today is so important. We have a deep responsibility to carefully assess the impact of our policies on those who face poverty and hunger and to take actions to make the lives of poor people less difficult. Life should not be a constant battle for survival, but an opportunity to enjoy sustainable livelihoods and the benefits they provide.

#### *The shock of price increases*

The recent spike in food prices has caught the world by surprise. It was not long ago when low commodity prices were viewed as the bigger challenge and food prices were expected to decline steadily.

For example, as recently as 2006 the US Department of Agriculture's Economic Research Service (ERS) was saying that "Retail food prices are projected to increase less than the general inflation rate," and the ERS projected farm income to decline.<sup>iii</sup> Likewise, international market observers expected low and even declining agriculture commodity prices. The UN Food and Agriculture Organization said, "Farmers and countries that depend on commodity exports have to contend with the long-term decline and short-term volatility of real commodity prices on international markets."<sup>iv</sup>

Instead, agriculture commodity prices have risen steadily over four years, and accelerated dramatically in the last year. The international food price index increased by 9% in 2006, but accelerated to a 40% increase in 2007.<sup>v</sup> Food prices

have continued this dramatic rise in the first three months of 2008.

Price volatility in agricultural commodities is not uncommon. What is unusual, however, is the confluence of the hike in world prices of nearly all major food and feed commodities. This means there is no safety valve for consumers seeking cheaper alternatives. There are also indications that these high prices may be sustained over time – meaning the prices are flowing through the production and value chain to reach consumers in the form of higher prices for both basic and processed foods.

High food prices threaten to cause hunger and increased poverty. Where incomes are not rising at the same rate as food inflation, high food prices seem certain to cause an increase in food insecurity and pose risks of widespread food crises in many developing countries.

Some of the first warnings about the high food price crisis came not directly from people facing food insecurity, but from the humanitarian agencies trying to assist them. In January, the UN World Food Program (WFP) put out a special appeal for Afghanistan noting that millions of Afghans could no longer afford to buy the wheat that is a staple in that country. Since November 2007, price of bread in Kabul increased from \$0.11 to \$0.21, an increase of over 90%. As a result, 1.4 million people in rural areas and 1.1 million in urban areas have been pushed into high risk for food insecurity.

Later, the UN WFP made an emergency appeal for an additional \$775 million, saying that high food prices had made it impossible to fulfill its 2008 plan to provide food assistance to 73 million people in need. The WFP's original budget was \$2.9 billion. Although new pledges have been made, the appeal has not yet been met. The WFP has recently announced that it will suspend a school feeding program for 450,000 children in Cambodia in May, unless additional funding is found.<sup>vi</sup>

Other humanitarian agencies are experiencing similar strains and making similar difficult decisions. Last week, World Vision International announced it has discontinued feeding programs for more than 1 million people due to increased food



costs and lack of funding.<sup>vii</sup> CARE has cut the size of its rations in Somalia.<sup>viii</sup>

Price increases are affecting markets across the world increasing the costs of staples and generating spontaneous protests and some civil unrest. Dozens of countries have experienced “food riots” in recent months.

While higher agricultural commodity prices are affecting industrialized and developed countries, and rich and poor, alike, the impact of higher food prices is different. Two factors tend to moderate the impact of higher agricultural commodity prices on consumers in the US, and conversely magnify their impact for poor people in developing countries.

First, most American consumers don't buy agricultural commodities. American consumers rarely buy wheat, for example. In fact, most households buy wheat flour only occasionally. Instead, we buy bread. And although bread may be made of wheat, the value of the raw commodity in the final product is actually quite small, perhaps 20 percent. So, even dramatic increases in wheat prices, will translate into relatively modest increases in bread prices.

This contrasts with poor consumers in developing countries, who often buy food in much less processed forms, as wheat flour or maize kernels. For these consumers, commodity price increases are felt more directly in their purchasing power.

The second factor that tends to moderate the impact of high agricultural commodity prices for American consumers is the fact that we're the wealthiest country on Earth. For the average American household, food makes up around 10 percent of our expenditures. For poor American households, food can make up as much as 25 or 30% of expenditures. Increased food prices may cause American to change their grocery list, buying less expensive foods and skimping on ingredients. But increased food prices would not be expected to drive large numbers of people into poverty or to increase US hunger rates substantially.

By contrast, food makes up a larger portion of household income in most other countries. Poor people in developing countries may spend 50-80% of income on

food. For these households, food price increases will require changes in behavior such as reduced food consumption; switching to less nutritious food; reduced consumption of other needs like health care or education; the sale of assets – like livestock or land; or some combination of these actions.

These are the awful choices that many poor people are being forced to make today as high food prices are impacting how they live and, in some cases, their nutrition.

*The causes of food price increases*

Many experts have noted that there are several forces driving food prices upward. I won't spend time discussing them here except to mention a few:

- rising demand for higher-protein foods in fast growing developing countries like India and China;
- changing weather patterns and production problems for some commodities and some regions, notably wheat;
- high energy costs which raise food production costs and food transport costs;
- possible speculation emerging from a large movement of investor capital out of equities and into commodities futures and related instruments;
- growth in biofuels production and consumption.

While experts argue about their relative importance, each of these factors appears to be having an impact. But for this hearing, I will focus my comments on the diversion of agricultural commodities, particularly corn, to fuel production.

Diversion of corn to ethanol is playing a significant role in reducing corn supplies for food and feed. In 2008, the USDA estimates that 3.1 million bushels of US corn will be used to produce biofuels. That's an increase of nearly 50% over 2.1 million bushels last year (2007) and close to twice the 1.6 million bushels of 2006.

What do these figures mean? It means that in 2008 the US will convert approximately one-quarter (23.7%) of our corn production into biofuels. That's an increase from 20% last year and 14% the year before. In short, we're rapidly diverting larger portions of our corn supply to fuel, leaving less for food.

This conversion of corn to fuel appears to be having an impact, not just in the US, but globally. For about 1.2 billion people around the world, corn is the preferred staple cereal. Consider that the US produces more than 40 percent of the world's corn supply.<sup>ix</sup> Dedicating 3.1 million bushels of corn for ethanol this year will take more than one-tenth of the global corn supply off the market for food and feed.

It's important to recognize that the US is a massive exporter of corn, the largest supplier in the world. We export nearly twice as much corn as all the other exporters combined. So, reduced supply and/or higher prices in the US corn market have significant implications for the rest of the world.

Although ethanol mandates and subsidies directly impact on corn prices, they also have cascading impacts on other agricultural commodities. This is because higher corn prices are encouraging farmers to commit more acreage and agricultural inputs to corn production. This leaves less acreage and agricultural inputs available for other crops, especially soybeans, which are often planted in alternate years with corn. As a result, production for other commodities like soybeans is lower and prices are higher.

Higher corn prices also lead consumers to choose other, cheaper cereals to substitute for food or feed. Over time, this increased demand increases the prices for other commodities.

The general consensus among economists and observers is that the growth in demand for biofuels – especially ethanol – is indeed a major contributor to the spike in food prices. Last month, the World Economic Outlook identified increased biofuels consumption as a major driver of food price increases.

“Rising biofuels production in the United States and the European Union has boosted demand for corn, rapeseed oil, and other grains and edible oils. Although biofuels still account for only 1.5% of the global liquid fuels supply, they accounted for almost half the increase in the consumption of major food crops in 2006-7, mostly because of corn-based ethanol produced in the United States. Biofuel demand has

propelled the prices not only for corn, but also for other grains, meat, poultry and dairy through cost push and crop and demand substitution effects”<sup>x</sup>

The International Food & Policy Research Institute (IFPRI), one of the premier organizations tracking food and hunger issues, estimates that biofuels will drive up corn prices by between 27% and 72% by 2020, depending on the scenario analyzed. Other commodities (oil seeds used for biodiesel) would rise by 18% to 44%. IFPRI stated, “In general, subsidies for biofuels that use agricultural production resources are extremely anti-poor because they implicitly act as a tax on basic food, which represents a large share of poor people’s consumption expenditures and becomes even more costly as prices increase...”<sup>xi</sup>

While the current situation around corn-based ethanol raises concerns about the impact on food prices and poor people, there are more ominous clouds on the horizon. The 2005 Energy Policy Act mandated 7.5 billion gallons of renewable fuels to be mixed into gasoline by 2012. Actual ethanol production is at least four years ahead of that schedule, with expected production of more than 7 billion gallons this year. But this is just the beginning of the planned expansion of corn ethanol. The 2007 Energy Independence and Security Act, mandates 36 billion gallons of biofuels by 2022. While the majority of this amount is meant to be “advanced biofuels”, 15 billion gallons would be corn ethanol. This would double current corn ethanol production and implies a much larger diversion of corn from food and feed. The potential for truly disastrous shortages in food supply with accompanying price inflation is very real.

It’s impossible to predict the future, and higher commodity prices are likely to induce a “supply response”, i.e. increase agricultural production to meet the demand. This may actually offer some opportunities to poor people and developing countries. However, in order to respond to these price signals, developing countries and poor people will need access to new investment, agricultural inputs, credit, and markets. All of these factors require a financial and physical infrastructure that will take time and resources to build. Helping developing countries make these investments is a very important element in resolving the current crisis posed by high food prices and should be a key component of a global response. In the meantime, the world is

likely to experience an imbalance between supply and demand with high prices prevailing.

*Oxfam America recommends the following:*

1. *Fulfill humanitarian needs:* Whatever the causes of the food price increases, the impacts could be devastating for vulnerable people in this country, but especially in developing countries. Congress should pay close attention to humanitarian agencies when they are making appeals for assistance, and take urgent action to fulfill these appeals. At this time, the UN World Food Program has estimated that it will need an additional \$775 million to fulfil its mandate this year, otherwise it will be forced to reduce rations and cut recipients from food assistance. Likewise, the US Agency for International Development has requested \$350 million in supplemental funds for this fiscal year. But that request was made months ago. In the meantime, food prices have spiked upwards. USAID now estimates it will need an *additional* \$260 million just to maintain existing commitments – due to food price increases and the depreciation in the dollar. Last week, President Bush announced a \$770 million package to address the high food prices, which is a welcome step. Congress should take up this proposal urgently and consider other emergency measures to address the potential humanitarian crisis. The Farm Bill, currently in conference committee offers an important vehicle to address these international hunger concerns.
2. *Review the impact of policy and make appropriate modifications:* Oxfam believes that Congress needs a more objective and sophisticated analysis of the inter-relation between biofuels mandates and subsidies, environmental performance, energy security, and food prices. We call upon Congress to create an impartial body – perhaps a panel of experts or blue-ribbon commission – to study the issue and make recommendations for actions. Since we face an urgent situation, the workplan should be completed before the end of the year for action early in the new year.
3. *Respond to the current food price crisis:* Any benefit from biofuels – for the

environment or energy security – must be balanced against the burdens that higher food prices place on poor people. US policy should not put food security, environmental concerns, and energy security at odds. If the experts tell us that current policies to encourage corn-based ethanol production are driving food prices and exacerbating hunger and poverty, then Congress should consider freezing or rolling back the renewable fuels standard to avoid larger diversions of corn or other food supplies from the market. Without changes, current law will mandate large additional diversions of corn or other food supplies from the market and could contribute to a true disaster.

4. *Make biofuels fair:* If the US decides to proceed with mandating use of biofuels for transportation fuels, the policy should be implemented fairly and openly. If biofuels offer benefits for the environment and energy security, why shouldn't developing countries be able to compete to supply the US market? Many developing countries are potentially competitive producers of biofuels. Currently, the US uses tariff protection to deny other countries access to the US market. New market opportunities could help developing countries benefit from higher agricultural commodity prices.
5. *Proceed cautiously with new technology and commitments:* While cellulosic ethanol and other "second-generation" biofuels technologies have advantages over current biofuels technologies, including using non-food feedstocks. In addition, they hold the promise of improved efficiency over current technologies. However, they are as yet unproven and could have similar problems in diverting agricultural land and resources away from food production. It makes sense to invest in research and development to explore their potential, but the experience with corn-based ethanol should teach us caution before implementing ambitious production mandates and subsidies.

### *Conclusion*

Food price increases have delivered a shock to consumers and governments around the world and were, largely, unpredicted. Nonetheless the impact of these prices is

now being felt and is creating significant turmoil, especially in developing countries that depend on food imports and with large, vulnerable populations. We expect to see added stress on poor households throughout the world, and a likely increase in poverty and hunger.

Although convergence of factors has contributed to the spike in food prices, the diversion of large amounts of US corn production is a significant driver.

Given growing questions regarding the potential environmental benefits of corn ethanol, and in light of the apparent negative impacts that ethanol mandates may be having on food prices, it makes sense to step back and consider a course correction.

I thank you for your time and attention and would be glad to answer any questions.

ENDS////

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- x World Economic Outlook, April 2008. International Monetary Fund. P. 60. See: <http://www.imf.org/external/pubs/ft/weo/2008/01/index.htm>
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**Summary of testimony by Gawain Kripke, Oxfam America  
on "The Renewable Fuels Standard: Issues, Implementation, and Opportunities", May 6, 2008**

The international food price index increased by 9% in 2006, but accelerated to a 40% increase in 2007. Food prices have continued this dramatic rise in the first three months of 2008. The confluence of price spikes for nearly all major food and feed commodities means there is no safety valve for consumers seeking cheaper alternatives. There are also indications that these high prices may be sustained over time

While the large majority (75%) of the world's poor people are food producers, they are all food consumers. Higher agricultural prices can help some poor people by offering more money for their products. But, on balance recent food price increases have been bad for poverty and hunger. The World Bank estimates that recent food price increases will increase absolute poverty by 4.5%, or more than 100 million people. Humanitarian agencies are experiencing serious strains and making difficult decisions to reduce food rations or cut off recipients.

Poor people in developing countries may spend 50-80% of income on food. For these households, food price increases will require changes in behavior such as reduced food consumption; switching to less nutritious food; reduced consumption of other needs like health care or education; the sale of assets – like livestock or land; or some combination of these actions.

Diversion of corn to ethanol is playing a significant role in reducing corn supplies for food and feed. In 2008, the US will convert approximately one-quarter (23.7%) of our corn production into biofuels. That's an increase from 20% last year and 14% the year before. For about 1.2 billion people around the world, corn is the preferred staple cereal. Consider that the US produces more than 40 percent of the world's corn supply. Dedicating 3.1 million bushels of corn for ethanol this year will take more than one-tenth of the global corn supply off the market for food and feed.

While the current situation around corn-based ethanol raises concerns about the impact on food prices and poor people, there are ominous clouds on the horizon. The 2007 Energy Independence and Security Act, mandates 15 billion gallons of corn ethanol. This would double current corn ethanol production and implies a much larger diversion of corn from food and feed. The potential for truly disastrous shortages in food supply with accompanying price inflation is very real.

***Oxfam America recommends the following:***

1. ***Fulfill humanitarian needs:*** Whatever the causes of the food price increases, the impacts could be devastating for vulnerable people in this country, and especially in developing countries. Congress should fulfill appeals by humanitarian agencies. For example, the UN World Food Program has estimated that it will need an additional \$775 million to fulfil its mandate this year, otherwise it will be forced to reduce rations and cut recipients from food assistance.
2. ***Review the impact of policy and make appropriate modifications:*** Oxfam believes that Congress needs a more objective and sophisticated analysis of the inter-relation between biofuels mandates and subsidies, environmental performance, energy security, and food prices. We call upon Congress to create an impartial body – perhaps a panel of experts or blue-ribbon commission – to study the issue and make recommendations for actions.
3. ***Respond to the current food price crisis:*** If the experts tell us that current policies to encourage corn-based ethanol production are driving food prices and exacerbating hunger and poverty, then Congress should consider freezing or rolling back the renewable fuels standard to avoid larger diversions of corn or other food supplies from the market.
4. ***Make biofuels fair:*** If the US decides to proceed with mandating use of biofuels for transportation fuels, the policy should be implemented fairly and openly; new market opportunities could help developing countries benefit from higher agricultural commodity prices.
5. ***Proceed cautiously with new technology and commitments:*** Cellulosic ethanol and other "second-generation" biofuels technologies have advantages over current biofuels technologies, including using non-food feedstocks. But the experience with corn-based ethanol should teach us caution before implementing ambitious production mandates and subsidies.



Mr. BOUCHER. Mr. Kripke, thank you. Your time is expired.

I want to thank all of the witnesses for their testimony here this afternoon and particularly for your patience in awaiting our return from that extended stay on the House Floor.

Let me begin my questions by simply asking for some projections from those who care to make these about the time when we can anticipate that cellulosic processes for making ethanol will be fully commercially feasible and we can anticipate widespread commercial deployment for cellulosic ethanol. Dr. Stowers, you and Mr. Kramer perhaps might want to go first on this, but others may have some views as well. Dr. Stowers?

Mr. STOWERS. Yes. Thank you very much for the question. Our current Project LIBERTY, as I indicated before, is scheduled to be—to start up in 2011. I think that the stepwise approach to Project LIBERTY involves our engineering and beginning our construction so we are going through a very methodical approach with our DOE funding.

Mr. BOUCHER. Well, I understand you are going to start making the product in 2011, but as I understand your testimony, you are also getting substantial government support for that project, and my question is, at what point will cellulosic ethanol be able to stand on its own and produce fuel for the market that is commercially feasible and competitive with petroleum and other sources?

Mr. STOWERS. The concept that we have with Project LIBERTY involves—it is a commercial demonstration plant of 25 million gallons. Part of our proof of principle at commercial scale will be actually the Project LIBERTY itself. One we have established that, then the rollout of a Project LIBERTY bolt-on to existing facilities is well within our reach. We have, as I said, 23 plants operational. By the end of the year we will have 27 corn-to-ethanol so we will be able to roll that in based on the economics demonstrated at LIBERTY. I can't give you an exact rollout of plants per year but it is our intention to capture as much of the cellulose ethanol market as we are able to do with the technology and do it profitably.

Mr. BOUCHER. OK. Well, that is a careful answer. Thank you.

Mr. Kramer, would you care to comment?

Mr. KRAMER. Sure. Sir, I think the biggest thing for KL, as we look at widespread mass production of cellulose-based ethanol, we made our first ethanol back in August of 2007 but, as I said in my statement, it was privately funded, and the revenues from our corn-based technology have dropped and it has a lot to do with the fear that is being instilled by the media and others that cause the debt and equity markets in the United States to shy away from any kind of ethanol, whether it is corn or cellulose. So we have real problems. We are ready to go to the commercial market as soon as this summer but our business development guy, as I sit here today, is in Paris trying to raise money to build the first plant in South Dakota. That is the problem that we have. It is not a matter of the technology being ready or not. It needs to be further developed and efficiencies need to be improved, no doubt about that, but the point is, is that the fear that is out there against all ethanol is causing sources of funds to dry up.

Mr. BOUCHER. Do you believe that if you can raise the capital that you are currently seeking that it would be possible to build a

facility and have it be commercially successful without any level of government support?

Mr. KRAMER. No, I don't believe that because I do—I believe that there still needs to be the same level of support that jump-started corn-based ethanol and the oil industry.

Mr. BOUCHER. So this would be the 51-cent-per-gallon tax benefit?

Mr. KRAMER. I am not going to say specifically. I can't say specifically whether the 51-cent would help us or not because that is designed for the oil industry to blend it. It is not designed for ethanol production. That is, I think, the confusion that exists out there, that any of the subsidies that ethanol might get is not for producers, it is for blenders, and that, I think, is the confusion.

Mr. BOUCHER. All right. Let me ask a little different question, and Mr. Faber, we will get your comment on this too. In the year 2010, current Federal law requires a 100-million-gallon contribution by cellulosic ethanol as a component of the mandate that comes into effect in that year. Can that be met? Mr. Dinneen.

Mr. DINNEEN. Mr. Chairman, let me tell you that I believe that we will meet that initial target. I have testified in the past that there is not a company that I represent that does not have a very aggressive cellulose-to-ethanol research program and there are several companies working on being able to convert fiber, which is already coming into the plant, into ethanol, and that is cellulose material. There is a commercial-scale ethanol facility being constructed today in Georgia, Range Fuels, that will be utilizing soft wood, and there are many others. You have Verenium, you have Blue Fire that is looking to produce ethanol from municipal solid waste. You have Iogen, that has announced that they are going to be building a plant in Canada later this year. So there is a lot of activity and I believe that we will be able to meet those targets. The key though that has been suggested is that if you are going to have a second-generation ethanol industry, you have to make sure that you have not eviscerated the first-generation ethanol industry that is providing the foundation from which those newer technologies will be able to flourish.

Mr. BOUCHER. All right. Let me ask for those who want to comment on views of Congresswoman Herseth Sandlin's legislation, which was the subject of testimony earlier, that would allow biomass harvested from Federal lands, woody biomass, to be counted toward the mandate, and the ethanol manufactured from that counted toward the mandate. Views on the appropriateness of that legislation, pros and cons, anyone want to comment? Let us start with Mr. Greene.

Mr. GREENE. As I mentioned in my oral statement, we believe that legislation would be very detrimental to the progress of making sustainable biofuels. The legislation that passed and was signed into law, went from the House to the Senate and back, received a lot of attention and does a very careful job of including the vast majority of economically available woody biomass while protecting our national forests and Federal lands, which are an incredibly important reserve of biological diversity and standing carbon. Allowing all sorts of other material really only excludes from private lands, old growth, native grasslands and the conversion from

natural forest to plantations. You can still use all the material on plantations. You can still use all the material from natural forests that are naturally managed. You just can't convert it from a natural forest to a plantation.

Mr. BOUCHER. OK. Well, thank you, Mr. Greene. I gather your organization opposes that legislation.

Mr. GREENE. We do.

Mr. BOUCHER. Let me just ask you this. If it were somewhat more narrowly tailored to assure that if the biomass is harvested from the Federal lands for other purposes such as natural thinning or just removing deadwood, for example, that otherwise would contribute to greenhouse gas emissions as it decays, would you have a different view?

Mr. GREENE. Well, no, because—

Mr. BOUCHER. OK. Well, that is enough.

Mr. GREENE. But there are good reasons why.

Mr. BOUCHER. My time is expiring and I do have one other question that I want to pursue, but let me give people on the panel a chance to comment with regard to this, if there is something. Mr. Kramer?

Mr. KRAMER. Thank you. Again, our plant being in the Black Hills and around the national forest, there is 720,000 tons of piled up slash that is there already and that came from harvest programs based on Federal government mandates. All we are asking for is that slash. We are not looking to clear-cut. In fact, if you go out behind Mt. Rushmore, you can come out this summer and visit South Dakota, you will see the effects of thinning the forest makes the old growth healthy. So our angle is to go after what has already been harvested. That is all.

Mr. BOUCHER. Let me just get you to respond to one thing that I believe Mr. Greene made as a point, and that is that if you permit that material off of Federal forest lands to be utilized, that utilization might interfere with the orderly development of a feedstock market, the growing perhaps of switchgrass or other kinds of things that might be devoted to cellulosic ethanol production. Do you want to comment with respect to that suggestion?

Mr. KRAMER. I think the point that I would make there is that there is enough biomass, and again, I will refer to the billion-ton study that was done by DOE, to go around for everyone and I think there wouldn't be a creeping effect because our—we are as much of stewards of the environment as anybody but I don't believe that it would create a competition or an effect on the market.

Mr. BOUCHER. OK. Well, my time expired long ago and the Chair intends to be very generous with other members in terms of their use of time as well. So at this time I would be happy to recognize Mr. Upton.

Mr. UPTON. Well, I thank you, Mr. Chairman. I have just a couple of questions. I have a big group that is waiting for me so I am going to maybe not use all my time. I will yield some time back.

A couple questions I have. By the way, Dr. Stowers, I have a district that I have always viewed as a microcosm of the county in lots of different ways and I have one particular county that is rumored to have 10 times more hogs than people, all right? How are they going to like the idea of another draw from the corncocks that those

hogs are going to otherwise gobble up? Are they going to be OK with that?

Mr. STOWERS. Well, the corncobs that we will be using are corncobs that are typically left on the field and that is part of—

Mr. UPTON. A lot of these hogs are outside.

Mr. STOWERS. Again, we will be collecting cobs simultaneously with the collection of grain and those are typically the cobs that are left on the field, so we don't see that impacting that area of Michigan in particular.

Mr. UPTON. Now, my science tells me that sugar, particularly as you look at Brazil, Brazilian sugarcane has been a phenomenal source of making ethanol, particularly in Brazil. How does the sugar component compare in terms of the quality of the ethanol as compared to corncobs? Have you looked at that at all?

Mr. STOWERS. Well, in terms of the ethanol is ethanol, so the quality of the end product should be the same. It is all a matter of getting that ethanol to the markets, being able to produce that here domestically, being able to offset the foreign oil that we currently purchase for our transportation fuels.

Mr. UPTON. Now, it is my understanding that of course we have I think what is a 54-cent tariff on out-of-country or exports coming into this country per gallon. It is estimated that I think the subsidy for ethanol domestic producers is about 51 cents a gallon. We have seen, as you indicated, somebody indicated, I think Mr. Dinneen indicated that the price of oil went up \$2 just since this hearing started this morning per barrel. I would like to know each of your perspectives in terms of should Congress look at both repealing the tariff—I don't suspect that there is a lot of ethanol that comes in, maybe it is because of the tariff—and also suspending the subsidy on ethanol, knowing full well that the price is going up as it meets that market test. So either a yes-yes, a yes-no, a no-no, whatever. Mr. Greene, we will start and go right down the panel. Should we get rid of both these subsidies, in your view, or not?

Mr. GREENE. As I said during my oral testimony, I think we need to reform both of them and make them both performance-based.

Mr. UPTON. Mr. Dinneen?

Mr. DINNEEN. No, no, but there is a longer answer, and that is, it just depends on whether or not you want to subsidize Brazilian sugarcane growers and Brazilian ethanol because the tax incentive that is available to refiners for ethanol use goes to those refiners whether the product is imported or domestic. So if you would remove the secondary tariff, which simply offsets the benefit that they would then receive, we are now subsidizing Brazil. And I am not really sure that that makes a great deal of sense, particularly at a time when we are trying to reform our own farm policies.

Mr. UPTON. Mr. Drevna?

Mr. DREVNA. Sir, yes, yes, and I find it intriguing that it is no-no but it is our tax benefit that Mr. Dinneen keeps telling us that we get. So logic would indicate that it would be yes over there and no here if we got it. That subsidy, that direct 51-cent-a-gallon subsidy is directly impacted by the—directly taking into account on the price of every gallon of ethanol. That is when I suggested the earlier comment where ethanol is cheaper than gasoline doesn't—

it can't be. If you take away that 51-cent-a-gallon subsidy and you consider the BTU difference, it is a lot more expensive.

Mr. DINNEEN. That is simply not true.

Mr. UPTON. There is a reason why we put you together.

Mr. Kramer, I am running out of time so—

Mr. KRAMER. Yes, sir. Very quickly, I do believe that the mandate should stay in place and the incentives should stay in place. However, my caveat is, they shouldn't stay around forever, and as we go through 2022, a stepped reduction in the way that the technology develops, I think that is what we are trying to get to, should be maintained to allow us that jump start that we had with corn through the cellulose time.

Mr. UPTON. Mr. Faber?

Mr. FABER. Yes, we should eliminate the tariff to address record food inflation and we should reform the tax credit to make it much more attractive to bring cellulosic ethanol to commercial scale very quickly.

Just to answer Mr. Boucher's question, we expect about 2 billion gallons to be online of cellulosic ethanol between now and 2014, so it is important to remember it took 20 years for these guys to bring their first 2 billion gallons on, so that is a pretty good lead time.

Mr. TOLMAN. We would agree with the ethanol industry and say no, no. In fact, there is not record food price inflation. It is high but not record. I will just add that we do import significant quantities of ethanol, I think in the range of 650 million gallons this past year. It has been up as high as nearly 1 billion through the Caribbean basin.

Mr. STOWERS. We would be no, no. We believe that a strong corn-to-ethanol industry is imperative for a strong cellulose-to-ethanol base and achieving the RFS as passed last year.

Mr. KRIPKE. We would say probably, probably. It needs a bit of evaluation, and I think the law of unintended consequences is prevailing today in some of the policies already taken. I think we need to do some careful evaluation of both measures before taking any steps forward.

Mr. UPTON. I know my time is expired. Thank you, Mr. Chairman.

Mr. BOUCHER. Thank you very much, Mr. Upton.

The gentleman from Washington State, Mr. Inslee, is recognized for 5 minutes.

Mr. INSLEE. Thank you. I just thought of kind of a provocative question. I haven't thought through whether I should ask it or not but here goes. We have these significant Federal policies for biofuels. I have been a supporter and I am a particular champion of the advance of cellulosic ethanol. I think that has a significant future for our country and I want to hasten that transition to the second and third and get to algae-based biodiesels and the whole 9 yards. But I was in California yesterday talking to some entrepreneurs who are just doing all of these incredible low- and zero-carbon technologies—enhanced geothermal, solar thermal power, advanced photovoltaics. I guess the question is, would anyone on the panel say there is a reason not to provide these other low-carbon and zero-carbon potential industries equivalent treatment to biofuels? Is there any reason not to do that?

Mr. FABER. I think anybody who has looked even—certainly not as much as you have, Mr. Inslee, but anybody who has looked at the energy supply-and-demand problems that this country faces realizes that we should be trying to provide generous incentives to get these true green technologies to commercial scale as quickly as possible, and that would go for solar, wind, geothermal, et cetera. I think there is a critical lack of investment. Certainly that is true in cellulosic ethanol where we are—hopefully that will be addressed probably through the Farm Bill but we need—I think it was Mr. Rogers who said we need sort of a man on the moon sort of level of investment in R&D, loan guarantees, incentives and so on to get cellulosic to commercial scale as quickly as possible so that we are not pitting our hunger needs against our energy needs.

Mr. INSLEE. Mr. Dinneen?

Mr. DINNEEN. Just to give me the opportunity to agree for once with Mr. Faber, I will say yes, we have to have all sources of renewable energy to address the critical problems we are facing. Again, \$122-a-barrel oil. We can't be saying no to anything right now.

Mr. INSLEE. So I hope you will all put your shoulders to the wheel for other industries as well and particularly the investment tax credit and the production tax credit we are struggling to get extended that is going to expire this December, and if you have a chance to talk to anyone with clout in Washington, D.C., we hope that you will do so, even though it is not exactly in your job description.

I want to address this issue of food prices. You know, we hear such disparate economists' evaluations of this. My own take is that my sense is that I think there are much larger forces dealing with food prices that are probably the larger bulk of the reason for food run-up than biofuels. That is my own kind of take from where I am sitting, and the reason I say that, I was listening to George Soros talk the other night about the flight of capital from currency speculation into commodity speculation that drives up demand for commodity speculators and that demand, the real demand is from speculators as much as eaters. Now, we have increased demands of people in China wanting to eat beef, which takes more grain, and world population going up and everything else, but it is something I hadn't really tumbled to and so you have George Soros saying it is not biofuels policy, it is change in speculation from currency speculators with the collapse of the dollar into commodities. I also have trouble buying that a very small number of acres in the United States, which is just a portion of the food supply can cause this radical increase in multiple products. You know, we have food riots about rice and I know there is some transfer from grain to grain but I just have a hard time believing that our biofuels policy has caused these huge spikes in rice prices causing food riots. So at least from where I am sitting, I am seeing the bulk of it caused by gas prices, increasing demand, or in currency speculation, increasing demand with population and people eating more meat, frankly, around the world. So I am just asking for people to comment on that. Mr. Faber is anxious.

Mr. FABER. I will start by saying that there are many factors that are driving food prices as high as they are and certainly com-

modity speculation is one of them, the weak dollar, export restrictions. Probably one of the most, if not the most significant is simply global demand, that we are seeing a huge increase in demand for these coarse grains greatly exceeding our capacity to increase our yields. In fact, yields over time are falling on average and now they are increasing about 1, 1.2 percent a year. So if you look at the long-term, long-run projections that USDA put out just this last week and when you look at how much demand is going to increase because of rising living standards in places like China and India, you really start to worry that we are moving into a period of significantly higher commodity prices across the board. Then you have to ask the question, why would we make that worse by diverting 40 percent of our corn and 30 percent of our vegetable oils into our fuel supplies. It is not a question of how much our biofuels policies or food-to-fuel policies are contributing to this. Clearly there are different estimates. The President at one point said 15 percent. EPRI said 25 to 33 percent. You would probably get five different economists to give you five different answers. The real question is, given what we are seeing in the next 5 years, 5 to 10 years with global agricultural demand compared with likely increases in yields, does it make sense to then go over and above that and divert so much of these basic commodities out of our food supply and into our fuel supplies? We would clearly argue it doesn't. Given what we are seeing with ending stocks, what we are seeing with sort of an increase in uptick in global hunger, you know, we simply can't afford—the global family can't afford to divert this much food into our fuel supplies.

Mr. INSLEE. I will just give you one perspective—oh, my time is up. I am sorry.

Mr. BOUCHER. If you want to ask another question, go ahead.

Mr. INSLEE. I was going to make more of a comment. Would you allow comment? I am going to indulge the Chair. Just one perspective. I think that is a very important question. Just from where I am sitting, if these policies drive us to the second and third generation of biofuels, which if we play it right I believe that they will, and if that achieves some reduction of global warming, which prevents the devastation of our food production capability, which I believe will occur if we don't make a transfer off of carbon, I think it is a more complicated question than that, and just one member thinks we should continue leading this work to advance biofuels.

Mr. DINNEEN. Congressman, if I could just really quickly—because you are absolutely right. The causes of food price inflation are extremely complex. The single-most important cause of food price inflation is \$122-a-barrel oil, and the only thing that we have got going to reduce the cost of crude oil and the price of gasoline is the use of renewable fuels in this country, and if you eliminate renewable fuels, you will drive gasoline prices up further and you will drive food prices up much further.

Mr. INSLEE. Thank you.

Thank you, Mr. Chair.

Mr. BOUCHER. Thank you very much, Mr. Inslee.

The gentleman from Oklahoma, Mr. Sullivan, is recognized for 5 minutes.

Mr. SULLIVAN. Thank you, Mr. Chairman.

My first question is for Mr. Kripke. You propose rolling back the renewable fuels standard to avoid large diversions of corn and other food supplies from the market. Do you believe that if we fail to accomplish this rollback, that hunger caused by food-to-fuel diversion will actually be measurable in incidences of malnutrition and death? Is it already happening, and where on earth is that happening, if it is?

Mr. KRIPKE. Thank you, Congressman. We haven't made a specific recommendation about rolling back. We do believe it needs more study but we are concerned about the diversion of food to fuel and we do believe it will drive poverty and hunger. Right now the most observable impacts of the food price inflation, which is significantly contributed to by this diversion of food, is observable in food aid programs where food aid programmers or implementing agencies are not able to provide the actual food delivery and so you are seeing cutoffs of 450,000 children from school feeding programs in Cambodia, for example, or many other agencies cutting off millions of people from food aid. So those people presumably are going to have nutrition problems and we are seeing that across the world but especially in Asia and Africa. So I think the—as yet we have not observed hunger on the increase but we are expecting it because it is simple arithmetic that if income doesn't rise as far as food does, then poverty increases and food insecurity comes. So that is probably not exactly what you wanted to hear but that is what we have right now.

Mr. SULLIVAN. Are these children that are being—are they being totally cut off or are they just going to less nutritious food sources?

Mr. KRIPKE. The World Food Program announced that in May they will cut off some of their programs in Cambodia and other places and the contingencies I am not sure about, whether they will have some alternatives, but I suspect not.

Mr. SULLIVAN. So these children are being totally cut off?

Mr. KRIPKE. Yes.

Mr. SULLIVAN. Mr. Drevna, how are you, sir? I have a question for you. Your testimony does not touch on other alternatives to unstable foreign oil. Does the NPRA believe that there is a role for, let us say, coal-to-liquid fuel or compressed natural gas?

Mr. DREVNA. Oh, absolutely, Congressman. You know, if we go back about 2 hours ago and listen to what Mr. Rogers, his opening statement, I think he pretty much summed up what the state of the union is right now, and even Bob had mentioned, you know, we need all sorts of supply. We need nuke, we need coal, coal-to-liquids, and we need biofuels. The problem comes in is when you mandate, you know, large volumes of things that really don't exist today in commercial quantities, and you mandate them and the penalty will be paid by refiners and other obligated parties for not meeting a requirement that somebody else has not met. That is the problem. The second problem that we see is, even if these things come into existence, the front-loaded volumes of these fuels, once we pass E10, and which is going to be very shortly, most people are talking about E, you know, 2010, 2011, how are the 250 million legacy vehicles in this country going to run on E11, E12, E15, E20? They are not going to be warranted by the auto manufacturers. Are we going to tell 250 million Americans who own automobiles



to go out and buy new ones because we have to figure out how to force-fit E15 and E20 into the marketplace? These are the kind of things that we have been talking about over the years as this type of legislation has emanated. We are in full support, we being NRPA, the refiners, the oil and natural gas industries, of biofuels but we do say let the market figure out where best to use them, how to use them, when to use them.

Mr. SULLIVAN. And be more realistic about it.

Mr. DREVNA. I guess that sums it up in one word, yes. Thank you.

Mr. SULLIVAN. Also Mr. Drevna, what is your response to the claim that gas prices would be even higher if it were not for the RFS?

Mr. DREVNA. Well, I think there are two responses to that. If you look at historic oil prices, crude oil prices versus gasoline prices, they tend to track pretty closely. What you are seeing right now is a huge divergence. The oil price at \$120, \$122 a barrel and what you are seeing at the retail stations today do not track. There is a much larger delta than one would expect. Now, why is that? That is because in the beginning of 2008, inventories of gasoline are at a 5-year high. Remember last year or the year before, those inventories were much lower and the prices spiked a lot higher. So yes, are gasoline prices high today? Absolutely. Are they as high as they would be given the fact where crude oil is today? Absolutely not. So it is not that ethanol is being put into the mix. I mean, if you really look at what the cost of ethanol is, again, as I said previously, on a BTU basis, it is 30 percent more because of simply the BTUs. You take away that tax credit and it is uneconomical.

Mr. SULLIVAN. Thank you, Mr. Drevna.

Mr. BOUCHER. Thank you very much, Mr. Sullivan.

Under the rules of the committee, we need to go to Mr. Shimkus next and take questions from subcommittee members before turning to those who are not subcommittee members, so Mr. Shimkus from Illinois for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman, and I appreciate that and my good friend, Gene Green.

I guess—I have been in and out like everybody in a lot of different hearings. The hearing is basically about the food-fuel debate. I think it has been clearly—USA Today did an editorial a couple days ago that said weather, energy costs, changing habits, renewable fuel—that was the four reasons. Renewable fuel was one. One of three other things was environment, drought, energy costs. And it was quoted to me last week that for commodity product to get out of the field, which I have a lot of them, to the grocer's shelf, travels about 1,500 miles to 2,000 miles at double the cost of diesel today. That has got to have a major impact on the high cost. We have—you have heard my ranting and raving over the past couple weeks. The frustrating thing from those of us who are supply guys, I am a more-is-better guy, Mr. Green. Because if you had more, then they could compete in the market and it would drive down costs. But when we talk about the ability for people to pay for food around the world, it is just like the LIHEAP debate. We don't explore our own resources so the demand goes up, so it costs more to heat your homes, so then we taxpayers have to pay to help the

people who can't afford home heating. Now, here we have the same equation. We won't go to our natural resources. We don't go to the OCS, Outer Continental Shelf. I have got the numbers of how much oil and natural gas is there. Whether it is the East Coast or the West Coast or the West Gulf or the East Gulf, or we won't go to ANWR to bring in these reserves so that we have an inflated price for crude oil, and I have the chart. It is \$122. That is right. That is the quote right now, \$122 a barrel. That spikes diesel costs, which pushes higher food costs, which then we now have to pay more taxpayers' dollars to help people subsidize their food costs. Wouldn't a better opportunity be to help push and drive down fuel costs by bringing on more supply? More supply.

Mr. Drevna, you represent the refiners. How can we justify not—why haven't we built a new refinery in this country in 30—what is it, 32 years? A new one from ground level. We have expanded, but haven't we built a new one?

Mr. DREVNA. Well, I mean, it comes down to siting and cost.

Mr. SHIMKUS. Siting and cost?

Mr. DREVNA. Yes, and one thing—I mean, the things we have done, Congressman, you and I have had some discussions about this in the past is that if you look at the statistics, we as an industry have been adding the equivalent of one new world-class refinery per year for the past 12 to 14 years.

Mr. SHIMKUS. And I appreciate that, because I visited the ConocoPhillips refinery down in Wood River. They are the size of the four other refineries that used to stand there. I never—and I appreciate that expansion but my point being, in the 2005 energy bill when we would not move to incentivize new refineries, and you heard my opening statement that we are importing refined product, that ought to make you feel good. As a guy who represents refiners and the companies and the people that work those jobs, that we lose that capital, we lose that siting, we lost that tax base because we are importing refined product. That is nuts. So what do we do? We incentivize renewable fuels. We send a signal. We have 147 ethanol plants from the ground up and now we want to send a signal, oh, no, markets, we want to stop. How many of your refineries now have the biofuels—you say you supported it. How many are actively involved in producing ethanol or biodiesel portion of the refineries?

Mr. DREVNA. Sir, I am going to have to get back to you on that, on exact statistics, but rest assured, this industry has devoted a lot of research and a lot of capital into producing biodiesel at the refineries on the front end.

Mr. SHIMKUS. Biodiesel?

Mr. DREVNA. Biodiesel, yes.

Mr. SHIMKUS. Which, you know, we started one in May 1988 including that in the EPAct and which it was our legislation that came through this committee.

Mr. DREVNA. But again, I can emphasize that it is going to take a whole menu of options, and you referenced the Outer Continental Shelf, both for oil and natural gas, and the same could be said for some lands that have been artificially kept out of development, you know, on land. Thirty-five years ago, 40 years ago, maybe that was

the right thing to do, not with today's technologies. We could produce that very environmentally sound.

Mr. SHIMKUS. I would concur, and if one message is to be sent from this is to make sure that you don't have one bad actor, and I don't think we have really decided this, whether energy input, changing habits and renewable fuels has driven up the cost of commodity products. But if we get a control with a national energy policy that talks about supply and we look at the East Coast, the 2.31 billion barrels of oil there, and the 24.05 trillion cubic feet of natural gas, the eastern gulf of 3.5 billion barrels of oil and the 12.31 trillion cubic feet of natural gas or the West Coast with 10.71 billion barrels of oil and 18.95 trillion cubic feet of natural gas, that is not even talking about ANWR, that that supply has to be made accessible so that we drive the cost of everything down, which would drive the cost down of food.

Mr. Chairman, you know my positions on supply and I am just trying to reiterate it. Thank you.

Mr. BOUCHER. Thank you very much, Mr. Shimkus.

The gentleman from Texas, Mr. Green, is recognized for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman, and it is great to follow my colleague from Illinois, who does have refiners and refineries in Illinois, because I am familiar with them, but coming from the area I have in Houston, we have a whole lot of them. But we also produce in the western gulf. It is the eastern gulf that we are having trouble with that is off Florida. We produce off of the western gulf in Texas a great deal of product.

Mr. Dinneen, let me ask you, because I have heard some questions earlier and I would like to have testimony on the studies of the efficiency or the BTU equivalent of ethanol versus gasoline. I have heard 25 percent, 30 percent. Is the efficiency or the BTU ratio for a gallon of ethanol in relationship to gasoline, what does Renewable Fuels Association have?

Mr. DINNEEN. Good today and improving all the time and certainly much, much better than \$120-a-barrel crude oil.

Mr. GREEN. Oh, no, I am talking about the efficiency, because I have heard it is 80 percent or 75 percent of a gallon of gasoline.

Mr. DINNEEN. Energy in, energy out, you get 80 percent—

Mr. GREEN. How much do I get if I put ethanol—

Mr. DINNEEN. With ethanol you get, according to the latest DOE analysis, 1.64 BTUs for every BTU that goes into the production of the ethanol. But as I said, we are getting better all the time. Oregon National Labs just a couple of weeks ago released a study from an analysis, a survey of the industry that showed just in the last 4 years, Congressman, dry mill ethanol plants have improved their energy efficiency by some 22 percent. With each new ethanol plant that opens up, and they are opening up all the time including some in Texas, they are using the most efficient technology and our energy balance is improving every day.

Mr. GREEN. Well, what I am trying to do is, if I buy a gallon of ethanol and put it in my Chevy Tahoe and I buy a gallon of gasoline, the efficiency of that gallon of gasoline. I know the refineries are getting more efficient. In fact, we do have oil refineries that are

much more efficient today and are getting better every day too, but what is that equivalent?

Mr. DINNEEN. It is roughly 76, 77 percent on a BTU basis. Now, it is important, though, to recognize that ethanol is going to burn more efficiently than gasoline but nonetheless, if you are utilizing ethanol as your replacement to gasoline, you are going to have fewer BTUs.

Mr. GREEN. Well, then at 76, 77 percent, that is with what I understand, and I have an E85 pump in my district that I get to look at every once in a while, and I notice—

Mr. DINNEEN. It is a lot cheaper than gasoline, isn't it?

Mr. GREEN. About 40 cents, and if you factor in \$3, and in Texas it is \$3.49 or \$3.50 a gallon, and, you know, if you factor in that, it is less efficient.

Mr. DINNEEN. Well, typically the refiners or the marketers will price the ethanol to be cost-competitive on a BTU-adjusted basis. The E85 pump that I go to, it is about 45, 50 cent cheaper and the flexible fuel vehicle I drive, it certainly gets better mileage on a dollar-in basis than with gasoline.

Mr. GREEN. Let me ask Mr. Drevna, is that the same information that you have?

Mr. DREVNA. On the BTU value, that is correct. It is a lot less BTUs per gallon of ethanol. I didn't realize that we priced the ethanol though. I thought the ethanol producer did, but—

Mr. DINNEEN. The gasoline marketers that are selling the E85 are selling it and those are the members. I will introduce you—

Mr. GREEN. OK—

Mr. DREVNA. But anyway, when you factor in that E85, the number of automobiles that can actually take E85 are, what, 4 to 6 million or something like that on the road today, when you factor in the fact that although our domestic auto manufacturers have indicated they are going to increase production of E85 vehicles over the next few years but still produce gasoline-only vehicles at a rate of about 6 to 7 or 8 to 1, we are still going to have to figure out how we are going to do anything over E10 for the long term.

Mr. GREEN. Can the members of your association meet the mandate for RFS that was mandated in the 2007 energy bill?

Mr. DREVNA. We have—there are two or three problems we have, Congressman Green. One is, even if the large volumes, 9 billion gallons in 2008, 11 billion gallons in 2009, even if they are produced, which, again, I think is still a question, the other part is, how is—the infrastructure. How are we going to get that to the blending facilities? We haven't figured that out yet. And if we don't meet it, we are the ones that are penalized. So the jury is out on that. We are very concerned, and if you heard the testimony from Mr. Meyers this morning, that is one of the problems the EPA is having and how we are going to implement these rules.

Mr. GREEN. Mr. Chairman, I know I am out of time and we have a vote call, but I asked a question earlier of the EPA on the RFS requirements, the study requirements, and I would like to ask if the results of these studies are found to be negative harmful impacts on the industries or the environment, would they be willing to require the EPA to adjust the mandate to prevent unintended consequences that may have been done in the 2007 energy bill. Is

that—just in the brief period of time we have, is there a feeling that we ought to be able to have that mandate instead of just EPA being willing to consider it?

Mr. DREVNA. I think our testimony is that we should take a long, deep breath as a Nation, look at what the art of the possible is, not what we want to do, what we can do, and I think if you look at the 2007 Energy Independence and Security Act, it is what we would want to do, far from what we can do today.

Mr. DINNEEN. And I would hope that we would want to take just as close a look at the environmental and health impacts of increased gasoline supply coming from Canada and the tar sands because if there isn't ethanol, where are we going to get this increased fuel supply? More and more of it is going to come from much more environmentally sensitive parts of the globe.

Mr. GREEN. Mr. Chairman, I understand we do import a lot of oil from tar sands but I don't know of any refined product that we are getting from up there, because typically that comes to our refineries in Illinois and maybe even Texas if we can get some pipelines there.

Mr. FABER. I would just add, Mr. Green, that I do agree that we need to revisit the mandate and figure out how much we can really afford to divert from our food supplies into our fuel supplies, not just this year but in the next few years. I think a really important point that has been missed here is that in the short, medium, and long run, corn ethanol is not going to be able to displace very much of our gasoline supplies or ultimately impact the price of gas very much. It is cellulosic ethanol and the enormous amount of biomass that holds a lot more potential in the long run, and the decision to divert either—whether it is 6.5, 7, 8, or 9 billion gallons in 2008, whatever that number is will have no effect whatsoever on the development of those second generation of fuels. I concede that if you got rid of all the mandates entirely, that would have a detrimental impact on the development of these second-generation fuels, but if Congress decided to divert 6.5 or 7 billion gallons instead of 9 this year, good lord, I don't think that will have any impact on whether Wall Street decides to bet on Vinod Khosla or something else, so—

Mr. BOUCHER. Thank you very much, Mr. Green, and again thanks to all of the members of this panel for joining us here today. We, I think, have learned a lot as a consequence of today's hearing and we will consider whether or not additional testimony will be necessary as we continue our evaluation of questions relating to biofuels. There may be additional questions that members of this committee have to those who have testified here today, in which case they will be submitting in writing, and we will keep this record open for a brief period of time for questions to be submitted to you by others and for your responses.

So with the Chair's thanks, this hearing stands adjourned.

[Whereupon, at 3:30 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

#### STATEMENT OF HON. JOHN D. DINGELL

Mr. Chairman, thank you for convening this important and timely hearing. We are here today to examine our biofuels policy from several standpoints.

First, what progress has the Environmental Protection Agency (EPA) made in implementing the Renewable Fuels Standard (RFS)?

The original RFS was enacted as part of the Energy Policy Act of 2005. It was expanded under the Energy Independence and Security Act of 2007 (EISA) which directs EPA to finalize many of the rules required to implement the new elements of this program by December 2008. The Agency did a commendable job in implementing the first RFS and was widely praised for the balanced way it pursued consensus, consistent with the law. We expect it will do the same in this instance.

The new RFS contained in EISA is an aggressive approach to biofuels policy. It attempts to both accelerate deployment of traditional ethanol and hasten the arrival of cellulosic biofuels, while balancing the need to reduce greenhouse gas emissions with the need for EPA to grant waivers should unforeseen events arise. Whether the Act's goals will be realized remains to be seen. In the meantime, this committee must be vigilant in its oversight of the program to see how close, or far, we are to achieving those goals.

I would observe that the ink had hardly dried on this new law when the clamoring began to alter the RFS, and these requests for congressional intervention continue. In my view, amendments to the law at this time would be unwise and could lead to unintended consequences.

I believe that all stakeholders would be well-advised to consult with the EPA as it develops the rule and try to address any concerns within that forum. If unresolved issues still remain after the rule is finalized, there may be need for congressional action. To act in advance of that date, however, undermines important processes.

Second, this hearing will examine many of the recent questions raised about biofuels, including the following: the effects of RFS on grain and food prices; the interaction between the price of oil and increased food prices; the role ethanol plays in the retail price of gasoline; the impact that increased biofuels production could have on the environment, particularly through land use changes; and how biofuels policy affects issues of hunger and poverty.

Biofuels policy impacts a broad range of crucial global issues, requiring us to be vigilant toward the potential consequences of these policies. I look forward to the insights from our witnesses on these matters and appreciate their appearance before the Subcommittee today.

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#### STATEMENT OF HON. CHARLES W. "CHIP" PICKERING

Thank you, Mr. Chairman, for the chance to discuss The Renewable Fuels Standard and its implementation and opportunities.

My colleagues on both sides of the aisle worked together to craft the original framework for a renewable fuels standard in the 2005 energy bill.

With its passage and implementation, we put our country on a path to cultivate and depend on its own energy resources, ranging from the traditional source in coal to the alternative in woody biomass.

Industry response was evident: nuclear enjoyed a resurgence in new license applications; corn-based ethanol facilities increased production; automobiles became more efficient.

To supplement these efforts, Congress should focus on technology incentives to speed the development of additional energy sources that improve the quality of lives, not increase the cost of living.

In my district, Mississippi State University is currently working on two technologies that offer viable long-term solutions.

The first project is using woody biomass to produce cellulosic ethanol from syngas. The supply of wood-waste is vast and would not compete within its industry or with our food supply.

Currently, the 2007 energy bill does not recognize forest biomass in its definition and excluding it leaves out a tremendous energy source.

Including forest biomass in Section 201 of last year's energy bill could increase cellulosic ethanol production on schedule with its mandate. Additionally, it offers the public reduced wildfire risk, reduced insect infestations, improved wildlife habitat for outdoor recreation, and a new market opportunity for the family forest owner.

A second technology Congress should consider is the conversion process of wastewater to biocrude.

Municipal wastewater presents numerous opportunities as a fuel source.

It also works outside our food supply and offers substantial economic and environmental opportunities for metropolitan areas and defense installations around the world.

Wastewater facilities are ideally suited to produce biocrude on a large scale. It can be refined into renewable propane and diesel and utilize the existing petroleum transport infrastructure.

I hope our committee and this Congress will continue to work together to advance alternative fuel production and thank you, Mr. Chairman, for my time.

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The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Air Quality  
House Energy and Commerce Committee  
U.S. House of Representatives  
Washington, DC 20515

May 6, 2008

Dear Representative Upton:

I am writing to provide comment and perspective from the oil and natural gas industry for the House Energy and Commerce Committee's Subcommittee on Energy and Air Quality's hearing titled "The Renewable Fuels Standard: Issues, Implementation, and Opportunity" and with the hope that you can submit these comments to the record.

API supports a realistic and workable renewable fuels standard (RFS). Our industry is the nation's largest user of ethanol and is increasing the volume of renewable fuels in America's transportation fuel portfolio. Despite logistical and infrastructure-related impediments, the industry used approximately 7 billion gallons of ethanol in 2007.

The Energy Independence and Security Act of 2007 (EISA2007) creates a significantly increased RFS containing four interrelated parts. The RFS requires annually increasing minimum volumes of renewable fuels to be included in transportation fuel sold or introduced into the United States. This four-tier approach with various carve-outs is very complicated, could lead to boutique blend requirements and inefficient credit markets as well as being very challenging to implement. However, our members are dedicated to doing so, and believe the 'advanced biofuel' requirements in the RFS incorporate a balanced approach of technology-forcing requirements with appropriate regulatory safeguards.

The RFS under the Energy Independence and Security Act has been designed to result in significant reductions in greenhouse gas emissions. The "advanced" and "bio-based diesel" biofuels mandates require a 50% reduction in lifecycle emissions from conventional fuels beginning in 2009. The "cellulosic" biofuels mandate requires a 60% reduction beginning in 2010. By 2022, the overall renewable mandate is 36 billion gallon. These requirements represent a very significant contribution to addressing global climate concerns by our industry. There are obvious questions about meeting the mandates in out years. If the mandates are met and the fuel complies with the GHG requirements in the legislation, benefit will be created based upon what we know now.



Looking ahead and taking climate and energy security considerations into account, the U.S. will need to develop all economically viable energy sources, including fossil and renewable fuel sources to meet expected demand. By relying, to the greatest extent possible, on market forces, understanding consumer impact and preferences, encouraging development of new technologies to meet environmental goals, and addressing secondary impacts of expanded renewable fuel usage, our industry and the nation will be better equipped to meet the energy challenges in the years ahead.

Biofuels will become a significantly larger portion of U.S. motor fuels with implementation of EISA2007. Petroleum-based and renewable fuels will continue to advance with ongoing environmental improvements. As cellulosic ethanol and other second generation biofuels live up to their promise, there will be a very large reduction in carbon dioxide from the transportation fuel pool. Our industry will strive to implement these challenging new mandates.

In passing EISA2007, Congress has spoken, and the new RFS is now law. Accordingly, API is committed to working with EPA during the rulemaking process to make this program as workable as possible. And, while we have very specific substantive concerns with certain provisions in the Act, none of these can or should be addressed by way of a "technical corrections" bill.

We would like to take this opportunity to reiterate our concerns about certain provisions of EISA that we did not support during the energy bill debate last year, and to also identify potential challenges/ramifications.

#### Lead time

EISA2007 requires an almost doubling of the RFS mandate in 2008. This doubling has occurred with no advance notice and is putting a strain on the transportation infrastructure. The mandated volume for 2008 far exceeds the industry's projected ethanol blending capabilities at fuel terminals during that timeframe, as well as the current domestic ethanol production capacity.

EPA is required to issue revised regulations by the end of 2008 for the increase in the mandate in 2009 and beyond. This short, one-year deadline may not allow adequate time for EPA to conduct a thorough rulemaking with robust stakeholder input, and thus could leave the industry with insufficient notice to comply in 2009. We are hopeful that EPA will find ways to mitigate this situation in its RFS rulemaking.

#### Transportation/distribution infrastructure

By 2012, a total of 15.2 billion gallons of renewable fuel will need to be blended into the transportation fuel pool, approaching volumes requiring up to 10 percent ethanol blending in gasoline nationwide. Between now and 2012, tens of billions of gallons of ethanol will have to be transported out of the Midwest to other regions. This will put tremendous strain on existing transportation and storage facilities such as tankage capacity at terminals, terminal blending facilities, rail spurs at terminals, retail infrastructure, rail tank cars, marine vessels, etc. The need to construct additional blending and other facilities will also stretch state permitting agencies. These large, early year mandates are very high and will be difficult to meet with the existing transportation and blending capabilities even if fuel terminal blending is expanded as quickly as possible.

#### Cellulosic ethanol

Similarly, long-term RFS mandate levels also may be unachievable. The cellulosic ethanol mandate begins at 100 million gallons in 2010 and grows to 16 billion gallons in 2022. An

additional 4 billion gallons of “advanced” biofuels are also mandated in 2022. Cellulosic ethanol is not currently produced on a commercial scale. Significant technology breakthroughs are needed for economic production of cellulosic ethanol. The timing of such technological breakthroughs is highly speculative. Even with breakthroughs in cellulosic ethanol production technology, significant logistical hurdles will need to be addressed. Gathering the feedstock (biomass such as forestry waste and switch grass), processing it, disposing of “waste” products, and delivering ethanol to markets at a cost comparable to gasoline have yet to be demonstrated on a commercial scale.

Thus, the cellulosic ethanol waiver is a critically important feature of the RFS program, because it provides flexibility if the volumes are not available to fill the mandated requirements. We strongly support this mechanism as essential to balancing the desire to force second generation technology with appropriate safeguards if the technology does not develop as anticipated.

#### Anti-backsliding

The EISA2007 anti-backsliding provision requires EPA to determine whether the renewable fuel volumes required by the Act will adversely impact air quality. Not later than 3 years after enactment, EPA is required to promulgate fuel regulations to mitigate any adverse impacts on air quality. This provision creates significant regulatory uncertainty for refiners. The use of ethanol will result in increased evaporative, tailpipe and permeation emissions of VOC and NOx. It is unfair to require refiners to use renewable fuels in increasing amounts and then to penalize them for doing so. Instead, the government should conduct a comprehensive study of the potential cross-media environmental impacts of widespread use of biofuels and address secondary impacts including the impact on food supplies and the environment. These studies should be commenced immediately, so the air quality, land use and water resource impacts can be addressed as early as possible.

#### Preemption

State-by-state biofuels mandates create additional boutique fuels and interfere with flexible compliance with the federal mandate. As EISA2007 does not contain federal preemption, compliance with the expanded mandate will be further complicated. States (and their political subdivisions), except California, should be preempted from setting state or renewable fuel mandates or low-carbon fuel standards. Flexibility is critical for the reliable supply of fuels. The proliferation of state mandates will likely make it much more difficult for our industry to deal with tight supplies and to get fuel to where it is most needed during those times of tight supplies.

#### State barriers to blending

In the southeastern states, a patchwork of regulatory standards (ASTM volatility standards relating to vehicle drivability) for gasoline impede the sale of gasoline-ethanol blends (E10), some by failing to accommodate the changes in fuel properties that occur when ethanol is added to finished gasoline and others by adopting differing standards on uncertain timetables. No two states have taken the same approach. As a result, refiner/marketers face potential non-compliance with state gasoline standards if they blend ethanol with fungible conventional gasoline that the integrated regional distribution system must deliver to them. Tailoring the base fuel at the refinery to assure compliance with the toughest standard would reduce gasoline supplies and increase fuel cost, thereby removing the incentive to blend ethanol. States served by common distribution systems should be strongly encouraged to align their gasoline specifications to facilitate blending with ethanol and aid reliability of supply. Our industry is working with individual states to remove these barriers so that 2008/9 compliance with the RFS can be enabled.

Ethanol blending above 10 percent

The most economical and practical use of ethanol is as a 10 percent blend in gasoline, which should be maximized before considering more broadly higher ethanol blends. It requires no modifications to vehicles, no major changes to service station pumps and storage tanks, and has a long history of successful fuel use by consumers.

Beyond 2012, compliance with the expanded RFS will require a ramp up in high-concentration ethanol blends, such as E85, for use in flexible-fuel vehicles, or increasing the level of ethanol in gasoline for all cars beyond 10 percent (E10+). Widespread use of high-concentration blends would require that the major technological and economic hurdles of cellulosic ethanol conversion first be overcome. Consideration will also be given to E10+ blends where research supports them. EPA, DOE, the auto-equipment and fuels industry are working together to conduct research on E10+ blends.

In conclusion, API is committed to working with EPA during the rulemaking process to make this program as workable as possible. While API has concerns about the provisions contained in EISA2007, none of them are technical in nature. We do not support additional legislative efforts at this time.

Sincerely,



Red Cavaney

cc. The Honorable Rick Boucher  
Chairman  
Subcommittee on Energy and Air Quality  
House Energy and Commerce Committee  
U.S. House of Representatives

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**25x25**  
**AMERICA'S**  
**ENERGY FUTURE**

The Honorable John Dingell  
 Chairman  
 Committee on Energy and Commerce  
 United States House of Representatives  
 Washington, DC 20515

The Honorable Joe Barton  
 Ranking Member  
 Committee on Energy and Commerce  
 United States House of Representatives  
 Washington, DC 20515

February 25, 2008

Dear Chairman Dingell and Ranking Member Barton:

We write to express our concern over the definition of "renewable biomass" enacted in the Energy Security and Independence Act of 2007 (PL 110-140) and to express support for an adjustment to the definition that would reflect the vision of the 25x'25 Resolution that passed out of your Committee and was passed by Congress within the same Energy Security and Independence Act of 2007.

In order for America to achieve the vision set out in the 25x'25 Resolution we must incorporate a wide variety of biomass into production of biofuels, particularly if we want to achieve the new Renewable Fuel Standard (RFS) mandate. The exclusion of thinnings from federal forestlands and from naturally grown forests eliminates a significant source of cellulosic feedstock that could otherwise be available for the production of renewable fuels. The expanded Renewable Fuel Standard enacted as a part of the Energy Independence and Security Act of 2007 calls for a total of 36 billion gallons of renewable fuels by 2022, with 21 billion gallons coming from advanced biofuels to meet a significant reduction in greenhouse gas emissions.

The current definition excludes woody biomass from thinnings of federal forest lands except in the immediate vicinity of communities at-risk to catastrophic wildfires. It also excludes significant acreages of private nonindustrial forestlands which do not fall within a "managed plantation" category. A third of America's land base is forested and nearly 60 percent is held by private nonindustrial landowners.

The narrow scope of the current definition of renewable biomass also eliminates an incentive for forest land managers to thin and remove hazardous fuels and thereby reduce the risk of catastrophic wildfires, the costs to the American taxpayers in fighting such fires, and the significant greenhouse gas emissions that emanate from such wildfires. The

*By 2025, America's farms, forests and ranches will provide 25 percent of the total energy consumed in the United States while continuing to produce safe, abundant and affordable food, feed and fiber.*

definition as it now stands also removes potential markets and viable economic options for private forest landowners and public land managers who have acreages in need of thinning for a variety of sustainable forest management practices.

We urge you to incorporate a more expansive definition of "renewable biomass" so that our Nation's forests and woodlands can benefit from the implementation of sustainable forest practices and contribute their full potential to renewable fuel development and greenhouse gas reduction measures. The full greenhouse gas reduction potential of the forest sector, as well as its significant contribution to biofuel mandate will only be realized if the biomass definition is expanded.

We urge, as you evaluate the best policies for environmental protection and the best options for safe and environmentally beneficial expansion of renewable fuels, that you consider the bipartisan biomass definition proposal developed by Representative Herseth-Sandlin (H.R. 5236) for House action.

Thank you for considering our view on this important matter.

Sincerely,

25x'25 National Steering Committee



Read Smith  
25x'25 Co-Chair

Bill Richards  
25x'25 Co-Chair

Cc: The Honorable Speaker Nancy Pelosi  
The Honorable Minority Leader John Boehner



February 12, 2008

The Honorable John D. Dingell  
 Chairman  
 Committee on Energy and Commerce  
 United States House of Representatives  
 Rayburn House Office Building  
 Washington, DC 20515

The Honorable Joe Barton  
 Ranking Member  
 Committee on Energy and Commerce  
 United States House of Representatives  
 Rayburn House Office Building  
 Washington, DC 20515

Re: *Renewable Biomass* definition

Dear Chairman Dingell and Ranking Member Barton:

We wish to express both our concern with the definition enacted in the Energy Independence and Security Act of 2007 (P.L. 110--140), and our support for the efforts of this committee to amend that definition in a manner best suited to meeting our nation's energy needs, as well as the equally important conservation and restoration needs of our public and private forests.

The existing definition in Title II artificially excludes from consideration as "renewable biomass" wood fiber generated from federal public lands, and from private lands other than those "actively managed" as plantations. This definition is needlessly narrow, and will serve to frustrate not only renewable energy production, but other forest management goals across the nation.

At a time when considerable legislative and agency efforts are being made to address global climate change, wildfire severity, and renewable energy production, it is regrettable that a definition would be promulgated that would equally obstruct all of these goals. The current definition will interfere with the ability to remove non-merchantable, small-diameter trees from our public lands, both as renewable fuels, and as a means for addressing the increasingly devastating wildfires we are experiencing. Any notion of climate change mitigation and adaptation of existing forests to changing environmental conditions will require the maximum in management flexibility for both public and private forests, and hampering that management with an unscientific and ill-conceived renewable biomass definition is unacceptable. Finally, the definition's arbitrary limits on qualifying private forest lands can only exacerbate the land-use conversion pressures faced by our smaller, private working forest landowners.

We commend your committee's current efforts to craft a more scientifically, socially, and ecologically appropriate definition that will balance the pressing management needs across our nation's forests, while at the same time safeguarding the important environmental and societal values provided by our forested lands. We would urge serious consideration of the bipartisan definitional approach taken by Representative Herseht-Sandlin (H.R. 5236) as a template for House action. And as always, we remain poised to assist with these efforts.

Respectfully,

Tom Thompson  
 President, SAF





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

**JUL 08 2008**

OFFICE OF CONGRESSIONAL  
AND INTERGOVERNMENTAL RELATIONS

The Honorable John Dingell  
Chairman  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairman Dingell:

Thank you for your letter of May 27, 2008, to Robert Meyers, Principal Deputy Assistant Administrator for EPA's Office of Air and Radiation. Your letter contained five questions for the record from the May 6, 2008, hearing entitled: "The Renewable Fuels Standard: Issues, Implementation and Opportunities" before the Committee on Energy and Commerce.

Please find enclosed responses to your questions. I hope this information will be useful to you and the other members of the Committee. If you have any further questions, please contact me or your staff may contact Patricia Haman in my office at (202) 564-2806.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Bliley", written over a white background.

Christopher P. Bliley  
Associate Administrator

Enclosure

cc: The Honorable Joe Barton,  
Ranking Member

**House Energy and Commerce Committee  
Subcommittee on Energy and Air Quality  
The Renewable Fuels Standard: Issues, Implementation and Opportunities  
May 6, 2008**

**Questions for the Record  
Robert Meyers, Principal Deputy Assistant Administrator  
EPA Office of Air and Radiation**

**The Honorable John D. Dingell:**

**1. Mr. Meyers, with regard to the definition of "renewable biomass," which excludes renewable biomass from Federal lands from qualifying for credit under the Renewable Fuels Standard, one of the witnesses on the third panel was concerned about "the burden of segregating non-credit qualifying bits of national forest mill waste from private or state timberland mill waste."**

**Has the agency considered this issue and do you believe this to be a valid concern? If so, does the agency have the flexibility to address such a concern?**

Answer: EPA is in the process of considering ways of implementing the new "renewable biomass" definition under EISA, including the provision that crops come from existing agricultural land and the provision that requires woody materials to come from non-federal lands. In recognition of the intent of these provisions, we are soliciting input from a wide range of stakeholders on how we might implement them in a practical manner. With their assistance, we believe that we can find appropriate solutions and will further seek comment on them in the Notice of Proposed Rulemaking.

**The Honorable Jim Matheson:**

**1. As EPA works to implement regulations for the expanded RFS, how much variance does the agency believe it has in terms of implementing a formula for assessing lifecycle emissions of GHGs associated with ethanol production?**

Answer: The Energy Independence and Security Act specifies a definition of lifecycle greenhouse gas emissions related to a fuel's full, emissions impact. EPA is developing a methodological approach that estimates lifecycle emissions, including feedstock cultivation, fuel production, and delivery and use of the finished fuel. There are obviously a wide range of factors that can and will go into the lifecycle assessment, and we believe that the definition in the Act provides enough specificity to develop an appropriate methodology.



**2. Some people have suggested that the RFS sufficiently addresses the fuel component of a broader climate policy, yet the RFS does not limit emissions and only addresses a small portion of fuels used.**

Answer: The EISA provisions will require the development and use of renewable fuels beyond levels that would have occurred absent this legislation. They contain important provisions to ensure that new renewable fuel volumes meet a minimum threshold of GHG reductions over their lifecycle, in comparison to the gasoline or diesel fuel they displace. EISA only addresses renewable fuels. Thus GHG emissions resulting from other alternative fuels such as natural gas or coal-to-liquids are not included nor are any emissions requirements imposed on the petroleum-based portion of our transportation fuel pool.

**3. How do you see linkage between the renewable fuels standard and future climate change policy, specifically, how would the RFS fit into a cap and trade system?**

Answer: The RFS sets a floor on the amount of renewable fuel that is used in transportation, but includes specific GHG lifecycle standards for renewable fuels that can count against this floor. A cap and trade system sets a ceiling on the GHG emissions of covered entities and would presumably be intended to harness the power of the markets to most efficiently allocate GHG emissions. The two programs could therefore complement each other, although implementing both together would likely lead to different outcomes than if only one or the other program was implemented exclusively. The extent to which a cap-and-trade program overlaps with the requirements in RFS would determine whether the combination of the two programs would prevent the market from finding the most efficient solution for a given GHG reduction goal.

**4. Would Congress be better off with a technology/feedstock neutral ethanol mandate or standard?**

Answer: EPA's focus right now is on developing a regulation to implement EISA's requirements. At this point, the Agency has not taken a position on any alternative forms of the mandate.



June 10, 2006

The Honorable John Dingell  
Chairman  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Rick Boucher  
Chairman  
Subcommittee on Energy and Air Quality  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

The Honorable Fred Upton  
Ranking Member  
Subcommittee on Energy and Air Quality  
Committee on Energy and Commerce  
U.S. House of Representatives  
Washington, D.C. 20515

Dear Chairmen Dingell and Boucher, and Ranking Member Upton:

The Renewable Fuels Association (RFA) appreciates the opportunity to submit two additional items for the record for the May 6, 2008 Subcommittee on Energy and Air Quality hearing on the "The Renewable Fuels Standard: Issues, Implementation and Opportunities."

As I stated in my testimony before the Subcommittee, granting Texas Governor Rick Perry's request for a waiver of 50 percent of the Renewable Fuels Standard (RFS) for 2008 (removing 4.5 billion gallons of ethanol from the market) would result in a short-term increase in retail gasoline prices of 31.1 percent. Using the national average price of gasoline, all grades, of \$3.653 per gallon for the week of April 28, 2008 as a base, this waiver would increase retail pump prices by \$1.138 per gallon to \$4.791 in the near-term -- translating into an additional annual cost of \$1,033 for each American household. Attached please find the complete analysis from Dr. John Urbanchuk, LECG LLC, on the impact of waiving the RFS on retail gas prices. The RFA respectfully asks that the analysis be submitted for the record.

Also attached please find the RFA's responses to a question from Chairman Dingell. Although we are happy to share this information with you, the RFA asks that you please keep the attached chart regarding cellulosic ethanol projects as proprietary information. If there is any additional information you would like RFA to provide, please do not hesitate to ask.

The RFA thanks you for the opportunity to submit these items for the hearing's official record.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Dinneen", with a long horizontal flourish extending to the right.

Bob Dinneen

Question from Chairman Dingell

1. There has obviously been a lot of attention focused on corn-based ethanol or first generation ethanol, and some of that attention has been warranted. I believe, however, that most of us hope that corn-based ethanol will serve as a bridge to more sustainable cellulosic ethanol. Certainly the revised RFS is very aggressive in terms of pursuing cellulosic.

In fact, the RFS is so aggressive that it calls for a minimum volume of 100 million gallons of cellulosic biofuel by 2010, which as Mr. Drevna of NPRA points out, is 18 months away. Can your industry meet that target of 100 million gallons of cellulosic biofuel by 2010? If so, please provide any information you have to support this assertion.

RFA Response

While the cellulosic ethanol target of 100 million gallons of production in 2010 is indeed an aggressive target, it has provided the intended signal to the financial community and to the ethanol industry to commercialize these technologies as rapidly as possible. As such, the RFA remains confident the targets included in the expanded RFS of the Energy Independence and Security Act of 2007 (EISA) will be met.

As the attached chart demonstrates, numerous cellulosic ethanol production projects are in various stages of development. For example, last November, Range Fuels, Inc. broke ground on a commercial cellulosic ethanol plant located in Treutlen County, Georgia. The facility will use wood and wood waste from Georgia's pine forests and mills as its feedstock. Verenium is operating a cellulosic ethanol pilot plant and research and development facility in Jennings, Louisiana, and is currently commissioning a two and a half million gallon demonstration facility using plant matter and farm scraps like sugarcane bagasse and wood chips as feedstock to produce cellulosic ethanol at the same site. This plant will be in production in just a few months. Verenium plans to operate several additional commercial scale facilities throughout the Gulf Coast. Abengoa Bioenergy operates a cellulosic biomass-to-ethanol pilot plant in York, Nebraska that will research and test proprietary technology for use in commercial-scale conversion of biomass into ethanol. POET Energy will expand an existing corn-based ethanol facility in Emmetsburg, Iowa into a bio-refinery that will include production of cellulosic ethanol from corn cobs and stover. And Iogen plans to build a cellulosic ethanol facility utilizing wheat and barley straw. These are just some examples of projects in the works to develop cellulosic ethanol.

One of the most readily available sources of cellulosic ethanol is the non-starch cellulosic fiber present in existing feedstocks. Several leading ethanol producing companies, including Archer Daniels Midland, are looking at the potential of converting this material into liquid fuel. Doing so would provide the added benefit of enhancing the feed value of the distiller's feed. Research suggests that ethanol production capacity could be increased by as much as 15 percent with current technology.

Finally, it is important to note the U.S. Department of Energy is currently partnered with four companies (some cited above) to produce cellulosic ethanol in this timeframe that could exceed 100 million gallons should the DOE be able to meet its financial commitment to these efforts in accordance with the companies' timelines.

It is simply not possible to state with certainty which plants and which technologies will be commercialized first or in what timeframe. But EISA did provide EPA with authority to adjust the requirement if it is clear adequate supplies cannot be produced. At this time, there is no reason to conclude the targets cannot be met, and every reason to be confident the market will respond to the strong signal Congress sent with the cellulosic schedule.

## LECG

IMPACT OF WAIVING THE RENEWABLE FUEL STANDARD PROVISIONS  
OF EISA 2007 ON RETAIL GASOLINE PRICESJohn M. Urbanchuk  
Director, LECG LLC

May 1, 2008

Concerns over the impact of increasing grain and oilseed prices on the nation's livestock, dairy and poultry industry and on retail food prices have given rise to calls to suspend the Renewable Fuels Standard (RFS) provisions of the Energy Independence and Security Act of 2007 (EISA 2007). On April 25, 2008 Texas Governor Rick Perry requested a 50 percent waiver from the RFS mandate for ethanol produced from grain. The RFS provisions of the EISA 2007 require that nine billion gallons of renewable fuels, primarily ethanol, be used in 2008. This waiver would remove 4.5 billion gallons of ethanol from the nation's gasoline supply and would result in a sharp short-term increase in retail gasoline prices that would have a significant adverse impact on consumers, particularly in an environment of record high gasoline prices.

The removal of 4.5 billion gallons of ethanol from the gasoline pool would force refiners to find an additional 3.1 billion gallons of finished gasoline to meet consumer driving requirements. Given the high short-term inelasticity of demand for gasoline the anticipated shortfall of 2.4 percent in the gasoline supply would result in a short-term increase in retail gasoline prices of 31.1 percent. Using the national average price of gasoline, all grades, of \$3.653 per gallon for the week of April 28, 2008 as a base, this waiver would increase retail pump prices by \$1.138 per gallon to \$4.791 in the near-term.<sup>1</sup> This translates into an additional annual cost of \$1,033 for each American household.

This estimate was arrived at by applying a price flexibility estimate to the change in finished gasoline supply that would result from removing the gasoline equivalent of 4.5 billion gallons of ethanol production from the market to estimate the expected short-term price impact. This price impact was then applied to the April 28, 2008 weekly average price of gasoline, all grades for the U.S.

Price flexibility is the percentage change in the price of a commodity associated with a one percent change in quantity, keeping all other factors constant.<sup>2</sup> The concept of price flexibility is particularly useful in a situation where supply is inelastic, that is, current production cannot be easily changed. Given current world crude oil inventories and refinery capacities the gasoline

<sup>1</sup> EIA Weekly Retail and Gasoline and Diesel Prices. Gasoline, all grades, U.S. average for the week of April 28, 2008. [http://tonto.eia.doe.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

<sup>2</sup> For a discussion of the price flexibility concept see chapter 3 of *Agricultural Product Prices* by William G. Tomek and Kenneth L. Robinson. Fourth Edition, 2003. Cornell University Press.

## LECG

markets fit this description. The price flexibility coefficient is the reciprocal of the price elasticity of the commodity in question. If demand for the product is inelastic (an absolute value of less than one) the value of the price flexibility coefficient will be greater than one meaning that prices are flexible.

Empirical studies of gasoline demand have shown that the demand for gasoline is inelastic particularly in the short run. This means that relatively large changes in price result in correspondingly small changes in demand. A recent paper published by the University of California Energy Institute (Hughes et. al.) points out that most of the short-run price elasticities for gasoline in the literature were estimated on data for the gasoline markets of the 1970s and early 1980s and fail to recognize structural and behavioral changes in transportation patterns, growth in multiple-income households, and conservation that have occurred more recently.<sup>3</sup> In their study Hughes et. al. estimate and compare price and income elasticities of gasoline demand for two periods: November 1975 through November 1980 and from March 2001 through March 2006, two periods of relatively high gasoline prices. Their estimates of the short-run price elasticity of gasoline demand for the 1975 to 1980 period range between -0.21 and -0.31 and are, as the authors point out, consistent with previous results from the literature. However, the estimated price elasticities for the more recent 2001 to 2006 period are significantly lower, ranging from -0.034 to -0.077 leading the authors to conclude that "...the short-run price elasticity of gasoline demand is significantly more inelastic today than in previous decades. In the short-run, consumers appear to be significantly less responsive to gasoline price increases."<sup>4</sup>

We adopted the upper end of the range of price elasticities for gasoline estimated by Hughes to calculate the price flexibility used in our analysis. Since the price flexibility coefficient is the reciprocal of the price elasticity, the calculated value is  $1/-0.077 = -12.987$ . This suggests that a one percent reduction in gasoline supply would result in a nearly 13 percent short-term increase in retail gasoline prices.<sup>5</sup>

The short-term change in gasoline prices was estimated by multiplying this price flexibility coefficient by the reduction in gasoline supply that would result from removing 4.5 billion gallons of ethanol from the nation's gasoline supply. According to the EIA, total finished motor gasoline supply (domestic production plus imports) in 2007 was 3.194 billion barrels or 127.7 billion gallons.<sup>6</sup> Finished motor gasoline includes gasoline blended with ethanol. While the 50 percent waiver would eliminate 4.5 billion gallons of ethanol, the impact on gasoline supply would be somewhat smaller when the relative energy value of ethanol is considered. The but

<sup>3</sup> Hughes, Jonathan, Christopher R. Knittel and Don Sperling. "Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand". Center for the Study of Energy Markets. University of California Energy Institute. Paper CSEMWP-159. 2007. Available at <http://repositories.cdlib.org/ucei/csem/CSEMWP-159>.

<sup>4</sup> Hughes et. al. p. 6

<sup>5</sup> In the context of this analysis short-run is defined as up to one year. In this period consumers are relatively unable to make significant changes to consumption patterns and suppliers are unlikely to significantly increase production. Over the long-run the demand for gasoline is more elastic (meaning the absolute value of the price elasticity is closer to one) and the price flexibility is smaller.

<sup>6</sup> [http://tonto.eia.gov/dnav/pet/pet\\_sum\\_snd\\_d\\_nus\\_mbb1\\_a\\_cur.htm](http://tonto.eia.gov/dnav/pet/pet_sum_snd_d_nus_mbb1_a_cur.htm)

## LECG

content of ethanol is about two-thirds that of gasoline (76,300 btu/gal for ethanol compared to 116,090 for gasoline).<sup>7</sup> Considering this, 4.5 billion gallons of ethanol are the gasoline equivalent of 3.063 billion gallons. Removing this amount of ethanol would reduce the supply of gasoline by 2.4 percent and would force refiners to “find” an additional 3.1 billion gallons of finished motor gasoline.

Multiplying the change in gasoline supply by the estimated price flexibility (-2.4% X -12.987) suggests that short-term gasoline prices would increase 31.1 percent. Using the average U.S. retail price of gasoline (all grades) for the week of April 28, 2008 of \$3.653 per gallon as the base, a 31.1 percent increase translates to a price of \$4.791, or a difference of \$1.138 per gallon. In other words, a 50 percent waiver of the RFS would force the average American household to pay an additional \$1,033 per year at the gasoline pump.<sup>8</sup>

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<sup>7</sup> Low heating (LHV) from USDOE EERE Alternative Fuels & Advanced Vehicles Data Center.  
<http://www.eere.energy.gov/afdc/fuels/properties.html>

<sup>8</sup> 21,252 vehicle miles per household per year (2001 estimate from the National Household Travel Survey) divided by 23.4 miles per gallon (from EIA) = 908 gallons per year X \$1.138 = \$1,033 per household.



203

Charles T. Drevna  
President



National Petrochemical & Refiners Association

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June 10, 2008

The Honorable Rick Boucher, Chairman  
House Committee on Energy & Commerce, Subcommittee on Energy & Air Quality  
2125 Rayburn House Office Building  
Washington, DC 20515

Dear Representative Boucher:

I testified before the House Committee on Energy & Commerce, Subcommittee on Energy & Air Quality on May 6, 2008 on the implementation of the Renewable Fuel Standard.

I am pleased to respond to the questions sent to us. Please see the enclosed document.

NPRA and its members look forward to working further with the Subcommittee on this issue.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Drevna".

Charles T. Drevna  
President



**Post Hearing Question**  
**House Committee on Energy & Commerce, Subcommittee on Energy & Air Quality**  
**Hearing on the "Implementation of the Renewable Fuel Standard"**  
**May 6, 2008**

**1) Would Congress be better off with a technology/feedstock neutral ethanol mandate or standard?**

**NPRA Response:**

NPRA opposes the mandated use of alternative fuels and supports the sensible and workable integration of alternative fuels into the marketplace based on market principles. Energy policy based on mandates is not a recipe for success. There is no free market if every gallon of biofuels – including those that do not exist – is mandated. Mandates distort markets and result in stifled competition and innovation. Therefore, NPRA opposes the Renewable Fuel Standard and recommended at the hearing of the Subcommittee on Energy and Air Quality of the House Energy and Commerce Committee on May 8, 2008 that Congress should act quickly to repeal the renewable fuel mandate.

The Energy Independence and Security Act of 2007 (P. L. 110-140) calls for a RFS with not one but four different mandates. It requires that 9 billion gallons of renewable fuel be blended into the transportation fuel supply *in 2008* (a large increase from a total of 7.2 billion gallons of available renewable fuels in 2007), ratcheting up to 36 billion gallons in 2022. In addition, it contains three other subset mandates: an "advanced biofuel" requirement of 600 million gallons beginning in 2009, scaling up to 21 billion gallons in 2022; a specific cellulosic biofuel mandate of 100 million gallons beginning in 2010 (a subset of advanced biofuel), ratcheting up to 16 billion gallons in 2022; and a biomass-based diesel mandate of 500 million gallons beginning in 2009 moving up to 1 billion gallons in 2012 (another subset of advanced biofuel). To demonstrate compliance with four mandates (some of which are subsets within subsets), every refiner will be required to secure different types of credits.

The technology and type of feedstock used for making various types of ethanol is important, for example, because ethanol produced from corn starch is excluded from the definition of "advanced biofuel" by EISA, but ethanol produced from sugar could qualify as "advanced biofuel." The technology and type of feedstock will also be important because some combinations will meet the lifecycle greenhouse gas emissions reduction statutory requirements for advanced biofuels and some will not. Even the status of land used to grow the biomass feedstock is an issue because EISA includes provisions that the planted crops or

Responses from Charles T. Drevna, President  
National Petrochemical and Refiners Association



crop residue must come from agricultural land cleared or cultivated before enactment of EISA.

While NPRA opposes renewable fuels mandates that distort market forces, it is also our policy that any government “incentives” used to promote alternative fuel production should be technology and feedstock neutral. The government should not create economic winners and losers.



June 10, 2008

The Honorable John Dingell  
Chairman  
House Committee on Energy and Commerce  
Washington, DC 20515-6115

Dear Chairman Dingell:

Thank you for the opportunity to appear before the Subcommittee on Energy and Air Quality. The following is my response to a question by Representative Matheson.

Question: Would Congress be better off with a technology/feedstock neutral ethanol mandate or standard?

Answer: In general, Congress should consider changes to our food-to-fuel policies which reduce our reliance on food as an energy source and that do not pit out energy needs against the needs of the hungry or the environment. Such policies should be technology neutral and should be designed to provide significant net energy benefits and to meet our environmental challenges, such as lifecycle reductions in greenhouse gas emissions.

Thank you for the opportunity to appear before the Subcommittee on Energy and Air Quality.

Sincerely,

Scott Faber  
Vice President for Federal Affairs

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