June 21, 2013

VIA ELECTRONIC MAIL
rfs@mail.house.gov

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
U.S. House of Representatives
2322A Rayburn House Office Building
Washington, DC 20515

The Honorable Henry A. Waxman
Ranking Member
Energy and Commerce Committee
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the DuPont Company, I am pleased to offer the following responses to stakeholder questions that accompanied the House Energy and Commerce Committee's white paper on Energy Policy released on June 7, 2013. The white paper and stakeholder questions raise key issues and DuPont is well positioned to provide constructive feedback. I look forward to working with you and the entire Committee in providing additional responses to the RFS-related white paper(s) planned for later this year.

DuPont is an industry leader in providing advantaged products for agricultural energy crops, feedstock processing, animal nutrition, and biofuels. Our three-part approach to biofuels includes: (1) improving existing ethanol production through differentiated agriculture seed products, crop protection chemicals, as well as enzymes and other processing aids; (2) developing and supplying new technologies to allow conversion of cellulose to ethanol; and (3) developing and supplying next generation biofuels with improved performance, such as biobutanol.

DuPont has been a global leader in greenhouse gas emission reduction for many years, having begun systematic reduction of emissions from our operations almost two decades ago. Between 1990 and 2004 DuPont reduced our global greenhouse gas emissions by more than 70%. By 2015 we will further reduce our greenhouse gas emissions at least 15% from a revised base year of 2004 that reflects portfolio changes. We believe biofuels have a critical role to play in the development of alternatives for the transportation fuels sector, in

ways that are renewable, cost-effective, and commercially viable in multiple geographies with minimal environmental footprints.

Questions for Stakeholder Comment

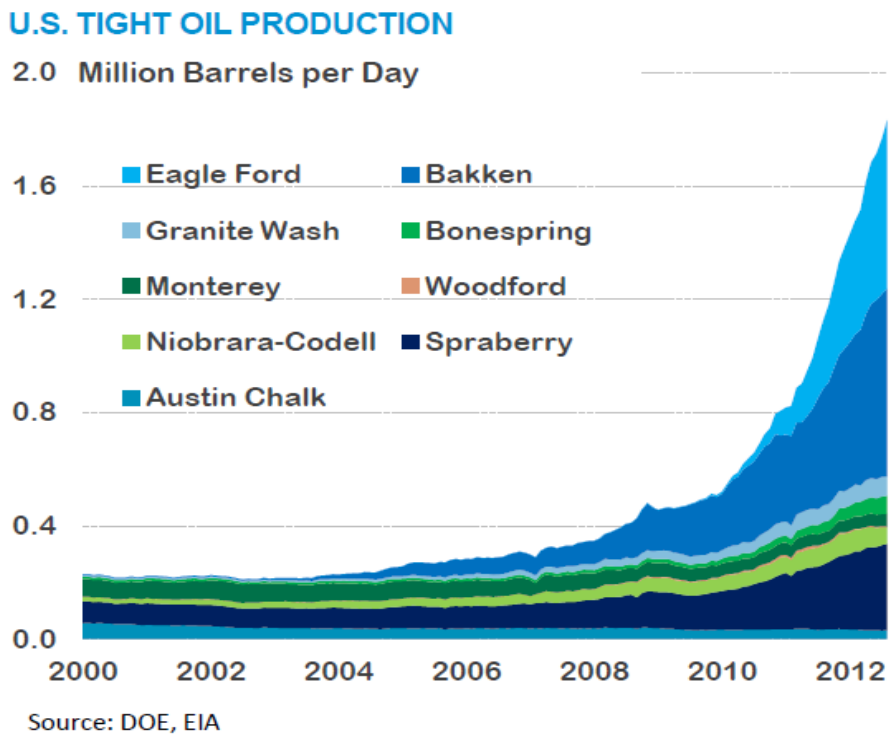
1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

Response: Supply and cost risks are two fundamental elements to energy security and both are directly related to our near total dependence on petroleum for transportation fuels. Given the magnitude of U.S. transportation fuel consumption, both are significant. Increased domestic production of oil is helping to marginally reduce supply risk, but for some time to come the U.S. will continue to rely on imported oil for a significant portion of our transportation fuel needs. At the same time, domestically produced biofuels are adding meaningful increments to the U.S. fuel supply which is insulated from international oil markets. The robust activity in commercializing advanced biofuels such as cellulosic ethanol and biobutanol demonstrates that we are on the cusp of significant domestic growth in the production of renewable fuels. This combined with growing domestic oil production will help to steadily reduce supply risks associated with imports.

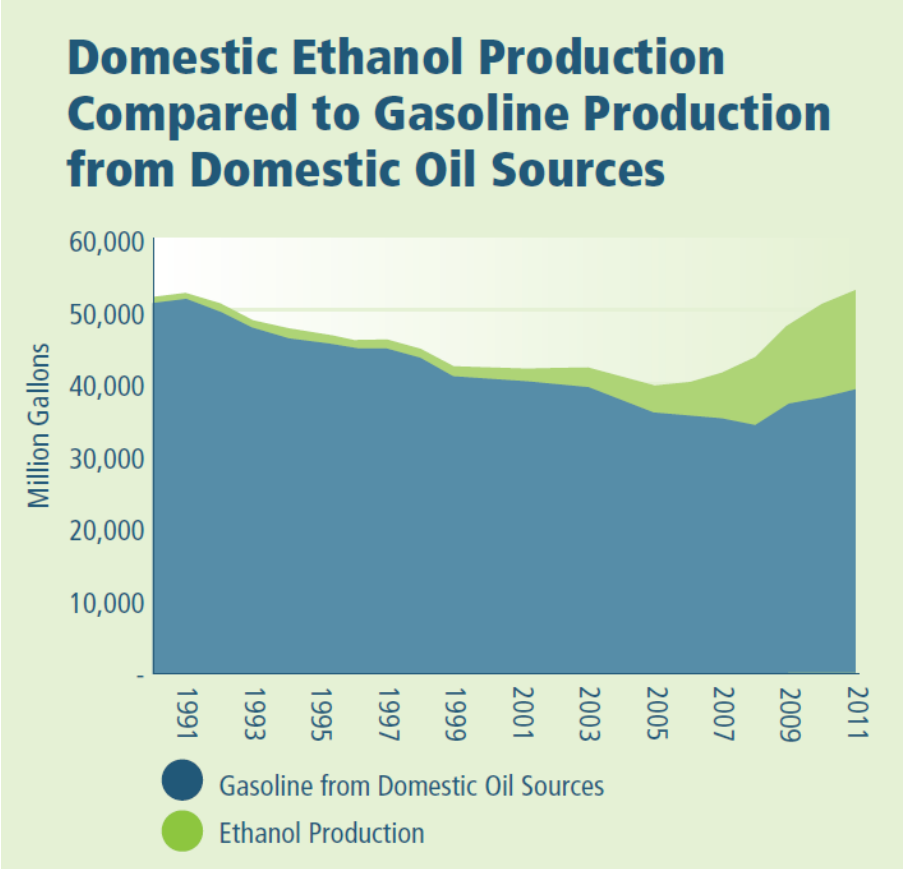
The second major risk, and one not resolved by domestic oil production, is cost risk. The U.S. spent approximately 900 billion dollars on transportation fuels in 2012[1] and the average U.S. household spent $2,912 on gasoline, a historic high. This reflects the fact that oil is a globally priced commodity such that fuel prices will reflect global oil prices regardless of domestic production. In addition, projections make clear that global supply demand dynamics will remain high into the future while remaining petroleum reserves are increasingly costly to produce and refine. These high costs, passed on to U.S. consumers flow to well enriched energy companies and increasingly state owned energy suppliers, a significant wealth transfer.

Renewable fuels have the ability to ameliorate this cost risk in two ways. Since ethanol wholesale cost is generally well below that of gasoline, ethanol blending lowers retail gasoline prices. In addition, an increase in E-85 deployment would rapidly bring additional RINs into the market, lowering their artificially elevated prices and exerting further downward price pressure on gasoline. Additional renewable fuel on the market will open up fuel choices for the consumer and lower prices. With the U.S. largely dependent on oil for transportation fuels, the U.S. economy is wholly exposed to the high and volatile cost of oil. The U.S. electricity sector provides a clear example of the economic benefits of diverse fuel supplies. The U.S. generates electricity from a variety of sources, including coal, hydro, natural gas, geothermal, solar, wind and other resources. This gives our electricity system a great ability to maintain globally competitive energy costs through the ability to shift fuel types when a given fuel rises in cost. Greater options in transportation fuels will provide similar cost abatement. We can offset both supply and cost risks by staying the course with the RFS, allowing it to continue to expand the domestic production of renewable fuels.

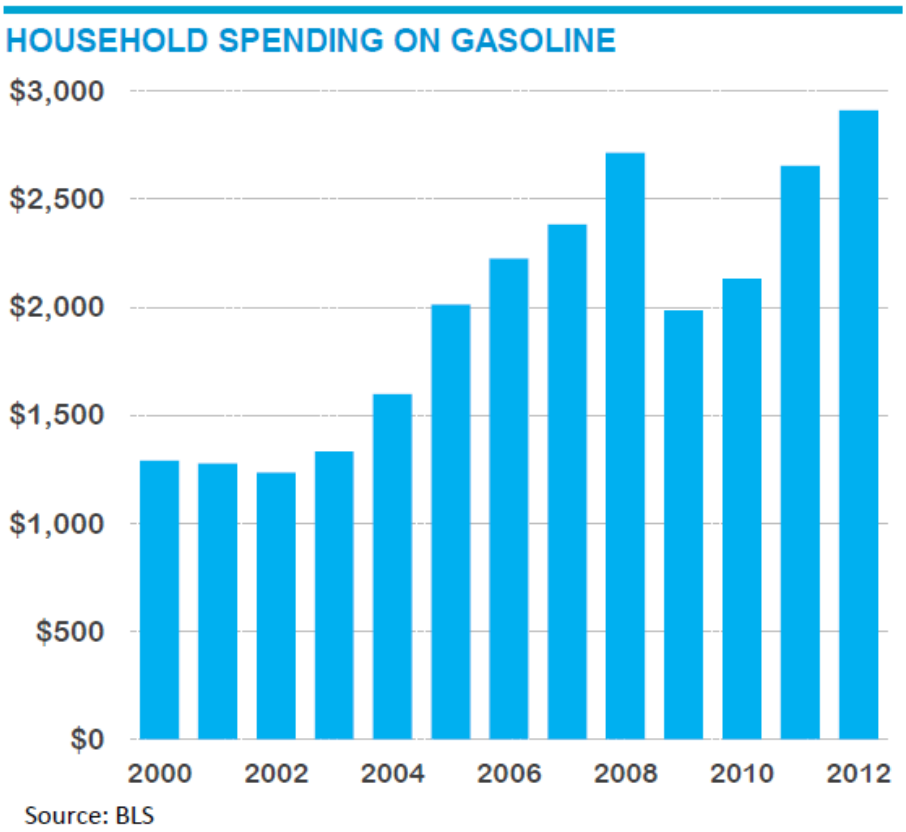
[1] Securing America's Future Energy Analysis based on data from DOE, EIA and BEA.



Source: DOE, EIA



Source: Renewable Fuels Association.
http://ethanolrfa.3cdn.net/056f576c0cb1b6388f_2om6b9rvl.pdf



Renewable fuels also contribute to minimizing risk to U.S. exports. International trade represents a large portion of the U.S. economy. Key U.S. trading partners are far more dependent on imported oil than the U.S. Reducing the U.S. demand for oil imports through increased use of renewable fuel will contribute to stabilizing international oil markets, thereby reducing risks with global trading partners.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

Response: The RFS has contributed to and improved energy security for the reasons described in our response to Question 1. As the U.S. is still importing substantial amounts of oil, increased domestic production of fuels including renewable fuels, has served to reduce imports on a 1:1 basis. The lower cost of renewable fuels is also incrementally reducing the cost of transportation fuels in the U.S. and that effect will expand as domestic renewable fuel production expands. In addition, as the RFS requires qualifying fuels to provide quantifiable improvements over gasoline in terms of lifecycle carbon emissions, the increasing use of renewable fuels under the RFS is helping to abate future climate change mitigation costs.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Response: Based on EPA's Regulatory Impact Analysis, increasing domestic production and usage of renewable fuels helps to reduce U.S. petroleum imports. A reduction of U.S.

petroleum consumption and imports reduces both financial and strategic risks associated with a potential disruption in supply or a spike in the cost oil. This reduction in risks is a measure of improved U.S. energy security. The reduction in U.S. oil imports projected by EPA is roughly 0.9 million barrels per day (a 9.5 per cent reduction in 2022). The energy security benefits of increasing the total renewable fuel volumes according to the RFS2 schedule through 2022 is valued at $2.6 billion.[2]

Petroleum reserves are increasingly held by sovereign governments, many of them hostile to our interests and with a demonstrated willingness to use energy as a policy tool. Increasing renewable fuel volumes according to the RFS will reduce both supply and cost risks significantly, thereby reducing the strategic leverage of these nations over the U.S. economy. Coupled with reduced domestic fuel consumption and increasing deployment of other alternative fuels such as natural gas and electricity from a variety of sources, our energy security posture is improving significantly.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Response: Based on extensive modeling and analysis EPA concluded in its Regulatory Impact Analysis in 2010 that the RFS2 would result in net benefits of $13 to $26 billion[3] in 2022.[4] These benefits are classified in environmental improvements, particularly regarding GHG emissions, energy security through reduced reliance on imported petroleum, economic security through reduced exposure to the global price of oil, and rural economic development opportunities. Each of these benefits rises as more renewable fuel is produced and consumed. As such, maximizing the amount of renewable fuels, including ethanol, in the U.S. fuels pool would maximize those benefits.

In May 2011, The Energy Policy Research Foundation (EPRINC) released a white paper suggesting that the RFS costs exceeded its benefits by a factor of 3 to 1. EPRINC is a non-profit group funded by petroleum refining interests and their analysis is flawed. As the Renewable Fuel Association (RFA) points out, EPRINC used an overly simplistic calculation omitting reductions in farm program payments due to heightened grain demand for ethanol use and savings on gasoline prices from ethanol blending.[5] Blending ethanol provides twenty-five cents per gallon in savings adding up to an average of $34.5 billion *per year* over the decade. EPRINC's analysis leaves these benefits among others out of their calculations.

Along with other federal policies to diversify fuels and improve efficiency in the transportation sector, the RFS is an important tool in the U.S. policy arsenal. Increasingly efficient use of transportation fuels through the CAFÉ standards, smart growth and other factors are making significant contributions to reducing our fuel demand and therefore reliance on imports. We are beginning to see increasing fuel diversity with renewable fuels, currently at 10% of the gasoline pool and slated to grow steadily. Electric hybrids, vehicles with regenerative

[2] In 2007 dollars.
[3] In 2007 dollars.
[4] EPA Renewable Fuels Standard Program Regulatory Impact Analysis available at http://www.epa.gov/otaq/renewablefuels/420r10006.pdf
[5] http://www.ethanolrfa.org/exchange/entry/five-big-problems-with-big-oils-new-analysis-of-rfs-implementation-issues/

braking and other "free" sources are increasing market penetration, as are plug in hybrids. Natural gas is entering short haul delivery vehicle fleets and may make further headway in long haul trucking. However, liquid renewable fuels are the only current petroleum alternative that can take advantage of the existing vehicle fleet as well as the extensive and well developed liquid fuel infrastructure in the U.S. and so have the greatest ability to scale rapidly.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

Response: A study conducted by economists at Iowa State University and the University of Wisconsin and released by the Center for Agricultural and Rural Development (CARD) found that the increased use of ethanol reduced wholesale gasoline prices by an average of $0.89 per gallon in 2010.[6] This study also found that the growth in ethanol production reduced gasoline prices by an average of $0.25, or 16%, over the entire decade of 2000-2010. Based on EIA gasoline consumption data, the U.S. consumer saved $33.5 billion in 2011.

In addition, a November 2012 Oak Ridge National Laboratory study[7] concluded that the RFS is producing significant positive economic effects in the United States while reducing crude oil prices, decreasing crude oil imports, increasing gross domestic product (GDP), and having only minimal impacts on global food markets and land use.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Response: The RFS should not be modified. Rather, it should be allowed to continue on its current trajectory under which substantial amounts of increasingly low carbon domestically produced renewable fuels will enter the U.S. market. The RFS has been successful in promoting the domestic manufacture of renewable fuels that are good for the U.S. economy, for our nation's energy security and for the environment. America's Renewable Fuel Standard has helped domestic, renewable transportation fuel strengthen America's rural economies and communities. It has spurred billions of dollars of investment in new technology for conventional and advanced renewable fuel, making cleaner, homegrown alternatives available and reducing our consumption of foreign oil.

The RFS is reducing our dependence on foreign oil by making clean, homegrown renewable fuels a part of our transportation fuel mix and since 2000, renewable fuel has helped reduce oil imports. Renewable fuel currently provides 10% of America's fuel needs – and that amount is growing. The U.S. Departments of Energy and Agriculture have estimated that there is enough biomass in America to replace nearly a third of the country's gasoline with renewable fuel by 2030. Almost two-thirds of future RFS volumes are allocated for advanced renewable fuel like cellulosic ethanol, which is made from next-generation feedstocks such as agricultural residues.

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[6] http://www.card.iastate.edu/publications/synopsis.aspx?id=1160

[7] Oladosu, G. Global economic effects of US biofuel policy and the potential contribution from advanced biofuels. November 2012. http://www.future-science.com/doi/abs/10.4155/bfs.12.60?journalCode=bfs&

The RFS is strengthening rural communities, driving economic growth and supporting more than 400,000 jobs nationwide. The RFS has spurred billions of dollars of investment in advanced and conventional renewable fuel. Renewable fuel has driven a $500 billion increase in America's farm assets since 2007. In 2011, gas prices were reduced by $1.09 per gallon and the average American household saved $1200 on their gas bill thanks to renewable fuel, according to independent studies.

We can't afford to reverse this progress. We must protect the economic, security and environmental benefits that renewable fuel brings to the country. We must avoid near-term decisions that imperil America's rural communities, entrepreneurs and innovators, and energy security.

Continued expansion in fuel diversity is a desirable policy outcome that Congress should encourage, but fuels such as natural gas are not renewable. In addition, non-renewable fuels require long lead times for deployment of suitable vehicles and substantial investment in fueling infrastructure. To attempt to incorporate them into the RFS would undermine the underlying policy rationale. Congress should incent additional transportation fuel diversity with additional policy vehicles better suited to the requirements of those fuels.

Thank you for the opportunity to comment on the RFS and Energy Policy white paper. I look forward to providing additional responses for the white paper(s) that are planned for later this year. Please contact me at Jan.Koninckx@dupont.com if you have any questions about the responses provided.

Sincerely,

Jan Koninckx
DuPont Industrial Biosciences

Fuel Cell &
Hydrogen Energy
Association

Request for Comments on RFS:

The Fuel Cell and Hydrogen Energy Association (FCHEA) applauds the House Energy and Commerce Committee for its bipartisan examination of the Renewable Fuel Standard (RFS).

FCHEA is the trade association for the fuel cell and hydrogen energy industry, and is dedicated to the commercialization of fuel cells and hydrogen energy technologies. Fuel cells and hydrogen energy technologies deliver clean, reliable power to cutting edge corporate, academic and public sector users, and FCHEA members are helping to transform our energy future. FCHEA represents the full global supply chain, including universities; government laboratories and agencies; trade associations; fuel cell materials, components and systems manufacturers; hydrogen producers and fuel distributors; utilities and other end users.

FCHEA would like to submit comments on suggestions for modifications of the RFS per question 6: *6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded?*

FCHEA Comments:

Hydrogen produced from renewable sources should be eligible to generate Renewable Identification Numbers (RINs) under the RFS.

As you know, hydrogen is an alternative fuel for passenger vehicles and non-road vehicles. The addition of hydrogen from renewable sources as an eligible fuel would provide an additional source of RIN credits that will allow gasoline refiners and importers to meet mandated volumes while other fuel sources come online.

95% of hydrogen produced in the United States is produced from natural gas reformation, with most of this feedstock sourced from traditional gas drilling operations. However, a portion of hydrogen is produced from renewable sources such as wind or solar powered electrolysis or biogas.

Hydrogen can be produced via electrolysis from renewable sources of energy such as solar or wind power. Excess renewable energy can be used to power an electrolyzer which disassociates oxygen and hydrogen from water. This hydrogen can then be stored and used as fuel in a fuel cell electric vehicle (FCEV). One example of this type of project was announced in April of this year, where a local wind company in Minnesota announced plans to develop a 10 MW wind installation capable of producing 500,000 kilograms of hydrogen a year. Renewably-produced hydrogen should qualify to produce RINs.

Hydrogen can also be generated from biogas. One method of biogas hydrogen comes from captured landfill biogas. When biogas is captured from a landfill, impurities are stripped from the biogas to produce CH_4. Instead of compressing that material into compressed natural gas (CNG) or liquefied natural gas (LNG), it can be reformed into hydrogen. Under the logic that several other biogas-produced fuels are currently eligible for advanced biofuels, we believe that hydrogen should also qualify to produce RINs. Furthermore, hydrogen from biogas should be eligible to produce cellulosic RINs specifically. As the primary feedstock in municipal solid waste (MSW) is cellulosic material, it follows that the hydrogen produced from that material should generate cellulosic RINs.

Another method of generating renewable hydrogen is through anaerobic digestion. Anaerobic digestion is a process of microbial bioconversion of waste through which biogas is produced. Anaerobic digesters are currently used at wastewater treatment plants, to process industrial or agricultural waste, among others. This biogas can then be cleaned and reformed into hydrogen for use as fuel. Again, as this hydrogen is produced biogas derived from cellulosic material, it should qualify to produce RINs, and specifically cellulosic RINs.

To implement this change, the following elements of renewable hydrogen will also require consideration:

- "Renewable Fuel" is defined in Section 211(o)(1)(J) of the Clean Air Act as those that "replace or reduce the quantity of fossil fuel present in a transportation fuel, heating oil or jet fuel." "Transportation fuel" under Section 211(o)(1)(L) means "fuel for use in motor vehicles, motor vehicle engines, non-road vehicles or non-road engines." **Under the strictest interpretation of "motor vehicle," FCEVs may not qualify as they do not have a conventional motor**. However, FCEVs do have an electric motor and provide oil-alternative transportation solutions. Clarification may be needed to ensure that hydrogen for FCEVs can qualify as a "transportation fuel," either by the EPA or in report language from authorizing or appropriating Committees.

- In order for hydrogen to become eligible for RINs, **EPA will need to establish an equivalence value for hydrogen**, because RINs are generated on an ethanol equivalent basis.

FCHEA can provide more technical information on the hydrogen proposal. Please contact Connor Dolan at (202) 261-1331 or cdolan@fchea.org to discuss.

FCHEA believes that RINs should be reclassified to include renewable hydrogen, and specifically hydrogen from biogas to the cellulosic category. Renewable hydrogen from biogas would not only incentivize the capture and beneficial reuse of biogas, it would provide companies with a renewable volume obligation (RVO) – drillers and importers – with an additional "release valve" from the challenge of meeting cellulosic requirements. While a handful of domestic cellulosic refineries are in their nascent stages, it is certain there will be a shortfall of cellulosic RINs in the near term. EPA and Congress should provide RVO-obligated companies with more options to help satisfy their cellulosic obligations.

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June 21, 2013

The Honorable Fred Upton
Chairman
House Energy and Commerce Committee
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
House Energy and Commerce Committee
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

Thank you for the opportunity to respond to your request for information regarding the energy policy implications of the Renewable Fuel Standard. The recent mantra that the U.S. is on the verge of becoming "energy independent" due to domestic oil production presents a very incomplete picture of the reality that our economy and consumers face at the pump. Today, the U.S. remains the top global consumer of oil, using almost 20 million barrels a day. Our nation's continued reliance on oil ensures that American families and our economy will continue to be burdened by the high and volatile prices of the global oil market and the national security challenges that come with oil dependence, as well as a greenhouse gas intensive transportation fuel supply. The RFS is the single-most important policy driving our nation toward oil alternatives.

Regardless of how much oil we drill at home, the price that American families pay at the pump and the cost of gas throughout our economy is dictated by global markets that are manipulated by foreign nations and external forces like OPEC. The International Energy Agency reported in its World Energy Outlook that oil prices will continue to rise in the coming years, reaching $125/barrel (in year-2011 dollars) by 2035 (over $215/barrel in nominal terms).

The cost of this trend to Americans is clear. On February 4, the Energy Information Administration (EIA) reported that American families paid the highest percentage of household income for gasoline expenditures that they have paid in nearly three decades. And, in 2013 the World Bank concluded that almost 2/3 of the post-2004 food price increase is attributable to the price of crude oil, reinforcing the near-perfect correlation of oil and food prices that has occurred since 2000. Without action to diversify our transportation fuel in the United States, we will continue to be held hostage by global oil markets.

But, it is not enough to just have alternatives to oil – we must have clean, renewable alternatives. The EPA reports that greenhouse gas emissions attributed to transportation accounted for about 30 percent of U.S. CO2 emissions from fossil fuel combustion in 2011, with nearly two-thirds of those emissions stemming from gasoline consumption for personal vehicle use. We cannot address climate change without reducing emissions from the transportation sector. Indeed, the International Energy Agency (IEA) in 2013 called for a more than doubling of renewable fuel

production and a sixfold increase in advanced biofuel capacity by 2020 in order to avoid a 2°C rise in global temperatures.

The good news is that a national policy is already in place to break the monopoly that the oil industry enjoys in our transportation fuel sector and bring alternatives to market, steadily reducing our dependence on oil and breaking the link between American families, our economy, and global oil markets controlled by forces like OPEC.

All Congress needs to do is stay the course. In 2007, President Bush signed into law a 15-year roadmap designed to drive investment in renewable fuel and bring new products to market – the Renewable Fuel Standard (RFS). The policy is working. The regulations implementing the RFS weren't complete until 2010, and yet renewable fuel has already displaced 10 percent of petroleum in our gasoline supply, with 13 billion gallons in 2012.

That production supported jobs for, and employed, more than 365,000 Americans, while reducing the need for imported oil by more than 462 million barrels. In 2012, using renewable fuel slashed greenhouse gas emissions by 33.4 million metric tons.

If left intact, the RFS can do even more to reduce oil in our transportation fuel supply and bring increasingly low carbon alternatives to market. The RFS sets forth ambitious targets through 2022 for the production of cellulosic and advanced renewable fuel that meet specific minimum thresholds of lifecycle greenhouse gas emissions reductions reaching up to 60 percent, depending on the type of fuel.

Grown from the ground up beginning in 2007 when the RFS was adopted, the cellulosic and advanced industries are reaching commercial scale with facilities throughout the country that use a diversity of feedstocks including agricultural waste, woody biomass, and municipal solid waste. Co-location of first generation and cellulosic facilities will allow for rapid increase in production. Higher fuel blends are approved for use after extensive testing by EPA and DOE, and flex-fuel vehicles are on the road

Unfortunately, in the face of this success, the RFS is under attack. Embedded interests have launched a campaign to eliminate the policy. The RFS provides exactly the type of long-term, regulatory stability that is required to send a signal to investors. The single most important thing Congress can do to reduce our nation's dependence on oil and cut greenhouse gas emissions is to leave the RFS in place, as is. We are just 1/3 of the way through the timeline Congress laid out in 2007 – we must stay the course or risk losing the progress we've made.

ABENGOA BIOENERGY

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Representative Fred Upton
Chairman
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Representative Henry Waxman
Ranking Member
House Committee on Energy and Commerce
2322 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

Growth Energy is the leading trade association for America's ethanol producers and supporters. Growth Energy promotes expanding the use of ethanol in gasoline, decreasing our dependence on foreign oil, and creating American jobs. As such, we are pleased to submit these comments in response to your questions for stakeholder comment released on June 7, 2013 regarding Energy Policy and the RFS.

Sincerely,

Tom Buis
CEO, Growth Energy

Questions for Stakeholder Comment

1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

   The U.S. continues to be extremely vulnerable to shocks in the oil supply and price disruptions –from both foreign supply and the domestic supply chain. During the last decade, the price of oil has nearly quadrupled, going from roughly $25 per barrel in 2001 to nearly $100 per barrel today; that price disruption has had a significant impact on American consumers and the American economy, with the price of gasoline rising from $1.09 per gallon in 2001 to $3.52 per gallon today. Despite significant increases in domestic oil production, we are still ***importing 10 million barrels per day*** of foreign oil sending more than $400 billion overseas last year alone. These imports are from a number of countries in unstable regions, like the Middle East, that have little interest in the United States' energy security (data from the U.S. Energy Information Administration http://eia.gov). Critics of renewable fuels point to Canada as our largest source of our imported oil, but even Canada has recently developed assets, such as the Enbridge Northern Gateway Pipeline, aimed at exporting their oil to China rather than exporting to the United States (http://www.northerngateway.ca/). ExxonMobil acknowledges processing nearly three times as much oil as is produced here in the United States ("What am I paying for in the price of a gallon of gasoline?", Ken Cohen, January 27, 2012 http://exxonmobilperspectives.com). All of this additional oil is purchased on the global market that is still largely controlled by OPEC, so any time there is a supply disruption or OPEC arbitrarily decides to cut production, it hurts American consumers. We've seen Iran choke off the Strait of Hormuz, we've seen workers strike in Venezuela, we've seen pipelines burst, and the list goes on – all of these situations have both impacted the supply of oil and the cost American consumers pay at the pump. Even in the past few weeks here in the United States, we have seen refineries taken offline for seasonal maintenance in the Midwest, thus causing outrageous price increases in Minneapolis and other places across the region ("Pain at the Pump as Gas Prices Soar above $4", http://kstp.com/article/stories/s3034685.shtml; "Spike in Twin Cities Gas Prices Leaves Drivers Frustrated", http://www.startribune.com/business/190374421.html). American consumers simply cannot continue to pay the price for oil's monopoly of the liquid fuels market. The RFS has only started to reach its potential with home-grown renewable fuel now making up 10 percent of America's fuel supply, while the oil industry still controls 90 percent of the market. Without the RFS, there will be no other competitive alternative to imported oil, and American consumers will continue to be held hostage to the supply chain of the oil industry.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

   According to EIA, 19 gallons of gasoline are produced from a barrel of oil; thus, for every 19 gallons of ethanol produced here in the United States, we can displace a barrel of oil imported from overseas and help offset the billions of dollars we spend each year to import foreign oil. When the RFS was first enacted into law in 2005, the U.S. was nearly 60 percent dependent on foreign oil – today we stand closer to 45 percent. While we have increased domestic oil production, ethanol has also grown to be 10 percent of America's fuel supply, and has the ability to displace even more foreign oil. Additionally, several studies have shown that the United States is spending billions of dollars to protect oil supply routes in the Middle East – these costs could be dramatically reduced if we turned to more home-grown renewable ethanol.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

   Again, we continue to import 10 million barrels of oil per day, thus sending more than $400 billion overseas per year. Additionally, according to RAND, the U.S. spends between $67 and $83 billion per year protecting global oil interests ("Imported Oil and U.S. National Security", RAND Corporation, 2009). With every 19 gallons of ethanol we add to America's fuel supply, we can replace a barrel of foreign oil. By moving to even higher ethanol blends such as E15 and E30, we can further reduce our dangerous dependence on foreign oil by replacing more of the 10 million barrels of oil that we import each and every day.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

   As Growth Energy has highlighted in previous white paper comments, the RFS has helped to create hundreds of thousands of jobs and economic opportunities for farmers and other small businesses across the country while simultaneously reducing consumer prices at the pump. In fact, the American ethanol industry provides nearly 400,000 jobs here in the United States and contributes more than $40 billion to the U.S. GDP. The industry has already made significant investments in the next generation of biofuels that will further bolster rural economies, create more American jobs, improve air quality and continue to reduce prices at the pump. The RFS has, and will, continue to be a win-win for America.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

   American ethanol has helped to reduce the price at the pump for consumers in several ways. First, with every 19 gallons of home-grown, American biofuels, we are replacing a barrel of foreign oil. Additionally, ethanol consistently trades below the cost of gasoline. Blended at just 10 percent in gasoline, ethanol has significantly helped to reduce the price at the pump for American consumers. A study by Louisiana State University estimated that solely due to increased supply through ethanol, on average, consumers saved six cents per gallon of gasoline for every billion gallons of ethanol produced. Since the U.S. produced 13.8 billion gallons of ethanol in 2011, this study indicates that U.S. drivers saved roughly 83 cents a gallon in 2011, totaling $111.22 billion in annual savings. With continued progress toward the goals of the RFS and the addition of mid-level ethanol blends into the fuel market, the opportunities for savings continue to increase as we increasingly replace more expensive fossil fuels.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

   The RFS was implemented to reduce dependence on foreign oil, reduce greenhouse gas emissions and develop the American renewable fuel sector. There is already a clear process to apply for a pathway through the EPA to qualify under the RFS. We have already seen a number of pathways approved and significant investment based on the certainty of the law as currently written.

Recently, EPA approved a pathway for ethanol derived from grain sorghum produced with biogas to qualify as an advanced biofuel. In fact, EPA has a pending proposed rule to consider even more pathways for qualification under the RFS including an additional pathway for cellulosic ethanol. The EPA already provides ample opportunity for renewable fuels that meet the original goals set forth when the RFS was enacted in 2005 and again in 2007 to qualify, so there is no current need to revise the range of qualifying fuels.

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Dear Chairman Upton and Ranking Member Waxman:

The Illinois Corn Growers Association and Illinois Renewable Fuels Association appreciate the opportunity to comment on this fourth white paper, *Energy Policy*, issued by the House Committee on Energy and Commerce as part of the RFS review process. Our comments will be brief since we are part of similar comments submitted by the National Corn Growers Association and the other ethanol associations.

From the Illinois perspective, ethanol provides a significant buffer to the price spikes and supply disruptions that we have seen in the oil industry over the last 30 years. This buffer is due in part to the implementation of the RFS beginning in 2005. Since the RFS was enacted by Congress in 2005 and signed by President Bush, ethanol prices have ranged on average between 40 cents and 60 cents a gallon less than gasoline on a wholesale basis. The price hikes and supply disruptions experienced by the oil industry, which ultimately impact the consumer and the U.S. economy, are not necessarily the fault of the oil industry. These can be caused from natural disasters or man-made disasters but are made worse because of our dependence on foreign sources for the crude or the refined gasoline. Refineries, terminals and pipelines are so large due to the economy of scale that even a planned shutdown due to maintenance can interrupt the flow or result in a price spike at the pump.

Using corn-based ethanol, the RFS created a buffer to some of these disruptions that we didn't have even five years ago. Almost 96 percent of our gasoline in the U.S. now contains 10 percent ethanol. When OPEC initiated an oil boycott in the 70's that was less than a 10 percent disruption and it resulted in havoc at the pumps. We now have a buffer against this happening again because of our national energy policy - the RFS.

In Illinois, our ethanol industry has the capacity to produce over 1.6 billion gallons of ethanol per year. This equates to more than 30 percent of our gasoline demand in Illinois which could be supplied by ethanol, providing an opportunity for even more protection for our energy and economic security for our citizens. Unfortunately we can't realize this security due to the blend wall, lack of vehicles and federal policy.

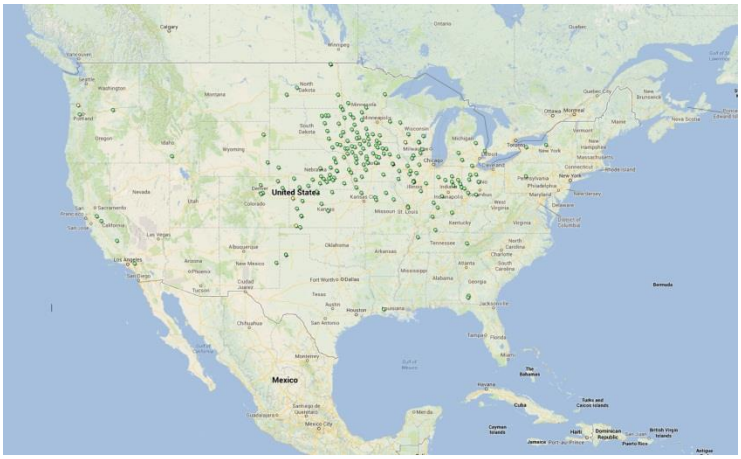
If allowed to work, the RFS can be the national energy policy driver that increases our energy and price security to protect our economy and citizens. One of the challenges facing Congress and the Administration is to ensure that the new CAFÉ standard rules are in alignment and not counter to the goals of the RFS. Right now USEPA is proposing rules under CAFÉ that will make it very difficult for the RFS to be met and will increase transportation costs to the consumers.

One of the least costly ways of increasing the buffer against price spikes and supply interruptions is to go to higher blends of ethanol. This can be done through the increased availability of E-15 in the marketplace or more flex fuel vehicles (FFVs) produced by both the U.S. and foreign automakers. If every gasoline vehicle sold in the U.S. was flexible fuel capable, then consumers would choose the blend at the pump that would make the most sense to them. This would be an easy market approach to buffer any changes to relative prices and supplies on both gasoline and ethanol. The consumers would truly have a choice based on economics at the pump.

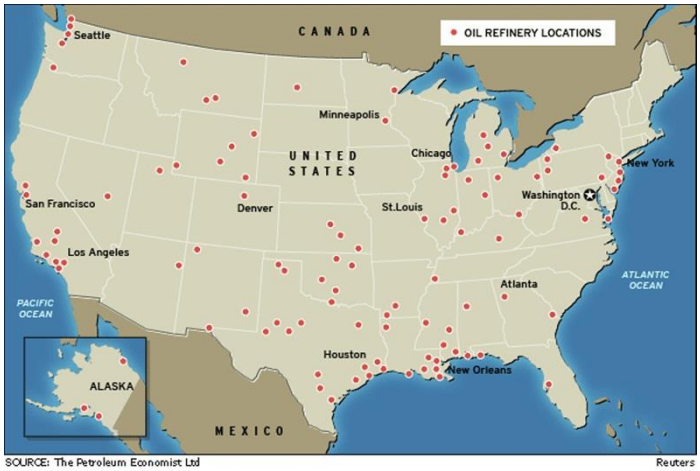
Encouraging the automobile industry to build more FFVs is a relatively easy challenge. USEPA can encourage the automobile manufacturers to do this through the CAFÉ rules and their incentives for FFVs. Right now, after 20 years of growing the number of FFVs available to consumers (Chrysler, Ford, and GM since 2012 provide the FFV technology in half of their vehicles produced), USEPA is unfortunately encouraging the autos to no longer produce these vehicles after 2016. There are also other avenues that Congress can use to increase the number of FFVs to provide this increased security and consumer choice.

Below are two maps that illustrate how important and how effective ethanol has been, providing energy security, reducing imports of oil and gasoline and moderating price spikes. The refineries pictured in the map are subject to supply disruptions due to the distance that crude and finished product travels to and from the refineries. Alternatively the ethanol plants pictured receive their feedstocks within 60 miles of the plant on average. The ethanol then is shipped to terminals, tank farms or to retail sites. Some ethanol is even exported when there is a surplus.

ETHANOL PLANTS IN U.S.



OIL REFINERIES IN U.S.



Right now as you can see, the ethanol plants are concentrated in the Midwest due to feedstock availability which provides this large region with fuel security. The real benefit of the RFS as it relates to energy and economic security is that with the new advanced biofuels entering in the market, more and more of these ethanol plants will be constructed on the west coast, east coast, and the southern regions of the U.S. This will provide added fuel security for these regions as well. This is the reason we think higher blends of ethanol encouraged through the RFS and more FFV vehicles will finally make definite the energy security for our transportation sector that we have been striving for during the last 40 years.

Thank you for taking the time to listen to our concerns and for inviting public comment on this issue.

Sincerely,

Paul Taylor, President
Illinois Corn Growers Association

Ray Defenbaugh
Illinois Renewable Fuels Association

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

As you review existing energy policy measures and debate methods of reducing U.S. oil imports, it is important to remember that there are more options we can tap right here at home, particularly when it comes to producing conventional ethanol. Ethanol made from natural gas is an extremely attractive and viable option. Natural gas-based ethanol can be manufactured more cheaply than corn-based ethanol ($1.50 to $2.00 a gallon when natural gas is priced under $6.00), and it doesn't have the same transportation issues because a plant can be located wherever there is a natural gas pipeline.

Natural Gas to ethanol technology is real and ready to be implemented. The only thing stopping this practical solution is the Renewable Fuel Standard. We are writing to encourage you to support expanding the definition of feedstocks allowed under the conventional biofuels definition of the RFS to include natural gas.

We've been in the oil and natural gas business for a long time, and we can say from personal experience that the US remains extremely vulnerable to the influence and manipulation of oil supplies and prices from foreign countries. We believe the RFS has improved our energy security by weaning us off of foreign oil, but its limitations and short-sightedness has put a drag on this positive development and the growth of the domestic alternative fuel industry in general.

As stakeholders in this debate, we sincerely hope you will take the utmost care in considering effective solutions to a broken energy policy, and we suspect we would all benefit from increased competition among available technologies.

Sincerely,

Charlie Burd, Executive Director
Independent Oil & Gas Association West Virginia

IOGA
WEST VIRGINIA

THE INTERNATIONAL COUNCIL
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June 21, 2013

RE: Energy and Commerce Committee White Paper Series on the Renewable Fuel Standard

The International Council on Clean Transportation welcomes the opportunity to provide comments on the Energy and Commerce Committee's deliberations on the Renewable Fuel Standard. The ICCT is an independent nonprofit organization founded to provide first-rate, unbiased research and technical analysis to environmental regulators. Our mission is to improve the environmental performance and energy efficiency of road, marine, and air transportation, as well as their fuels, in order to benefit public health and mitigate climate change.

The ICCT has long supported, and welcomes the opportunity to provide comments on, the Renewable Fuel Standard (RFS). We commend the House and US Environmental Protection Agency for their continuing efforts to promote a cleaner, lower-carbon transportation sector that uses less petroleum-based – and more renewable – fuels with the RFS program. We hope these comments can help in the dialogue to continue improving the performance of the program.

We would be glad to clarify or elaborate on any points made in the attached comments. If there are any questions, Committee staff can feel free to contact our fuels program director, Dr. Nicholas Lutsey (*nic@theicct.org*).

Fanta Kamakaté
Chief Program Officer
International Council on Clean Transportation

International Council on Clean Transportation comments on Energy & Commerce Committee White Paper Series on the Renewable Fuel Standard

The International Council on Clean Transportation (ICCT) has long supported the Renewable Fuel Standards (RFS). The ICCT has contributed a substantial body of research and public comments directly to the US Environmental Protection Agency regulatory development process on the areas of life-cycle emission analysis, indirect land use change provisions, and volumes of fuels within the various RFS biofuel categories.

These comments are narrower in scope, related only to question #6 "Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?" More specifically, these comments relate to the provisions within the RFS for the inclusion of electricity as a qualifying fuel.

The use of electricity as an energy carrier in transportation is relatively small but growing.[1] The first commercial plug-in electric vehicles on now in the marketplace[2], and sales of these electric-drive vehicles will increase as battery technology achieves greater economies of scale. In addition, there are new electrification niches to power accessories of idled trucks and trailer refrigeration loads, as well as port electrification for ships. Each vehicle that is powered by electricity in the US would, on average –

- Reduce its oil use by nearly 99%, because only about 1% of grid power is fueled by petroleum-based fuels[3];
- Reduce its climate-related emissions by over half (even with US' current electricity average grid mix of about 37% coal) and by much more in less coal-intensive states[4];
- Increase its renewable energy content to about 12%, based on the average renewable electricity contribution to the overall US electricity grid mix[5];
- Increase its renewable energy content to over 20% in leading renewable electricity states, including Alaska, California, Idaho, Maine, Montana, New York, Oregon, South Dakota, Vermont, Washington[6]
- Increase its renewable energy content to about 33-37% for vehicles that are powered by the leading power utilities that have been more actively investing in renewable energy-sourced electricity grid generation[7,8].

The ICCT would like to encourage the House to consider revising the RFS program to better promote renewable electricity use within the transportation sector. The existing RFS2 electricity

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1 Hydrogen is another feasible energy carrier, which can also be produced using renewable energy. While our comments are written specifically for electric vehicles, it is important that the RFS provisions also encourage renewable hydrogen.

2 As of May 2013, cumulative electric vehicles sales, including plug-in hybrids, just reached 100,000 units, per EDTA (2013) Electric Drive Sales. *http://www.electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952*.

3 Energy Information Administration (2013) *http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3*

4 See, e.g., Lutsey, N. and D. Sperling (2012). Regulatory adaptation: Accommodating electric vehicles in a petroleum world. *Energy Policy*. 45: 308-316. *http://dx.doi.org/10.1016/j.enpol.2012.02.038*

5 Energy Information Administration (2013) *http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3;* Average 2012 US grid electricity content of 7% hydroelectric, 3.5 wind, 1.4% biomass, 0.4% geothermal, and 0.1% solar; 12% renewable electric compares to 7% renewable in the current gasoline mix (i.e., E10 with 10% by volume ethanol)

6 Based on 2009 state-by-state electricity content from the EPA (2012) eGRID2012 Verson 1.0. *http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html*

7 PG&E (2013). Clean Energy Solutions. *http://www.pge.com/en/about/environment/pge/cleanenergy/index.page.*

8 Portland General Electric (2013) How We Generate Energy. *http://www.portlandgeneral.com/our_company/corporate_info/how_we_generate_energy.aspx*

provisions are unduly restrictive regarding the use of renewable electricity for transportation. For example, the RFS provisions allow for fuel providers (e.g., primarily electric utilities in this case) to opt in and generate RFS Renewable Identification Number (RINs) credits by either supplying electricity from a non-commercial electricity grid or requiring EPA Administrator approval. The use of non-commercial electric grids are extremely rare, and requiring special Administrator approval does not give a clear path for utilities to make serious investment decisions about how to alter their operations to better accommodate increasing numbers of plug-in electric vehicles. Also the definition of renewable within the RFS program is restricted to biomass – whereas there are far more renewable sources that offer petroleum savings and carbon reductions that meet or exceed the benefits of biomass-derived energy. Examples of renewable electricity sources that do not currently qualify are wind, geothermal, hydroelectric, solar photovoltaic, and solar thermal. Biomass-derived grid power is only about 1% of current US grid power, whereas the state-by-state renewable electricity portfolio standards will increasingly bring the US electricity grid to 20-30% renewable power in the 2020-2030 timeframe.

If the RFS provisions were modified so as to be inclusive of all commercial grid renewable electricity, utilities would have a greater incentive to play their respective role in readying the grid, improving electric vehicle charging options, working on electric vehicle-specific electricity rate structures, etc. Providing the electric utilities with a clearer path to generate RIN credits by explicitly allowing commercial grid electricity would be an important revision. Including electricity from all renewable sources (i.e., not only biomass-derived) would be appropriate. Including a factor that appropriately accounts for the lower on-vehicle energy requirements of electric drive would also be appropriate, considering that a unit of energy on a electric vehicle would deliver about three times the distance traveled from a unit of fuel energy on a comparable gasoline vehicle.[9,10]

As a result, the ICCT makes the following recommendations to be considered by the House Energy and Commerce Committee for further analysis:

- Commercial grid transmission: Adopt use of commercial transmission-supplied electricity (i.e., without special Administrator approval)
- Utility-average renewable fraction: Allow utilities to opt in to generate RIN credits based on their average overall commercial renewable electricity generation fraction (e.g., if a utilities overall electric power generation is 30% renewable, then their transportation electricity use would multiplied by 0.3 to calculate a RIN credit)
- Qualifying renewable energy sources: Include a provision whereby renewable electricity includes electricity that is powered by wind, solar, hydroelectric, geothermal (along with biomass fired and biomass co-fired power that are already included)
- Electric vehicle efficiency: Utilize a standard electric vehicle efficiency conversion of about 3.0 for electricity-powered transportation sources to reflect how an electric vehicle delivers about three times more miles traveled per energy unit than a comparable conventional gasoline vehicle.

These concepts would likely amount to relatively small changes in the overall compliance with the RFS program. For context, an ICCT analysis for a plausible year 2025 scenario where there are 4 million total electric vehicles powered on average by a 25% renewable grid, suggests that the total annual RIN generation could be on the order of 450 million gallons

[9] See Energy Economy Ratio provisions in California Air Resources Board (2013) Initial Statement of Reasons. Low Carbon Fuel Standard. *www.arb.ca.gov/fuels/lcfs/030409lcfs_isor_vol1.pdf*

[10] Lutsey, N. and D. Sperling (2010). Toward integration of vehicle and fuel regulation: California case study. *Transportation Research Record.* 2191: 100-110. *http://trb.metapress.com/content/6g10747l4188n768/*….

equivalent [11], or about 2% of the total 21 billion gallons for advanced biofuel requirements in RFS2 for 2022. For a rough sense of scale, based on the value of $0.62 per advanced biofuel RIN,[12] this amount of renewable electricity-based RINs would amount to $280 million per year in sustained revenue that could be dedicated to electric vehicle charging infrastructure projects.

We also note that analogous provisions to those itemized above for battery electric vehicles should be considered for electric-drive vehicles that are fueled by hydrogen. Similar to electricity, hydrogen is an energy carrier that can be derived from diverse fossil and renewable sources. Although hydrogen fuel cell vehicles are further from major commercial deployment than plug-in battery electric vehicles, their long-term potential is very promising. Policies to incentivize the increased use of a higher renewable content of hydrogen are underway in California[13], and the RFS should create similar incentives for renewable hydrogen.

Each of the above-suggested recommendations would be appropriate under the objectives of the Energy Independence and Security Act, and they would also adhere to best practices internationally in promoting the transition to electric-drive vehicles. Transportation fuel policies – including the RFS, the California Low Carbon Fuel Standard (LCFS), and the European Union's Fuel Quality Directive (FQD) – can play an important role in better facilitating a mix of all alternative fuels in the vehicle fleet. Currently the RFS artificially restricts some renewable energy sources, whereas the LCFS and EU FQD polices are broader and include electric-drive options alongside biofuels, including provisions as suggested above.

More broadly, a path toward greater electrification of the transportation sector would be long and require sustained policy efforts on many fronts to facilitate a decades-long transition.[14,15] Concepts like those discussed here would make a major relevant stakeholder (i.e., the electric utilities) more vested in the process and help them generate some RIN revenue to pay for electric vehicle charging infrastructure. Among the broader policies that would also help long-term viability of electric vehicles are support for automobile manufacturing and suppliers' research and development on pre-commercial technologies, progressive long-term efficiency and greenhouse gas emission standards for vehicles that help drive incremental and electric-drive vehicle technologies into the market place, and upstream fuel policies like the RFS. Sustained efforts in all of these areas will be needed by countries like the US that seek to lead in the transition to electric drive vehicles in the 2020-2050 timeframe.

With all transportation policies, it is important to strive for technology neutral, performance-based standards that drive alternative fuels based on their relative energy and carbon benefits. The suggestions laid forth above could help to ensure that the RFS program more equitably promotes renewable biofuels and renewable electricity. Such changes would offer an acknowledgement that the long-term future for vehicles in the US is likely to involve lower carbon biofuels and more renewable electricity use (among other alternative fuels).

[11] Based on electricity use of 0.34 kWh/mile (similar to Nissan Leaf), a 3.0 energy economy ratio (as used on LCFS), 22.6 kWh per gallon of ethanol equivalent (per RFS2 final rule provisions), and 10,000 miles per year of driving

[12] Based on D5 Advanced biofuel RIN 2012 average price from EcoEngineers, 2013. Overview of RIN Program and Recent Trends. *http://www.energy.ca.gov/altfuels/notices/2013-01-11_workshop/presentations/04_Shashi_Menon-Ecoengineers.pdf*

[13] California Air Resources Board (2013). Environmental & Energy Standards for Hydrogen Production *http://www.arb.ca.gov/msprog/hydprod/hydprod.htm*

[14] Greene, D., Park, S., Liu, C (2013). *Analyzing the Transition to Electric Drive in California*. Prepared for the International Council on Clean Transportation. *http://bakercenter.utk.edu/wp-content/uploads/2013/06/Transition-to-Electric-Drive-2013-report.FINAL_.pdf.*

[15] National Academy of Sciences (2013). *Transitions to Alternative Vehicles and Fuels*. *http://books.nap.edu/catalog.php?record_id=18264*. National Academies Press. Washington DC.

The ICCT encourages the Committee to consider the above recommendations and to reach out to the ICCT with any questions or clarifications on these comments.

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

We are writing in regards to your recent White Paper addressing energy policy as it relates to the Renewable Fuel Standard (RFS). As farmers, ranchers, dairymen and livestock organizations, we are extremely vulnerable to fluctuations in corn supplies and prices as well as the cost of transportation fuel. The livelihood of our colleagues, our families, and our customers in the supermarket, depend on reasonable feed and fuel prices to produce our goods, get them to market and make sure they're affordable when they get there. Volatile food and transportation prices are not only devastating to our farming industry but to the entire U.S. economy. While we support the original intentions of the RFS – providing energy security by producing more alternative fuels domestically – we believe the RFS needs to be modified to prevent it from further ravaging our agriculture industry.

We are in favor of an "all of the above" approach to alternative fuels, including renewables, but we don't believe we should depend so heavily on corn for the ethanol that's blended into our transportation fuel. It artificially picks winners and losers and leans too heavily on a single feedstock that's vulnerable to drought and other market factors. We hope you will consider allowing additional technologies into the RFS, such as natural gas, so healthy competition can lower fuel costs, reduce the dependence on corn, increase energy security and create a truly fair and open alternative fuel marketplace.

Despite positive trends toward declining demand and increased local supply of transportation fuel, we must remain vigilant in our pursuit of diversity in our solutions. We do not want our country beholden to petroleum imported from volatile regions of the world, but we also cannot accept a domestic alternative fuel program that deprives our industry of sufficient feed supplies and crushes it under high corn and fuel prices simply because the definition of ethanol is so narrow.

We strongly support the Domestic Alternative Fuels Act, introduced by Reps. Olson (R-TX) and Costa (D-CA), with fifteen additional cosponsors, which proposes adding

natural gas to the RFS. We hope you will consider this reasonable solution when you evaluate the RFS.

Sincerely,

Dave Foster

Dave Foster
Chief Executive Officer
Cattle Producers of Louisiana

To:

Congressman Fred Upton
Chairman
Committee on Energy and Commerce

Congressman Henry Waxman
Ranking Member
Committee on Energy and Commerce

Re: Comments solicited in bipartisan Committee white paper on the Renewable Fuel Standard

Background:
Linde North America is an industrial gases company headquartered in Murray Hill, New Jersey and is a subsidiary of a larger German company. Linde has about 15,000 employees based in the United States. We produce and distribute bulk gases for a broad variety of industrial, food and medical applications. These gases include cryogenic and non-cryogenic nitrogen, CO2, helium, oxygen, helium, argon, and liquid natural gas (LNG). Linde has major divisions located in New Cumberland, WV, Tulsa, OK, and Atlanta, GA.

Request for comments on RFS:
Linde applauds Energy and Commerce for its bipartisan examination of the Renewable Fuel Standard. Linde does not have comments on the broad market impacts of the RFS on oil demand and prices, but does have some suggestions for modifications per question 6:
6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded?

Linde Response

We believe that two modifications to the RFS should be implemented by the EPA and/or Congress.

First, compressed natural gas (CNG) and liquid natural gas (LNG) should be re-categorized to qualify for cellulosic RINS under the EPA criteria. Landfill biogas is the natural emission of gases from biodegrading material in landfills, mostly comprised of CH4. These gases can be captured, cleaned of impurities and compressed into CNG and LNG. For an example, Linde and partner Waste Management run the world's largest landfill gas-to-LNG operation at a site in Altamont, California. See here: http://www.prnewswire.com/news-releases/linde-and-waste-management-commission-worlds-largest-landfill-to-liquefied-natural-gas-facility-68578542.html. At this time, the landfill biogas used to produce CNG and LNG is eligible to generate RINS under the Advanced Biofuel category. These RINS command a lower trading value in the marketplace than cellulosic RINs. CNG and LNG from landfill biogas should qualify for cellulosic RINs because they meet the criteria of "fuel that is produced by cellulosic feedstocks." EPA has judged that municipal solid waste (MSW) in landfills is predominantly cellulosic material, and the biogas produced from that material are the feedstock for landfill-produced CNG and LNG.

On June 14, EPA announced its intent to propose this very modification to the RFS. The Federal Register entry contains detailed justification for the proposal. Linde is supportive of the criteria EPA has used to inform its recommendation on CNG/LNG.

Second, **hydrogen (H2) produced from renewable sources should be eligible to generate RINS**. As you know, hydrogen is an alternative fuel for passenger vehicles and non-road vehicles. Like the re-classification of CNG and LNG above, this addition would provide an additional source of RINS credits that will allow gasoline refiners and importers to meet mandated volumes while other fuel sources come on line.

95% of hydrogen produced in the United States is produced from natural gas steam methane reformation (SMR). Most of the "feedstock" natural gas is sourced from traditional gas drilling operations. However, a portion of H2 is produced from biogas, like CNG and LNG above. When biogas is captured from a landfill, impurities are again stripped from the biogas to produce CH4. Instead of compressing that material into CNG or LNG, it can be reformed into H2. Under the logic that several other biogas-produced fuels are currently eligible for advanced biofuels, we believe that H2 should also qualify to produce RINS. Furthermore, H2 from biogas should be eligible to produce cellulosic RINS specifically. As noted above, the primary feedstock in MSW is cellulosic material, so it follows that the H2 produced from that material should generate cellulosic RINS..

To implement this change, the following elements of renewable hydrogen will also require consideration:

- "Renewable Fuel" is defined in Section 211(o)(1)(J) of the Clean Air Act as those that "replace or reduce the quantity of fossil fuel present in a transportation fuel, heating oil or jet fuel." "Transportation fuel" under Section 211(o)(1)(L) means "fuel for use in motor vehicles, motor vehicle engines, nonroad vehicles or nonroad engines." **Under the strictest interpretation of "motor," fuel cell vehicles may not qualify**. Fuel cell vehicles do not have a motor, but they do provide oil-alternative transportation solutions. Clarification may be needed to ensure that hydrogen for fuel cell vehicles can qualify as a "transportation fuel," either by the EPA or in report language from authorizing or appropriating Committees.

- In order for hydrogen to become eligible for RINS, **EPA will need to establish an equivalence value for hydrogen**, because RINS are generated on an ethanol equivalent basis.

The Fuel Cell and Hydrogen Energy Association (FCHEA) can provide more technical information on the H_2 proposal. Please contact Morry Markowitz at (202) 261-1333 or mmarkowitz@fchea.org to discuss.

Linde believes that the re-classification of CNG and LNG and the addition of hydrogen to the cellulosics category would not only incentivize the capture and beneficial reuse of harmful landfill gases, it would provide companies with a renewable volume obligation (RVO) – drillers and importers – with an additional "release valve" from the challenge of meeting cellulosic

requirements. While a handful of domestic cellulosic refineries are in their nascent stages, it is certain there will be a shortfall of cellulosic RINS in the near term. EPA and Congress should provide RVO-obligated companies with more options to help satisfy their cellulosic obligations.

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June 21, 2013

U.S. House Committee on Energy and Commerce
Chairman Fred Upton
Ranking Member Henry Waxman
2125 Rayburn House Office Building
Washington, DC 20515

Submitted via Email: RFS@mail.house.gov
RE: Committee White Paper on Energy Policy

Dear Chairman Upton and Ranking Member Waxman:

Thank you for the opportunity to weigh in on the recent white paper regarding energy policy considerations related to the Renewable Fuel Standard (RFS). We appreciate your efforts to better understand the impact of this important program, which we believe is already one of the most effective U.S. energy policies in recent history. We look forward to working with both Congress and the Administration as we shift toward a true "all of the above" energy approach to strengthen our economic and energy security.

The National Biodiesel Board (NBB) is the national trade association representing the biodiesel industry as the coordinating body for research and development in the United States. Since 1992 when it was founded, NBB has developed into a comprehensive industry association that works with a broad range of stakeholders including industry, government and academia.

Before we discuss the six questions highlighted by the Committee, it is important to note that the Biomass-based Diesel section of the RFS is working as intended. Since the program began in 2010, our industry has exceeded its RFS volume requirements and, over the past two years, produced more than 1 billion gallons annually while lowering diesel fuel prices to consumers. In fact, the biodiesel industry is proud to be the first EPA-designated Advanced Biofuel to reach 1 billion gallons of production.

There are currently about 200 biodiesel plants across the country – from Washington state to Iowa to North Carolina – with registered capacity to produce some 3 billion gallons of fuel. The industry supported some 50,000 jobs last year, generating billions of dollars in GDP, household income and tax revenues. The industry's economic impact is poised to grow significantly with continued production increases, supporting jobs in a variety of sectors, from manufacturing to transportation, agriculture and service.

Gallon for gallon, we believe biodiesel is the single best transportation fuel produced on a commercial scale in the U.S. It is diversifying our fuel supplies so that we are not at the mercy of global oil markets that are so heavily influenced by unstable parts of the world. We believe this is critically important because no matter how much oil we produce at home, without diversity we are constantly vulnerable to highly volatile global oil prices. Biodiesel can play a major role in expanding domestic refining capacity and reducing our reliance on imports. Each gallon of biodiesel produced in the U.S. displaces an equivalent amount of petroleum diesel fuel with a clean, efficient fuel, keeping jobs and profits at home.

This fourth E&C white paper has raised six questions. As representatives of the U.S. biodiesel industry, we are pleased to offer our responses below.

1. **1(A) - How vulnerable is the United States currently to major oil supply and price disruptions?**

   One of the greatest perennial risks to our economy is our singular dependence on petroleum in the transportation fuels market. Our economy is constantly threatened by volatile global oil prices that are heavily influenced by forces beyond our control, including geopolitical developments in some of the most unstable regions of the world and market manipulation by groups such as OPEC. This is why Congress created the RFS in the first place, with overwhelming bipartisan support.

   Petroleum is a globally priced commodity – whether from West Texas or Northern Iraq – and its price will continue rising regardless of how much we produce at home. Most Americans agree that our dependence on oil is harmful to our economy and dangerous to our national security. Diversifying our fuel supplies – as we have diversified our electricity sector with a broad variety of sources such as nuclear, coal, wind and natural gas – is critical to strengthening our energy security and stabilizing consumer prices. This is illustrated by the attached chart (Attachment A) comparing historical electricity prices, which have been relatively stable, with transportation fuel prices, which have been far more volatile. Increasing supplies of domestically produced renewable fuels such as biodiesel through the RFS is one of the most practical, cost-effective tools available today to address this issue.

   Furthermore, U.S. petroleum industries have created a "just-in-time" distribution, storage and delivery system, which by definition creates vulnerability to supply and price disruptions. Hurricanes Sandy and Isaac are two recent examples where we experienced major oil supply disruptions. During both hurricanes, petroleum terminals readily replaced traditional petroleum diesel with higher blends of biodiesel, which allowed them to more easily produce volumes to meet the needs of consumers.

   1(B) - In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

   Despite the ongoing North American oil boom, consumers are still paying near-record prices at the pump. This is because regardless of how much domestic oil we produce, our fuel prices are dictated by global oil markets. This is why Congress must stay the course on policies such as the RFS, which was created just seven years ago and is working to build a new American fuels industry. The United States will never completely eliminate its dependence on imported oil, and the biodiesel sector adds domestic refiners to the U.S. manufacturing landscape while diversifying supplies. Currently, there are more than 200 domestic biodiesel refineries in the U.S. with more than 3 billion gallons of finished fuel capacity. As the renewable fuels program matures and as new domestic renewable volume production facilities are added to the infrastructure, our country's dependence on imported oil and imported finished fuel will continue to decrease. We believe that domestic production of biodiesel provides a greater level of domestic energy security than imported fuels.

2. **How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?**

The RFS has increased U.S. energy security by displacing some 10 percent of petroleum fuels with clean, domestically produced renewable fuels, significantly reducing our dependence on imports and vulnerability to global petroleum markets. From 2005 to 2012, the biodiesel industry alone has produced 4.587 billion gallons, which has displaced an equivalent amount of imported diesel fuel. Additionally, this has reduced lifecycle greenhouse gas emissions by 61.5969 billion pounds, the equivalent of removing 5.4 million passenger vehicles from America's roadways. These numbers illustrate that biodiesel is among the most practical, cost-effective ways available today to significantly increase domestic production of transportation fuels while at the same time reducing carbon emissions.

3. **In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?**

Again, rising domestic production is to be applauded. But without diversifying the transportation fuels marketplace, U.S. energy security will continue to be threatened by unstable global petroleum markets, regardless of how much oil we produce at home.

With about seven years of commercial-scale production, the biodiesel industry is proud of its careful approach to growth and strong focus on sustainability. Production has increased from about 25 million gallons in the early 2000s to almost 1.1 billion gallons in 2012. This represents a small but growing component of the annual U.S. on-road diesel market of about 35 billion to 40 billion gallons. Consistent with projected feedstock availability, the industry has established a goal of producing about 10 percent of the diesel transportation market by 2022.

Reaching that goal would significantly lessen U.S. dependence on imported oil, bolstering national security and reducing our trade deficit. At the same time, biodiesel's growth would boost the U.S. economy, not just by creating jobs but also by reducing our dependence on global oil markets and vulnerability to price spikes. When the biofuels industry meets the RFS targets in 10 years, the U.S. will be importing nearly 1 billion fewer barrels of oil every day and the country will spend $41.5 billion less on foreign petroleum products each year.

It is also important to note that increased domestic production of petroleum does not necessarily mean decreased dependence on imported oil and finished fuel. The United States is limited in its ability to refine petroleum into usable finished fuels. The U.S. biodiesel sector is currently the most efficient way to grow the domestic refining capacity for finished fuels, where every gallon of biodiesel can be blended with finished diesel fuel to dramatically extend the volumes of finished diesel fuel.

4. **How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?**

We believe the RFS is the most cost-effective and successful policy ever created in the U.S. to diversify transportation fuel supplies. While the program has faced obstacles just as any other

major federal initiatives have, the RFS overall is working just as intended to create a new fuels industry.

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

In the long-term, the RFS will stabilize fuels markets by diversifying supplies and offering competition and consumer choice. In fact, due to the RFS, biodiesel is already being purchased by fuel distributors at a lower price than petroleum diesel. In 2013, this will result in in estimated consumer savings of $120 million on diesel fuel containing biodiesel blends, including the following examples:

- *Navy Secretary Ray Mabus, Testimony before U.S. House Armed Forced Committee, April 16, 2013: "This past year the Navy purchased a B20 blend (80 percent conventional/20 percent biodiesel) for the steam plant at the St. Julien's Creek Annex, near Norfolk, VA. The cost of the B20 is 13 cents per gallon less expensive than conventional fuel, and is projected to save the facility approximately $30,000 over the 2012-2013 heating season."*
- *Gadsden, Ala., Mayor Sherman Guyton on the city saving about $100,000 annually in fuel costs and taxes by switching much of the city's fleet to 20 percent biodiesel blends: "We are being kinder to our environment, we are saving money and we are reducing our dependence on foreign oil. There's no downside. It's a win, win, win situation." (Gadsden Times - May 30, 2013).*
- *Michael Whitney, Love's Travel Stops/Musket Corp.: "Over the course of the past year delivered biodiesel prices have been lower than diesel prices. Accordingly, wholesale marketers of diesel have been able to offer biodiesel blends at the rack at a discount to clear diesel (diesel without biodiesel). These discounts have varied over the course of the year from as little as $0.0025 (1/4 of a cent) to as much as 4-5 cents per gallon."*

In the future, we anticipate that as biodiesel producers continue to increase efficiencies in production and continue to grow and diversify feedstocks that the cost of production of biodiesel will also continue to decrease.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

If the goal is to enhance energy security, we believe the answer should be increasing volume requirements of the RFS where appropriate, particularly in sectors such as biomass-based diesel that have exceeded initial targets. The program is already clearly driving new technologies and feedstock development. The biodiesel industry has evolved significantly in recent years and now

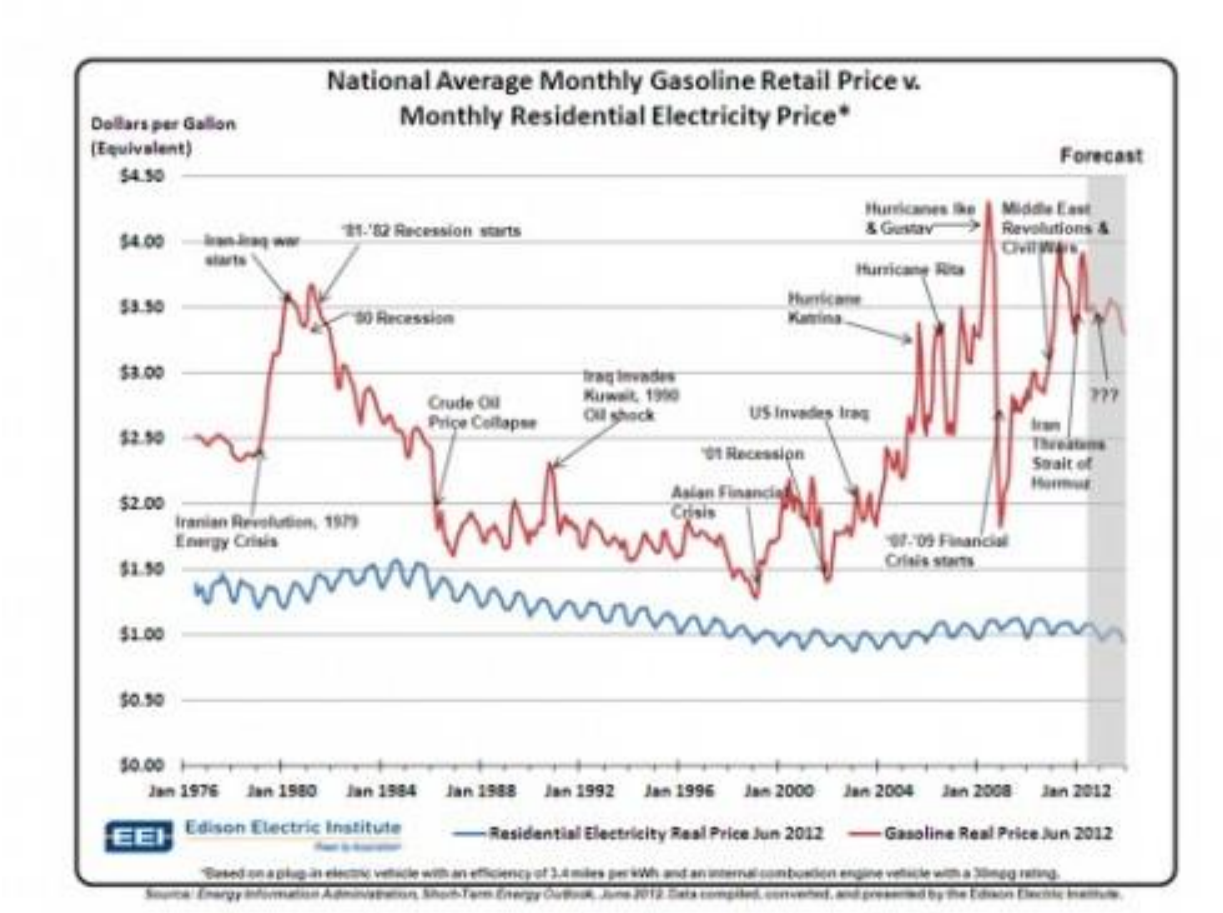
uses a wide variety of feedstocks, including soybean oil, recycled cooking oil, and animal fats. Industry demand for less expensive, reliable sources of fats and oils is stimulating – and financing – promising research on next-generation feedstocks such as algae and camelina. While some sectors of the RFS are taking longer to develop than expected, we strongly oppose modifying the RFS legislatively because we believe doing so is unnecessary and would undermine investor confidence in the renewable fuels sector. In creating the program in 2005 and 2007, Congress gave the EPA significant flexibility to amend specific targets and to expand the range of qualifying fuels by approving new feedstocks, as the agency recently did in approving camelina oil.

Thank you again for the opportunity to submit comments on this important subject. Should you have any questions or need further information, please don't hesitate to call me at 202-737-8801. I can also be reached via email at asteckel@biodiesel.org.

Best Regards,

Anne Steckel
Vice President, Federal Affairs
National Biodiesel Board

Attachment A



NATIONAL CORN GROWERS ASSOCIATION

June 21, 2013

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
2322A Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of more than 38,000 members of the National Corn Growers Association, we appreciate the opportunity to comment on this fourth White Paper, "Energy Policy," from the House Committee on Energy and Commerce as part of the Renewable Fuel Standard (RFS) review process.

The U.S. government has invested and continues to invest in alternative energy resources as a means to increase national security. This has been done through a series of funding initiatives to government, academic, and private organizations. The foresight of this nation's leaders has supported the abilities of our citizens and provides one of the hallmarks of this country to produce some of the most advanced technologies in the world. One of these initiatives is the RFS, which has contributed to U.S. energy security by providing an affordable and domestically produced alternative to oil while decreasing greenhouse gas emissions. Another mechanism has been through the Corporate Average Fuel Economy (CAFE) Standards, which decrease vehicle fuel consumption through increased mileage requirements. The continued support of methods to decrease the use of, and provide alternatives to, the consumption of energy while preserving the environment are critical to sustaining the planet for future generations – something farmers have been doing for generations.

As a result of these and other commitments from the government, the United States is now more energy secure than it was prior to the implementation of the RFS. The production of more than 40 billion gallons of biofuel, mainly ethanol, in the last four years has provided an alternative to petroleum while decreasing GHG emissions. This occurrence has not only provided jobs for rural Americans but has also stimulated the economies of surrounding communities. Ethanol is a renewable transportation fuel that has higher octane that gasoline; the petroleum industry has capitalized upon this fact by producing fuel at lower levels of octane prior to 2009 and has pocketed the savings. Even though higher blends of ethanol have been approved by the EPA (up to 15 percent in model year 2001 and newer, known as E15), strong resistance from the petroleum industry has blocked expansion of the use, and thus expansion, of the benefits of this cleaner-burning renewable fuel into the marketplace.

While this White Paper solicits information on U.S. energy security, economics and policy, it is important to consider how the needs and projected changes in the global demographics, wealth

and economics are expected to impact this nation. A minority of the world's population consumes the majority of the planet's resources. Since the United States, China and Japan consume approximately 35 percent of the world's gasoline supply, we have a tremendous opportunity to impact the environment as we plan for the future of our planet. Responses to the questions regarding energy security follow.[1]

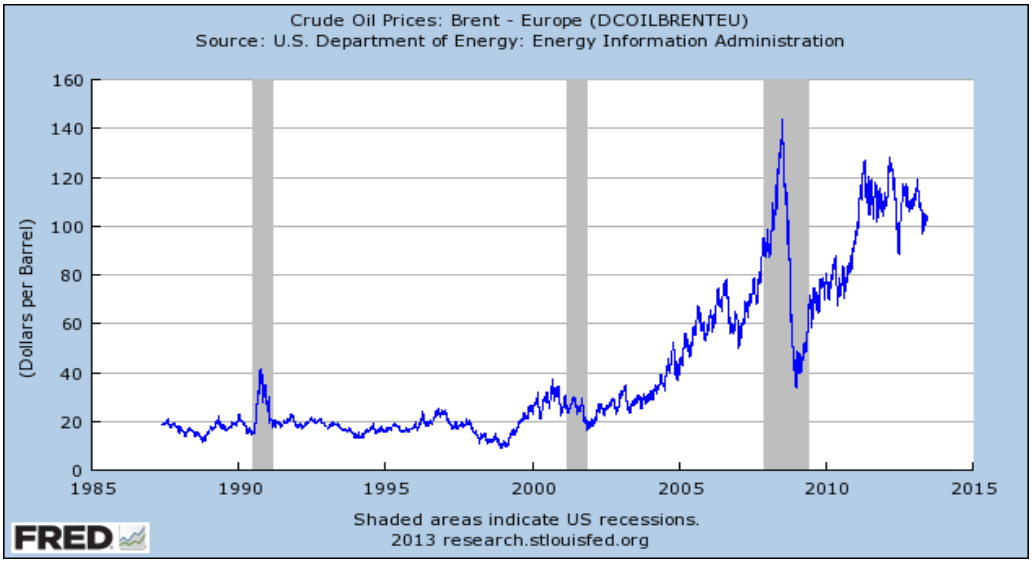
1. **How vulnerable is the U.S. currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?**

The United States is vulnerable to major oil supply and price disruptions. It is important to adopt and strengthen policy measures that diversify and buffer the current fuel resources.

Reliance on foreign oil has decreased from 60 percent in 2005 to 40 percent today due to several factors including decreased usage, greater automobile fuel efficiency, and a replacement of 10 percent of the gasoline supply with ethanol. While improvements in fuel economy helped to reduce oil consumption, the bulk of the decline can be attributed to crude oil prices. The West Texas Intermediate price for crude oil increased from $56.64 per barrel to $94.05 per barrel, from 2005 to 2012. The impact of high oil prices on GDP growth is striking. In 2005, Huntington stated "Nine of the last 10 U.S. recessions (post WWII) were preceded by an increase in crude oil prices."[2] Figure 1 shows an overlay of the last three U.S. recessions shaded in gray which are all preceded by a significant increase in crude oil prices. Others have proposed that for every 1 percent increase in crude oil price, U.S. GDP falls by 0.044 percent.[3] Thus, low energy prices are important for economic growth. Conversely, positive impacts of ethanol on gasoline prices are presented in question five.

[1] External reports from Informa and World Agricultural Economic and Environmental Services, WAEES, were utilized as resources for this response; both are available upon request.
[2] Huntington, H. G. (2005). The Economic Consequences of Higher Crude Oil Prices. Energy Modeling Forum Workshop. Stanford: Stanford University.
[3] Brown, S., Huntington, H. (2009). Estimating U.S. Oil Security Premiums. Stanford: Stanford University.

Figure 1. Crude Oil Prices and U.S. Recessions (source: Federal Reserve Bank of St. Louis, 2013)



Energy security is not only about reducing foreign oil imports, but also about providing a buffer to supply and price disruptions such as natural disasters, economic and/or political upheavals, accidents or man-made events such as strikes or embargoes. Due to economies of scale and location of pipelines and port terminals, U.S. refineries are large and located in areas with a concentration of industrial facilities. In contrast, the location and size of the approximately 200 ethanol plants are geographically dispersed based on feedstock availability and transportation systems, which provides a buffer to potential gasoline supply disruptions. In Illinois alone, there are 15 plants with an annual production capacity over 1.6 billion gallons of ethanol. This is equivalent to over 30 percent of the gasoline consumed in Illinois. The ethanol capacity in Illinois could provide an excellent buffer for the Midwest to any supply disruptions of oil and gasoline from the Gulf or shut downs by any of the six or seven refineries serving Illinois. There is no reason this same model could not be used across the nation. It is critically important for our energy and economic security to not lose this diversity and flexibility in our domestic fuel supplies.

The International Energy Agency (IEA) was formed in the late 1970s to coordinate stock release and market soothing among the major petroleum nations in times of emergency supply disruption and/or extreme market volatility. History shows that even nations with their own domestic emergency reserves seek to replenish their supplies and purchase any excess on the market—negating any market soothing effect of an emergency stock release. Even with the advent of the IEA, rising demands, especially by China and India, are expected to impact the global market. Even with rising reliance on OPEC nations providing some surplus, this is expected to deteriorate due to forecasts predicting as much as 40-50 MBD (million barrels per day) by 2035 compared to 36 MBD today.[4] Increased U.S. oil production will help with internal demand but if the price goes up internationally, higher value markets would resultantly cause

[4] IEA World Energy Outlook, Table 3. Oil production and oil and liquids supply by type and scenario (page 102). This includes Natural Gas Liquids, whereas OPEC traditional crude oil production was 29 MBD in 2011.

rises in domestic markets. In other words, since oil is a global commodity, an event in any oil producing country results not only in oil price changes in countries importing from the affected country but also every other country that buys oil. Resultantly, the United States cannot completely shield itself of its vulnerability to oil price shocks and supplies; thus it is critical to have a diversified set of resources, i.e., alternative and renewable biofuels.

Oil is expected to remain the key source of energy for transportation globally. Oil supplies and price will continue to be subject to global disruptions and influences. The best method of protection is to reduce the vulnerability through continued decreases in utilization, increasing domestic production from all sources including biofuels and working towards international cooperation.

2. How has the RFS contributed to improved energy and security? To what degree should the reductions in U.S. oil imports be attributed to the RFS?

The RFS complements current positive energy security trends such as decreased demand and increased efficiency of usage that allowed the United States to decrease its reliance on foreign oil. This has been accomplished by offsetting approximately 10 percent of gasoline use. From 2007 to 2012, global ethanol production peaked in 2010. Today, the United States is the world's largest producer of ethanol. In 2012 the United States and Brazil together produced 87 percent of the world's supply. It should be noted that while the production of an annually renewable, alternative fuel has increased during the past seven years, the quality and accessibility of non-renewable petroleum resources (tar sands and shale oil), which takes millions of years to produce has decreased.

Since gasoline production is responsible for approximately 45 percent of U.S. oil consumption,[5] a 10 percent decrease in gasoline consumption corresponds to an approximately 4.5 percent decrease in overall oil consumption. In 2012, the United States consumed 18.55 MBD of oil, 8.7 MBD being for gasoline or 870,000 barrels of oil per day offset.[6] In perspective, the Keystone XL Pipeline is projected to transport approximately 830,000 barrels of oil per day to the U.S. from Canada.

Additionally, the shift in the United States from being a net importer of gasoline in 2006 to a net exporter in 2012 averaging 366,000 barrels per day is noteworthy. While this shift has occurred, the production and utilization of 870,000 barrels per day of ethanol (equivalent to 13 billion gallons) has enhanced the U.S. gasoline supply. Ethanol allows for a decreased reliance on foreign oil and contributes to the U.S. fuel supply such that gasoline can be exported.

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to the U.S. energy security and to what extent will it further contribute going forward?

[5] According to the U.S. EIA "U.S. refineries produce about 19 gallons of motor gasoline from one barrel (42 gallons) of crude oil. The remainder of the barrel yields distillate and residual fuel oils, jet fuel, and many other products. http://www.eia.gov/tools/faqs/faq.cfm?id=24&t=6.

[6] EIA Short-term Energy Outlook, June 11, 2013. http://www.eia.gov/forecasts/steo/report/us_oil.cfm

As stated in response to question two, the RFS has decreased U.S. oil dependency through offsetting oil use by increased use of ethanol. Today, essentially all of the ethanol produced (approximately 13 billion gallons) is blended into 95 percent of the gasoline at nearly 10 percent by volume (referred to as E10). Since the RFS mandates increasing levels of ethanol be produced on a yearly basis, a shift to higher blends must occur to consume the biofuel produced. Unless this occurs, this decrease in oil dependency is restricted and the maximum achievable benefit will not be realized.

Not only must the alternative biofuels be produced, but the distribution system must be in place for the utilization to occur. Limits to the distribution currently exist since most ethanol is produced in the Midwest and a large proportion of the existing 18 million flexible-fuel vehicles (FFVs can consume up to 85 percent ethanol or E85) are on the two coasts. Currently, approximately 3,000 of the nation's 165,000 fuel stations are equipped to provide E85. A recent study found that a 10 percent increase in the price of gasoline resulted in a 45 percent increase in the quantity of E85 demanded.[7] The authors state, "However, due to the availability of a substitute fuel in the form of gasoline, consumers are highly sensitive to ethanol price changes and can switch to the alternative at zero search cost." Thus, if E85 is readily available and priced energy appropriately[8] consumers will choose it over gasoline (E10).

Both the agricultural and ethanol industries are in place and ready to produce the feedstock and ethanol to further decrease reliance on petroleum while simultaneously decreasing GHG emissions, just as designed by the RFS. Retail infrastructure must be integrated into the market for this next major step towards energy versatility and increased security to occur. It is important to note that there are no technological barriers to offering E85 in the marketplace. It is simply a matter of gas stations making the necessary conversions.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Global fossil fuel subsidies reached almost half a trillion dollars in 2010. This figure is up $110 billion over 2009 and could reach $660 billion by 2020.[9] According to the Congressional Research Service, $46.6 billion in tax expenditures has been granted to fossil fuels from 1977 through 2010, and more than $130 billion in government subsidies have gone to the oil industry from 1968 through 2000, as detailed by the U.S. General Accounting Office.[10] This does not take

[7] Khachatryan, Y. and Casavant, K. (2011). Spatial Differences in Price Elasticity of Demand for Ethanol. *Journal of Transportation Research Forum*, p. 43-61.

[8] On a gallon per gallon basis, ethanol has 65% of the energy (BTU) value of gasoline and needs to be priced accordingly in E85.

[9] Renewable Fuels Association (RFA) web site and "World Energy Outlook 2011 Factsheet," International Energy Agency, October 2011. http://www.ethanolrfa.org/pages/ethanol-facts-energy-security#sthash.cue3EON7.dpuf

[10] RFA web site. and Energy Tax Policy: Historical Perspectives on and Current Status of Energy Tax Expenditures*,"* CRS Report for Congress R41227 (Congressional Research Service, May 2, 2011). [Molly F. Sherlock] *"*Tax Incentives for Petroleum and Ethanol Fuels*,"* GAO/RCED-00-301R (U.S. General Accounting Office, September 25, 2000).

into account the billions spent since the turn of the century or the money spent to protect oil supplies in the Middle East.[11] The following table summarizes other programs instituted and their comparative costs put into place to diversify the fuels in the transportation sector.

Table 1. Comparison of federally funded energy programs.

Program	**Benefit in reducing U.S. oil dependence**	**Major Costs**
CAFE Standards	With new standards to 2025, 2.0 million BPD are projected to be cut from U.S. oil usage by that year.[12]	Expected increase in average vehicle price by 2025 of $1,800 will be partially offset by fuel cost savings ($3,400-5,000) over the life of the vehicle.[13]
RFS	Displaces 10% of U.S. gasoline usage (approximately 870,000 BPD), though increase is limited.	In 2012, when the ethanol excise tax credit was eliminated, this translated to $7.5 billion in savings for consumers.[14]
IRS Motor Fuels Excise Tax	This is the 'federal gas tax.'	Ranges (depending on fuel) from $0.10-0.25 per gallon.
DOE ATVM (advanced technology vehicles manufacturing program)	Provides loans to aid car manufactures to retool and invest for the production of more efficient and advanced vehicles that will ultimately reduce U.S. oil usage.	$8.4 billion out of $25 billion in loans appropriated; $6.0 million in administration costs.[15]
DOE Clean Cities Program	Promotes policies on a local level that result in lower oil usage (e.g. less oil usage in mass transportation systems). Projected to have saved 400 million gallons of oil in 2012.[16]	$30.0 million in 2012[17]
DOT Clean Fuels Grant Program	Provides funds for local municipalities to purchase buses operating on clean fuel systems (e.g. powered by natural gas) to substitute for oil usage.	$51.1 million in 2012[18]
IRS Plug-in electric vehicle drive credit	Provides up to $7,500 in tax credits for the purchase of electric vehicle (phased out when a manufacturer reaches 200,000 units).	$200 million in 2012[19]

Thus the two programs with the greatest reduction in oil usage are CAFE standards and the RFS, which offer the most visible and tangible results, though others contribute on a smaller scale. However, there

[11] RFA web site.
[12] EPA Report, August 2012 - EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks.
[13] EPA Report, August 2012 - EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks http://www.epa.gov/otaq/climate/documents/420f12051.pdf
[14] CRS Renewable Fuels Standard (RFS): Overview and Issues
[15] CRS Alternative Fuel and Advanced Vehicle Technology Incentives: A Summary of Federal Programs. January 10, 2013. www.fas.org/sgp/crs/misc/R42566.pdf
[16] DOE - http://energy.gov/articles/top-10-things-you-didn-t-know-about-clean-cities
[17] Ibid
[18] Ibid
[19] Ibid

are some misalignments in these two programs. As outlined in previous NCGA comments,[20] incentives to continue production of FFVs for the automobile industry are greatly lacking. In order for the RFS to be fulfilled as designed, i.e., to utilize the mandated levels of ethanol produced, automobiles must be produced to consume the ethanol. Without the proper incentives, automobile manufactures will likely stop production of flexible-fuel vehicles. The RFS is designed to increase ethanol and other biofuels over time and it is critical to have a system in place to consume the produced fuel. The simplest method would be that domestic and foreign automobile manufacturers produce all vehicles with flexible-fuel capability to consume the ethanol supply (as in Brazil). From a national security perspective, biofuels have contributed to national security through the decreased use of oil and benefitted the environment. Thus the RFS is part of the solution to reach energy security and independence.

5. **What has been the impact of the RFS on oil prices? What has been the impact on gasoline and the diesel fuel prices? What has been the impact on oil and fuel process volatility? How will these impacts change in the years ahead?**

Ethanol prices have typically been substantially below gasoline prices at the wholesale level in recent years. For the first five months of 2013, ethanol prices in Chicago have averaged $2.48 per gallon, while gasoline prices have averaged $2.96 per gallon in Chicago (wholesale prices in Chicago were utilized since it is the central pricing point for ethanol and the regulatory conditions for gasoline are not as varied as on the East and West Coasts). This 48 cent-per-gallon discount translates to a gross benefit of almost $0.05 per gallon of finished motor gasoline supplied to consumers.[21] This does not take into account either the indirect benefit that ethanol has on gasoline prices by effectively lowering demand for gasoline (a benefit especially in past years when refineries were running close to capacity) or the enhanced octane value of ethanol over gasoline. [Pure ethanol has an octane value of 113; with the advent of the required addition of 10 percent ethanol to gasoline, manufacturers altered their refining processes to produce sub-octane fuel, which costs less, and added ethanol to make 87 octane fuel with the savings pocketed to the refiner].

Table 2 shows that the advantage of blending ethanol with gasoline ranged from a disadvantage of two cents per gallon in 2006, the first year of RFS, to an advantage of 6 cents per gallon in 2012. The weighted average advantage of physical ethanol versus gasoline from 2006 to 2012 has been 2 cents per gallon of blended gasoline or *a combined total of $15.5 billion*. An estimate for 2013, suggests a net benefit of approximately $6.0 billion.

[20] Comments to "Draft Guidance for Industry and Staff: E85 Flexible Fuel Vehicle Weighting Factor for Model Years 2016-2019 Vehicles under Light-duty Greenhouse Gas Emissions Program." Docket ID No. EPA-HQ-OAR-2013- 0120, April 22, 2013.

[21] Most gasoline contains 10% ethanol, thus price reduction is 10% of $0.48

Table 2. Calculated Ethanol Impact on Retail Gasoline Price[22]

Benefit from Usage of Physical Ethanol Versus Gasoline		2006	2007	2008	2009	2010	2011	2012
Year-to-Date Avg. Ethanol Price	$/gal	2.56	2.01	2.24	1.73	1.84	2.63	2.29
Year-to-Date Avg. RBOB Unleaded Gasoline Price	$/gal	1.93	2.17	2.60	1.71	2.13	2.84	2.94
Year-to-Date Avg. Ethanol Price Advantage	$/gal	(0.63)	0.17	0.36	(0.03)	0.29	0.21	0.65
Conventional Ethanol Consumption	bil. gal.	4.7	6.3	9.0	10.7	12.8	12.7	12.5
Aggregate Benefit from Usage of Physical Ethanol Versus Gasoline	**bil. $**	**$ (2.96)**	**$ 1.04**	**$ 3.23**	**$ (0.27)**	**$ 3.69**	**$ 2.69**	**$ 8.09**
Finished Motor Gasoline Consumption	bil. gal.	141.9	144.1	139.6	140.4	137.9	138.4	138.1
Per-Gallon Benefit from Usage of Physical Ethanol Versus Gasoline	**$/gal**	**(0.02)**	**0.01**	**0.02**	**(0.00)**	**0.03**	**0.02**	**0.06**
Assumed % of Wholesale Cost or Benefit Passed through to Retail	%	100%	100%	100%	100%	100%	100%	100%

Additionally, a literature review of multiple studies found a range of impacts ethanol had on the price of gasoline ranging from $0.00/gallon to $1.09/gallon lower. These are summarized below.

Table 3. Summary of the impact of ethanol on gasoline prices.

Reference	Conclusion
U.S. Department of Energy and U.S. Department of Agriculture (June 2008). Letter/analysis responding to questions from Sen. Jeff Bingaman (D-NM)	Lower gasoline prices by $0.20-0.35/gallon
Merrill Lynch (June 2008). "Global Energy Week: Biofuels driving global oil supply growth"	Retail gasoline down $0.50/gallon
McKinsey & Company, for National Renewable Energy Laboratory (November 2008). "The Impact of Blending on U.S. Gasoline Prices." Subcontract report NREL/SR-670-44517	Lower gasoline prices by $0.17/gallon
Du & Hayes (August 2009). "The impact of ethanol production on U.S. and regional gasoline markets," Energy Policy, Elsevier, vol. 37(8), pages 3227-3234	Lower gasoline prices by $0.29-$0.40/gallon
Environmental Protection Agency (2010) Regulatory Announcement. "EPA Finalizes Regulations for the National Renewable Fuel Standard Program for 2010 and Beyond"	Gasoline lower $0.024/gallon
Du & Hayes (April 2011). "The Impact of Ethanol Production on U.S. and Regional Gasoline Markets: An Update to May 2009," CARD working paper [11-WP 523]	Lower gasoline prices by $0.89/gallon

[22]Informa Report dated June 17, 2013.

Elam and Farm Econ LLC for National Chicken Council (2012). "The RFS, Fuel and Food Prices, and the Need for Statutory Flexibility"	No impact on gasoline prices or oil refiner margins.
Marzoughi & Kennedy (Feb. 2012). "The Impact of Ethanol Production on the U.S. Gasoline Market." Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Birmingham, AL, February 4-7, 2012	Can lower gasoline by up to $0.78/gallon
Du & Hayes (May 2012). "The Impact of Ethanol Production on U.S. and Regional Gasoline Markets: An Update to 2012," CARD working paper [12-WP 528]	Reduced wholesale gasoline price by $0.29/gallon from 2000 to 2011. Impact in 2011 would

Today, refiners use ethanol as an octane replacement for other gasoline additives (such as MTBE and aromatics including benzene, toluene and xylene) because it offers a cleaner burning component. The U.S. Environmental Protection Agency (EPA) has also required North American refiners to substantially limit sulfur levels in gasoline and to reduce emissions of mobile source air toxics (MSAT) further. Since petroleum is a mixture of many different components, including sulfur, which produces acid rain, refiners spend a great deal of money and energy to reduce sulfur levels in gasoline and lower air toxics. Ethanol is a pure substance; it does not contain sulfur nor any other hydrocarbons and thus once produced does not have to be further refined. Additionally, ethanol is produced from a renewable resource which is produced annually. Petroleum is mined out of the ground and once removed is not replenished.

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

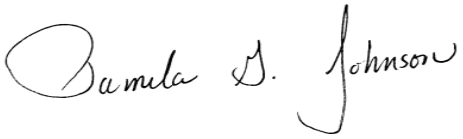
As outlined above, the next step towards enhancing energy security comes from the increased usage of ethanol through the use of E85 with the 18 million FFVs on the road today, enhanced E15 utilization, and the production of flexible-fuel or optimized automobile engines that can take advantage of the octane from ethanol through mid-level blends. The RFS can be a vital tool in creating the incentive in the marketplace to increase ethanol usage through increased utilization of higher blends of ethanol.

American agriculture and corn ethanol processing have continued to lower the GHG intensity of ethanol, i.e., are producing more corn and ethanol using fewer resources. This trend will continue as both farmers and ethanol producers continue to become more efficient. Today, EPA considers the total GHG emission value of gasoline from petroleum as 91.54 g CO_2/MJ of fuel (baseline 2005 value) vs. 77.56 g CO_2/MJ of ethanol from corn (this calculation was *projected* for 2022). Further improvements in GHG savings would be more evident if all of the current-day optimizations for farming and ethanol production are taken into consideration. In fact, a case can be made to demonstrate that corn starch ethanol *today* produces nearly 50 percent less GHG emissions than petroleum, as discussed in the NCGA response to the third White Paper. This is true even excluding the additional GHG emissions from current day shale and tar sands oil being hunted, pumped and processed. This represents tremendous advancements in agriculture and

corn starch to ethanol production technologies and the continuing role that corn starch ethanol can play in helping to meet RFS volumes now through 2022.

In conclusion, ethanol is the leader of change for the future of fuel and the technologies needed to achieve this country's energy goals. The RFS clearly outlined the future of the development of renewable resources that decrease GHG emissions while decreasing reliance on GHG intensive foreign, non-renewable petroleum resources. A balanced energy portfolio requires long-term reliable policies that spur capital investments and technological advancements. If the RFS is diminished just when the steam has fully emerged, the technology, process improvements, and capital for future innovations will be lost. Most importantly, prior investments will be wasted and the ultimate goal of energy security and long-term solutions dashed. Therefore, we strongly urge that this important policy be maintained.

Sincerely,



Pam Johnson, President
National Corn Growers Association

The Honorable Fred Upton
Chairman
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2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry A. Waxman
Ranking Member
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via email at: *rfs@mail.house.gov*

June 21, 2013

Dear Chairman Upton and Ranking Member Waxman:

Novozymes, a leader in biotechnology and innovation, is pleased to respond to your request for information regarding the Renewable Fuel Standard (RFS) and energy policy through the latest in your series of white papers.

Novozymes is a technology and science company; we embrace and encourage both. We have nearly 6,000 employees worldwide, with more than 1,000 employees in the United States – including California, North Carolina, Virginia, Nebraska, Texas, Wisconsin and Massachusetts. We have more than 7,000 patents and 700 products at work in 130 countries. Our enzymes remove trans-fats in food, lower the temperature needed to wash a consumer's clothes and convert biomass, from switch grass or corn stover, into biofuels. By using fewer chemicals and raw materials, we save our customers and consumers energy and money.

Cellulosic biofuels is our largest global R&D effort with more than 150 employees dedicated to its development. Over a five-year period, our work has reduced the cost of the enzymes required to make advanced biofuels by 90 percent.

Our US investment – and that of many industry peers – is driven in large part because of the RFS. Just last year Novozymes invested more than $200 million in bioenergy in the US and inaugurated the largest enzyme plant dedicated to renewable fuels in the United States with the opening of its advanced manufacturing plant in Blair, Nebraska. The plant created 100 career positions and 400 construction jobs. Biorefineries in United States, China, Italy and Brazil will use enzymes made at our Nebraska Plant. Global production capacity of advanced biofuels is estimated to reach approximately 15 million gallons in 2012 and 250 million gallons by 2014.

RFS Motivations

The paper suggests that the RFS was enacted for a single purpose: address concerns about a growing gap between domestic supply and demand from future oil imports. We believe the RFS is a

smarter, more comprehensive policy. While reducing imports and ending a monopoly that hurts consumers is a benefit gained from any national policy, those benefits do not tell the whole story of this policy.

Decreased Imports

The paper states that "many saw biofuels as a potential source of domestic liquid fuels that could be increased to counter dependence on oil imports, thereby mitigating high and volatile global oil prices while providing geopolitical benefits by reducing dependence on OPEC". They are. Since 2000, renewable fuel has helped reduce oil imports from the Persian Gulf by 25 percent.

Reduced Demand

The RFS requirements were not intended to be dependent on consumption levels nor capped at a certain percentage, such as 10. Instead, incrementally increasing volumes are required with the expectation that they will be incorporated in to the marketplace by the obligated parties. A question for those parties is why they have failed to meet that obligation and are they concerned about the impact it's having on consumers. Petroleum consumption reduction in the US is a positive development and a trend that should continue. Despite the potential to increase domestic oil supply in the near term, we also need to diversify our national transportation fuel sources. Renewable fuels are the leading alternative, due in large part to the RFS.

Reduced Consumer Cost

As the Committee knows, regardless of how much oil we drill here at home, the price American drivers pay at the pump and the cost of oil used throughout our economy is dictated by global markets – hence the necessity of the RFS.

On February 4, 2013, the Energy Information Administration reported that American families paid the highest percentage of household income for gasoline that they have paid in nearly three decades. In 2013, World Bank also reported that almost 2/3 of the post-2004 food price increase is attributable to the price of crude oil, reinforcing the unfortunate but near-perfect correlation of oil and food prices that has occurred since 2000.

Eighty-four percent of retail food costs are derived from non-farm costs, according to the United States Department of Agriculture's Economic Research Service. In other words, 84 percent of the price of food at the grocery store pays for energy, labor, marketing, packaging, transportation and more – not corn. Every part of that supply chain relies on oil, so changes in oil prices affect

what you pay. Without action to diversify our transportation fuel in the United States, we will continue to be held hostage by global oil markets in many ways.

As the Committee's white paper points out, renewable fuel is solving these challenges for consumers. Environmental Protection Agency data projects that the RFS will reduce gasoline prices by 2.4 cents per gallon and diesel by 12.1 cents per gallon by 2022. EPA also estimates that the RFS will decrease oil imports by $41.5 billion and result in additional energy security benefits of $2.6 billion.

Innovation, Economic Development, Environment

The reductions generated by the RFS – in oil imports, oil consumption and costs to American consumers – are not the RFS' only benefit. Innovation and investment flowing from the RFS is also clear.

The RFS is driving economic growth and already supporting more than 400,000 jobs nationwide. Advanced biofuel is expected to create another 800,000 long-term careers. The RFS has also spurred billions of dollars of investment in advanced and conventional renewable fuel. Renewable fuel has driven a $500 billion increase in America's farm assets since 2007. [1] The industry is supported by Novozymes' renewable fuel enzyme facility in Nebraska

The RFS was also intended to drive innovation in technology by fostering investment in cellulosic and other advanced biofuels, to get us over the fictitious "blend wall." It has.
We are offering blends from E15 to E85 in some parts of the country. All oil companies need do is offer more of those blends: the non-existent problem is then solved and consumers reap the benefits.

The RFS is America's only Congressionally-authorized greenhouse gas (GHG) program. Production of biofuels under the RFS is subject to strict lifecycle GHG reduction requirements of up to 60 percent less compared to traditional petroleum-derived fuel. In 2012, using renewable fuel slashed greenhouse gas emissions by 33.4 million metric tons.[2] EPA has estimated that renewable fuels used under the RFS will reduce greenhouse gas emissions by 138 million metric tons when the program is fully implemented in 2022. [3] The reductions would be equivalent to taking about 27 million vehicles off the road.

The RFS is Working, Stay the Course

[1] http://www.reuters.com/article/2012/09/05/us-usa-ethanol-farmbankers-idUSBRE88413O20120905
[2] Renewable Fuels Association, "Battling for the Barrel: 2013 Ethanol Industry Outlook." Washington, DC: February 2013, p.18.
[3] US EPA, "Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis." Washington, DC: EPA-420-R-10-006, February 2010.

In 2007, President Bush signed into law a 15-year roadmap designed to drive investment in renewable fuel and bring new products to market. The policy is doing what Congress, President Bush – and Presidents Clinton and Obama – intended.

The regulations implementing the RFS were not final until 2010 and already renewable fuel has displaced petroleum in 10 percent of our gasoline supply, with 13 billion gallons in 2012. It has offered hundreds of thousands of Americans careers and the ability to support their families, while reducing the need for imported oil by more than 462 million barrels. In 2012, using renewable fuel slashed greenhouse gas emissions by 33.4 million metric tons. We are just 1/3 of the way through the timeline Congress laid out in 2007. Imagine the benefits when we stay the course – and imagine the progress we risk losing if we turn back now.

When the RFS was signed into law, it was envisioned as a two-part strategy: Renewable fuel and technology companies would bring solutions to market and oil companies would offer them to drivers.

We have done our part. But as energy analyst Daniel Dicker says "[Oil] refiners don't make ethanol, so they're not really all that happy about making E15. What they want to do is make gasoline because that's what they make money off of." Imagine how much broader these benefits will be when more renewable is included as part of our fuel mix, out to gas stations and on to families.

The RFS provides exactly the type of long-term, regulatory stability that is required to encourage investment in the United States, we are an example. The single most important step Congress can take to develop advanced manufacturing and renewable fuels in the US is to stay the course: leave the RFS in place, as is.

We look forward to working with you to reach those goals. If there is any additional information Novozymes can provide, please do not hesitate to ask.

Cc: Congressman Lee Terry
Congressman G.K. Butterfield

June 20, 2013

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
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Dear Chairman Upton and the Committee on Energy and Commerce,

I am writing in regards to your recent White Paper addressing energy policy as it relates to the Renewable Fuel Standard (RFS). As a dairy farmer, I know my industry is extremely vulnerable to fluctuations in corn supplies and prices as well as the cost of transportation fuel. The livelihood of my colleagues, our families, and our customers in the supermarket, depends on reasonable feed and fuel prices to produce our goods, get them to market and make sure they're affordable when they get there. Volatile food and transportation prices are not only devastating to our farming industry but to the entire U.S. economy. While I support the original intentions of the RFS – providing energy security by producing more alternative fuels domestically – I believe the RFS needs to be modified to prevent it from further ravaging our agriculture industry.

I am in favor of an "all of the above" approach to alternative fuels, including renewables, but I don't believe we should depend so heavily on corn for the ethanol that's blended into our transportation fuel. It artificially picks winners and losers and leans too heavily on a single feedstock that's vulnerable to drought and other market factors. I hope you will consider allowing additional technologies into the RFS, such as natural gas, so healthy competition can lower fuel costs, reduce the dependence on corn, increase energy security and create a truly fair and open alternative fuel marketplace.

Despite positive trends toward declining demand and increased local supply of transportation fuel, we must remain vigilant in our pursuit of diversity in our solutions. I do not want our country beholden to petroleum imported from volatile regions of the world, but I also cannot accept a domestic alternative fuel program that deprives my industry of sufficient feed supplies and crushes it under high corn and fuel prices simply because the definition of ethanol is so narrow.

I strongly support the Domestic Alternative Fuels Act, introduced by Reps. Olson (R-TX) and Costa (D-CA), with fifteen additional cosponsors, which proposes adding natural gas to the RFS. I hope you will consider this reasonable solution when you evaluate the RFS.

Sincerely,

Jim Krahn, Executive Director
Oregon Dairy Farmers Association
PH: 503.780.9956
jimk@odfa.org

PETROLEUM MARKETERS ASSOCIATION OF AMERICA
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June 21, 2013

The Honorable Fred Upton
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Committee on Energy and Commerce
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2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
House of Representatives
2125 Rayburn House Office Building
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Re: White Paper Series on the Renewable Fuel Standard

Dear Chairman Upton and Ranking Member Waxman:

Thank you for the opportunity to provide comments on this important issue facing the retail motor fuels marketplace.

PMAA is a federation of 48 state and regional trade associations representing more than 8,000 petroleum marketing companies nationwide. Many of these companies are engaged in the transport, storage and sale of petroleum products on both the wholesale and retail levels. These products include gasoline, diesel fuel, biofuel blends, kerosene, jet fuel, aviation gasoline, racing fuel, lubricating oils, home heating oil as well as **ethanol and biodiesel motor fuel blend stocks**. Among the customers served by petroleum marketers are motorists, retail gasoline stations, commercial transportation fleets, manufacturers, construction companies, federal, state and local governments, farmers, airports, railroads, marinas and homeowners. Small business petroleum marketers own and operate over 60 percent of all retail gasoline stations nationwide. **As a result, the majority of ethanol and biodiesel blends sold at retail pass through underground storage tank systems owned and operated by petroleum marketers.**

PMAA is a strong supporter of the development and use of alternative energy sources in blending with traditional petroleum products such as biofuels. However, not even all alternative energy sources combined will provide the amount of energy required to run a $15 trillion annual economy until far in the future. For the next 100 years, traditional sources of domestically available energy resources of all kinds (oil, gas, coal and nuclear) will need to be brought to bear to maintain the nation's economic and national security. Congress must expedite approvals for deep water drilling projects, approve the Keystone XL Pipeline, and delay EPA rules implementing Tier 3 gasoline requirements and new ozone standards. It remains important for the U.S. to adopt policies that will reduce our dependence on foreign oil. Increased domestic production of crude and realistic volumetric obligations for ethanol that are in line with demand are key policy initiatives the U.S. should pursue as we move towards energy independence in the future.

In the fourth White Paper Series, the Committee has asked a number of questions related to U.S. energy policy. PMAA would like to give a general answer explaining our position on the world oil market and the RFS's impact on U.S. energy security.

WTI Crude Oil Contract vs. the North Sea Brent Crude Oil Contract

The U.S. remains vulnerable to global oil supply and price disruptions, but far less so than in the past now that domestic production of crude has increased significantly from the Bakken and Eagle Ford oil shale developments. However, the threat of closing the Strait of Hormuz can drastically increase the price of oil on the world market given that 1/5th of the world's oil travels through the area. Historically, the West Texas Intermediate (WTI) contract was the dominate price benchmark for the world, but since 2011, the North Sea Brent crude oil contract has taken over as the dominate benchmark. The sweeter, light crude WTI oil contract delivered in Cushing, Oklahoma was $2 - $3 higher compared to the Brent contact and now it's common to see the Brent contract price $10 - $20 above the WTI contract.

Because Bakken and Eagle Ford oil shale developments are delivered to Cushing, Oklahoma, they put downward price pressure on the WTI contract, but only have a modest impact on the world's oil prices because the crude oil is landlocked and doesn't have an outlet to the world oil market. **However, this doesn't take away from the fact that the U.S. must continue to pursue domestic oil production on both public and private lands to prevent future oil price shocks and curtail OPEC's market share on the world oil market.**

RFS Impact on Oil Prices

The production output from the Bakken and Eagle Ford oil shale developments coupled with the RFS has improved U.S. energy security. Following passage of the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, ethanol volumes have increased substantially thereby displacing domestic oil consumption. Ethanol consumption has increased from 1.65

billion gallons in 2000 to 12.95 billion in 2012. However, corn-based ethanol consumption makes up only a fraction of the total motor fuels consumption which was 134 billion gallons of gasoline in 2011, compared to 12.89 billion gallons of ethanol that same year. Unfortunately, the RFS corn-based ethanol mandate is reaching levels that cannot be sustained with existing underground storage tank (UST) system infrastructure and legacy vehicles. Additionally, advanced ethanol and cellulosic ethanol also have a long way to go before they can be sold commercially. For instance, only 21,000 gallons of cellulosic ethanol was produced last year. PMAA supports the use of drop-in fuels which can be used in the existing liquid fuels infrastructure; however, drop-in fuels won't be made commercially available in the near future. E85 sales, a blend of 85 percent ethanol and 15 percent gasoline, haven't produced the volumes ethanol proponents have sought. Many PMAA companies made the investment to sell E85, but sales have been minimal. E85 must be priced 30 percent less than E10 blends in order for sales to modestly increase given the 30 percent decrease in fuel economy.

PMAA welcomes the future use of renewable fuels to further reduce U.S. dependence on foreign oil as long as the renewable fuels are compatible with the existing $500 billion liquid fuels infrastructure. PMAA also supports a regulatory fix to the RFS by urging the EPA Administrator to prevent chaos in the retail motor fuels marketplace by adjusting the corn-based ethanol mandate to a level achievable with E10 and reasonable growth for E85. E15 has too many infrastructure, liability and marketplace issues to significantly expand national ethanol blending volumes in the short run. If refiners are forced to increase gasoline exports and/or reduce gasoline production to fall within the parameters of the RFS corn-based ethanol blending mandate, PMAA believes the economic harm will be severe and drastic swings in gasoline prices will occur. PMAA does not oppose E15 but advises marketers to obtain knowledgeable legal and regulatory counsel before offering E15 at wholesale or retail.

Future Motor Fuels

In addition to the RFS, PMAA supports efforts to expand gas-to-liquids (GTL) technology which is a process that converts natural gas into clean, reliable diesel fuel. It was developed in the early 1920s and the diesel fuel produced can be used in the existing $500 billion downstream motor fuels distribution system without any costly upgrades. Furthermore, propane already has a distribution system that would cost much less to expand than to basically start from scratch with a CNG infrastructure system. Propane is a safe consumer and employee friendly product that is easy to work with once store personnel are properly trained. In addition, the cost of installing a propane fueling site runs about $20,000-$25,000 versus CNG at a cost of $750,000 - $1 million per site. Propane mileage is similar to a vehicle running on E-10 gasoline blend. Congress should enable innovation by promoting all fuel options, especially propane, given how closely it resembles CNG and LNG in fuel quality and CO2 emissions, and because of its effective motor fuels distribution system.

PMAA STAFF CONTACT: Sherri Stone, sstone@pmaa.org; Rob Underwood, runderwood@pmaa.org

POET | DSM
Advanced Biofuels

June 21, 2013

The Honorable Fred Upton
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The Honorable Henry A. Waxman
Ranking Member
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Submitted via email at: rfs@mail.house.gov

RE: POET-DSM Advanced Biofuels, LLC comments on the U.S. House of Representatives Committee on Energy and Commerce white paper on the Renewable Fuel Standard (RFS) and "Energy Policy."

Dear Chairman Upton and Ranking Member Waxman:

POET-DSM Advanced Biofuels, LLC (hereinafter, "POET-DSM") is pleased to comment on the white paper on the RFS and "Energy Policy" that the Energy and Commerce Committee released on June 7, 2013 (hereinafter, White Paper).[1] The White Paper is the fourth in a series of analyses by the Committee on the RFS.

About POET-DSM

POET-DSM Advanced Biofuels is a 50/50 joint venture, created by POET, LLC ("POET"), an American company based in Sioux Falls, South Dakota, and Royal DSM ("DSM"), based in the Netherlands. This joint venture is targeted to begin operation in early 2014 of its first commercial-scale cellulosic ethanol facility, located in Emmetsburg, Iowa, called Project LIBERTY. The capital expenditure by the joint venture in Project LIBERTY amounts to approximately $250 million.

[1] *See* "Renewable Fuel Standard Assessment White Paper: Energy Policy," available at http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/20130607RFSWhitePaper4.pdf.

DSM is a global life-sciences and materials-sciences company. DSM has more than 140 years of experience in biotechnology development and a proven track record of scaling up industrial operations. With its integrated technology package the company is the industry technology leader in converting cellulosic biomass to ethanol using proprietary enzymes and yeasts.

POET, the largest ethanol producer in the world, is a leader in biorefining through its efficient, vertically-integrated approach to production. The 25+ year-old company produces more than 1.6 billion gallons of ethanol annually from 27 production facilities nationwide. POET is also the world's largest producer by volume of distillers' dried grains with solubles (DDGS), a highly nutritious animal feed produced as a co-product of ethanol production.[2] POET also owns and operates a pilot-scale cellulosic ethanol plant in Scotland, South Dakota, which uses agricultural waste products like corn stover as a feedstock.

The POET-DSM joint venture intends to extend cellulosic technology to the remaining 26 plants in the POET network and to license this technology to build other plants co-located with grain ethanol plants in the United States and globally. With this joint venture, POET and DSM expect to lead the industry in fulfilling one of the central goals of Congress when it created the RFS program—the large-scale development of cellulosic ethanol and the dramatic reduction of greenhouse gas emissions as compared to petroleum.

Preface

The RFS is increasing the use of domestically-produced renewable fuels. Furthermore, the RFS is meeting Congress' goals of enhancing our nation's energy security, creating diversity in transportation fuels and providing fuel choices to the American public, developing a much-needed source of rural employment, and reducing the emissions of greenhouse gases and other harmful pollutants from petroleum. As currently structured (and if allowed to work *as-is*), the RFS will continue to provide the benefits that Congress desired when it strengthened the RFS requirements in 2007.

POET-DSM appreciates the opportunity to comment on this White Paper on "Energy Policy." Responses to the specific questions raised in the White Paper are below.

Questions for Stakeholder Comment

1. How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

[2] For more information on POET, *see* http://www.poet.com.

The United States is extremely vulnerable to major oil supply and price disruptions because of our dependence on foreign oil, and the influence global politics and events have on oil supply, demand and price fluctuations. This vulnerability created an imperative in 2005 to create an RFS and develop new fuel supplies, and that imperative carried through to 2007 with the Energy Independence and Security Act (EISA) and remains all the more relevant today.

Since 1979 there have been thirteen price spikes that have caused measurable economic harm in terms of consumer confidence, consumer prices, and even employment. For example, in 1973 the United States faced the OPEC Oil Embargo, which pushed petroleum prices from $4 per barrel to $12 per barrel. This was such a shock to the U.S. economy that the Department of Energy was created. At that time, prices were a fraction of what they are today and the US was only 30% dependent on foreign oil. Today the U.S. is 45% dependent on foreign oil.[3]

Without greater fuel diversity, price spikes and economic damage may become a rite of passage every year, threatening our prosperity. Unrest in the Middle East has contributed to shocks in 2006, 2007, 2008, 2011, and 2012. Last year, concern over Iran's threat to close the Strait of Hormuz and access to 20% of global supply sent prices skywards.[4] This was a major contributor to the spring slump in the economy. In 2011, Libya's civil war was the culprit. The U.S. does not exist in a bubble. Even when production increases on our soil, those resources are at the whim of the global market. For example, even though prices remain far higher than in 2008, oil companies are beginning to export U.S. oil overseas. All of this suggests that other sources of energy are needed.

At the same time that supply threatens to be disrupted, demand is expected to grow. While our nation becomes more efficient, world economies may soon begin to recover and appetite for oil will grow. In 2011 when it appeared Greece and the European Union were getting out ahead of the economic malaise gripping Europe, the markets reacted by sending oil prices higher.[5] If oil prices increased on merely a suggestion that economic growth could resume globally, what will happen when recovery takes hold in earnest? Couple this with increasing demand from the developing world which has already increased consumption from 25% of global supply to 47%.[6] Again, new domestic sources of energy are needed for our nation's consumption.

The outcome of these trends is clear. In 2001 when the average price of a barrel of oil was $23. As a result of the attacks of 9/11 and subsequent global events, oil prices spiked to a record $145 in July 2008 and have now settled around $100 per barrel. Economists note that the

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[3] Energy Information Administration, *How dependent are we on foreign oil*, at http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm

[4] Phillip Inman, "Iran-Us tensions over Gulf send oil prices soaring," *The Guardian*, January 3, 2012. Accessed June 21, 2013. Available at: http://www.guardian.co.uk/business/2012/jan/03/oil-price-iran-us-gulf

[5] Matthew Philips, "Rising Gas Prices: Not Demand Driven," *Bloomberg Businessweek*, February 14, 2012. Accessed March 5, 2012. Available at: http://www.businessweek.com/finance/rising-gas-pricesnot-demand-driven-02142012.html.

[6] Mark Finley, "The Oil Market to 2030 – Implications for Investment and Policy," International Association for Energy Economics, 2012. Available at http://fuel2.org/the-oil-market-to-2030implications-for-investment-and-policy-download-w135.pdf.

increasing price of oil has been a major contributor to the economic downturn the United States has experienced since 2008. A 2012 study points out that significant hikes in oil prices immediately preceded 10 of the last 11 U.S. recessions since WWI.[7]

These events illustrate our vulnerability to foreign oil and global events. Without more competitive fuels in the marketplace, oil will continue to dominate the economic and energy security climate of the country.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

In 2005, the year the Renewable Fuel Standard was signed into law, the U.S. imported 60% of its oil. Today, the U.S. imports about 45% of its oil. As the U.S. Energy Information Administration notes, efficiency improvements and changes in consumer behavior account for some changes in demand, and

> "At the same time, increased use of domestic biofuels (ethanol and biodiesel), and strong gains in domestic production of crude oil and natural gas plant liquids expanded domestic supplies and reduced the need for imports."[8]

Domestically produced ethanol offset 200 million barrels of oil imports in 2011 with a value of $22 billion recirculated in the U.S.[9] Sending that money overseas would have negatively impacted unemployment – notwithstanding the approximately 12,000 direct jobs at ethanol plants – and our balance of trade.

Ethanol now contributes 10% of the U.S. gasoline fuel supply and could take significantly more market share, immediately through E15 and through higher blends in the future, if not for the grip petroleum has on the U.S. fuel supply. The United States imported 11 million barrels per day of crude oil in 2012, so there is ample room for new domestic biofuels production to offset foreign oil rather than domestic oil.

The current debate over the RFS is the result of the petroleum industry trying to retain its market share and control pricing and supply. The RFS is the only mechanism in place today to encourage a better balance of competitive fuels for the benefit of America. Greater use of renewable fuel loosens the hold of OPEC and limits that organization's ability to set the global price of oil.

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[7] Resources for the Future, *Reassessing the Oil Security Premium*, Stephen P.A. Bran and Hillard G. Huntington, February 20120, at http://www.rff.org/RFF/Documents/RFF-DP-10-05.pdf

[8] Energy Information Administration

[9] *Global economic effects of US biofuel policy and the potential contribution from advanced biofuels,* at *http://www.future-science.com/doi/abs/10.4155/bfs.12.60*

3. In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Domestic renewable fuel use is an important component of a multi-pronged approach to improving energy security. Increased vehicle efficiency and increased domestic oil production have their own roles, but the most reasonable way to moderate the cost of fuel and insulate the nation from global price manipulation or supply disruptions is to offer consumers *options*.

The cost of petroleum today moves to a large degree according to the production targets set by the Organization of the Petroleum Exporting Countries (OPEC).[10] The countries that control the supply control the market. By further developing the domestic, sustainable fuel production in the U.S., we can control a new supply to counteract disruptions in the global market. We can also offer *choice*, which gives more power in determining price to the U.S. consumer.

4. How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?

Ethanol costs less than gasoline and expands the available domestic fuel supply. To date, it has lowered the cost of gasoline, by as much as $1.09 according to Iowa State University's Center for Agricultural and Rural Development.[11] This represents a cost savings for consumers.

Since the first RFS in 2005, more ethanol has been sold into the market than has been required because of the value it offers to blenders and refiners. Ethanol is the lowest-cost octane enhancer on the market.

Looking ahead, as more stringent emissions standards come into play, automakers will need higher-octane fuel to improve engine efficiency. In a paper presented in April 2013, engineers from Ford Motor Company and AVL, an engineering company, asserted that "a mid-level ethanol blend (greater than E20 and less than E40) appears to be attractive as a long-term future fuel for the U.S., especially if used in vehicles optimized for such a fuel."[12]

Ethanol represents the most likely source for achieving the fuel mix needed. According to a recent MathPro Refinery study, increasing the fuel octane to 92 AKI from 88 AKI would save drivers money at the pump, anywhere from 11.7 cents per gallon to 30.8 cents per gallon.[13]

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[10] Energy Information Administration, *What Drives Crude Oil Prices? Supply: OPEC*, at http://www.eia.gov/finance/markets/supply-opec.cfm

[11] Iowa State University Center for Agricultural and Rural Development, *Impact of Ethanol Production on the U.S. and Regional Gasoline Markets: An Update to 2012*, Xiaodon Du and Dermot Hayes, at http://www.card.iastate.edu/publications/synopsis.aspx?id=1166

[12] Stein, R., Anderson, J., and Wallington, T., "An Overview of the Effects of Ethanol-Gasoline Blends on SI Engine Performance, Fuel Efficiency, and Emissions," (*SAE Int. J. Engines* 6(1): 2013)

[13] MathPro Inc., "Analysis of the Refining Costs and Associated Economic Effects of Producing 92 AKI Gasoline in the U.S. Refining Sector," (Oct. 30, 2012)

Additionally, improving the fuel distribution infrastructure to accommodate higher ethanol blends is cost-efficient. A recent Stillwater Associates study estimates the cost of updating pump infrastructure nationwide to accommodate higher blends such as E30 at a range of 0.0024 cents per gallon to 0.0056 cents per gallon on a 15-year amortized basis.[14]

5. What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?

As noted above, ethanol has lowered the price at the pump by as much as $1.09, according to Iowa State University. Additionally, ethanol today makes up 10% of the gasoline market, expanding our fuel supply and adding diversity, which dampens the impact of fuel supply disruptions.

According to a study by Iowa State University in April 2011, if ethanol was to be taken out of the gasoline pool, increase in gasoline prices would be "of historic proportions," ranging from 41% - 92%.[15]

6. Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

The RFS does not need modification to enhance energy security; it only needs a firm commitment from Washington. Uncertainty in D.C. stifles investment and innovation in clean, domestic renewable fuel. When RFS2 was passed in 2007, domestic and international companies started investing heavily in renewable fuels in the United States. DSM, BP Biofuels, Abengoa, DuPont, POET, INEOS, and many more have invested billions of dollars on renewable energy technologies in the United States because of the RFS and the commitment America made to becoming less reliant on foreign oil.

Now that these new renewable fuel technologies are threatening the monopoly of the established petroleum industry, there is a concerted effort to diminish the value and purpose of the RFS. Congress needs to stand united in its commitment to reduce our dependence on foreign oil and let the RFS work for the benefit of America.

Conclusion

In conclusion, the RFS has been a significant success and—left as it is—will provide even more of the economic, energy security, and environmental benefits that Congress intended to promote, including a lower reliance on foreign oil and greater resilience to oil price spikes.

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[14] Stillwater Associates, "The Cost of Introducing an Intermediate Blend Ethanol Fuel for 2017- and- Later Vehicles," (October 17, 2012)

[15] Iowa State University Center for Agricultural and Rural Development, *Impact of Ethanol Production on the U.S. and Regional Gasoline Markets: An Update to 2009*, Xiaodon Du and Dermot Hayes, at http://www.card.iastate.edu/publications/dbs/pdffiles/11wp523.pdf

POET-DSM would welcome the opportunity to further discuss these issues and solutions to the nation's transportation energy needs, including the need for greater energy security.

Sincerely,

Steve Hartig
General Manager
POET-DSM Advanced Biofuels Licensing

James Moe
Chairman of the Board
POET-DSM Advanced Biofuels

June 21, 2013

Via Electronic Filing

Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC

ATTN: Ben Lieberman & Alexandra Teitz

Re: Request for Comment on Renewable Fuel Standard Energy Policy Influences

Dear Sir or Madam:

Renewable Energy Group, Inc. (REG) appreciates the opportunity to present comments to the Committee on Energy and Commerce regarding "Energy Policy" influences of the Renewable Fuel Standard (RFS). The RFS was expanded as part of the Energy Independence and Security Act of 2007 (EISA) (P.L. 110-140), which also created specific requirements for advanced biofuels, including biomass-based diesel. In so doing, Congress sought to further incentivize U.S. production and use of these fuels such as biodiesel. This policy has been an overwhelming success in the biodiesel sector, and has resulted in significant job creation, energy security, and environmental benefits.

As the nation's leading advanced biofuel producer, REG has a strong interest in the continued success of the RFS and we support efforts to fully implement RFS program requirements. REG currently has more than 225 million gallons of annual biodiesel production capability at seven biorefineries and distribution capabilities at nineteen terminals across the country. We plan to build upon our leadership in the biodiesel industry and expand into the production of additional advanced biofuels. The experience REG has gained over the last 17 years in the biofuels industry uniquely qualifies us to share comments on the RFS with you.

The Committee solicited comment on energy policy influences of the RFS. REG will weigh in on select issues and, as we share many of the concerns articulated by the National Biodiesel Board (NBB), REG incorporates their comments by reference.

Specifically, the Committee requested comment on the following issues:

1. **How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?**

2. **How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?**
3. **In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?**
4. **How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?**
5. **What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?**
6. **Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?**

The RFS is a critical policy that has enhanced America's energy security by diversifying the U.S. transportation fuel market and displacing foreign petroleum imports. This is important in order to protect ourselves from supply disruptions and price spikes in global petroleum markets that wreak havoc on our economy. Unlike other diversification strategies, the RFS has actually made inroads to transportation fuel diversification, currently displacing about 10% of the petroleum-based onroad fuels we consume each year. Moreover, EIA analysis indicates that foreign imports would be 7% higher without the RFS.[1] This has resulted in tremendous benefits for U.S. consumers and the economy. Notwithstanding the fact that since the development of the RFS, the U.S. has made great strides in developing additional fossil fuel resources through the "Shale Revolution," the fact remains that the U.S. still imports a significant amount of foreign petroleum and dependence on one source of transportation energy, where we have limited influence over its price is problematic. In short, energy diversity is energy security and the RFS should be promoted as part of a suite of "all-of-the-above" policy options.

Fungibility and relative ease of transportation has created an integrated world market for oil that does not distinguish between domestic and imported sources of crude. This market reality results in a significant risk exposure to the U.S. economy. As a Bi-Partisan Policy Center Paper outlining recommendations from a diverse set of stakeholders' notes:

> The U.S. transportation sector remains overwhelmingly dependent on oil. In 2011, petroleum-based fuels accounted for more than 93 percent of primary energy consumption in the sector. Biofuels and natural gas accounted for the remaining 4 percent and 3 percent, respectively. This lack of fuel diversity in a critical sector of the

[1] *Ethanol Facts: Energy Security*, RENEWABLE FUELS ASSOCIATION, http://ethanolrfa.org/pages/ethanol-facts-energy-security, (last visited June 18, 2013).

> U.S. economy means that American consumers and businesses remain exposed to the fluctuations of the world oil market – *regardless* of how much oil the United States is producing domestically. A large share of global oil supplies comes from regions or countries that are unstable and/or conflict-prone-indeed, a considerable amount of world oil is controlled by national oil companies subject to political and geostrategic interests and motivations. The level of domestic oil production has at most a small effect on world oil prices, which are driven by global trends in supply and demand. In other words, even if the United States produced enough oil to meet 100 percent of domestic demand, American consumers would still pay the world oil market price. In this context, the most direct way to insulate the U.S. economy from oil price shocks is to reduce overall oil demand through efforts that include greater fuel diversity, improved fuel economy, and improvements to the efficiency of our nation's transportation system.[2]

The consequences of oil dependence are severe: ten of the eleven past recessions since World War II have been preceded by significant oil price spikes.[3] To illustrate this point: every time the price of a barrel of oil rises by $1 it costs the Navy and Marine Corps $30 billion[4] and U.S. GDP growth contracts 0.5 percentage points with a $10 increase.[5] Consumers currently do not have other options at their disposal. They have to purchase oil products, which underscores the importance of fuel diversity.

In order to help prevent such disastrous increases, the U.S. military intervenes to prevent oil chokepoints. General Charles F. Wald (ret.) noting a 2010 Rand study that examined how much the U.S. government spends on military presence in the Middle East, projected that, "it was somewhere between $65-85 billion a year. That money is actually translated directly to the taxpayer and in some ways is directly translated in how much we spend at the pump and, you could look at that number and you could say in the United States, we're paying about $9 a gallon for gasoline."[6] Thus, the true cost of petroleum-based transportation fuels doesn't

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[2] *America's Energy Resurgence: Sustaining Success, Confronting Challenges*, BI-PARTISAN POLICY CENTER, http://bipartisanpolicy.org/sites/default/files/BPC%20SEPI%20Energy%20Report%202013.pdf, (last visited June 8, 2013).

[3] *Id.*

[4] Chris Bast, *Secretary Mabus: building a culture of clean energy innovation in the Navy*, CLIMATESOLUTIONS.ORG, http://climatesolutions.org/cs-journal/secretary-mabus-building-a-culture-of-clean-energy-innovation-in-the-navy, (last visited June 18, 2013).

[5] Peter Cohan, *What Do Rising Oil Prices Mean for U.S. Economic Growth?*, DAILYFINANCE.COM,

[6] Jane Norris, *Energy Security Strategies of the Department of Defense: An interview with general Charles F. Wald, Director and Leader of the Department of Defense practice and KC Healy, Director, Federal Energy Management and Sustainability practice*, DELOITTE LLP, http://www.deloitte.com/view/en_US/us/Industries/US-federal-government/cf662d1c46922310VgnVCM1000001a56f00aRCRD.htm, (last visited June 18, 2013).

include a $5.31 energy security premium.[7] On biomass-based diesel alone this has resulted in an approximately $6.8 billion benefit for consumers and the U.S. economy.[8]

As with any significant policy there is always room for improvement. Fortunately, Congress gave EPA significant implementation flexibility to approve new fuels, feedstocks and technologies as well as to waive certain requirements, if necessary, to prevent severe harm to the economy. In short, the RFS does not need any legislative fixes. Creating a climate suitable for investment is crucial to maintaining the significant aforementioned energy security benefits to the U.S. economy. Modifying or repealing the Renewable Fuel Standard would undermine the environment necessary for these benefits to exist and grow, while putting significant current and future capital investment at risk.

The biodiesel industry has demonstrated its capability and capacity to meet increasing biomass-based diesel targets beyond the 1.28 billion gallons called for in 2013. REG also looks forward to continuing to work with all stakeholders, public and private, as we move forward with RFS goals and requirements. Please don't hesitate to contact Anthony Hulen (Anthony.Hulen@REGI.com) or myself (Jonathan.Hackett@REGI.com) if you have any questions.

Sincerely,

Jonathan W. Hackett
Director, Federal Affairs & Policy
Renewable Energy Group, Inc.

[7] NOTE: EIA estimated that the average price of gasoline at the time of General Wald's speech was $3.69 per gallon. (last visited: http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMM_EPM0U_PTE_NUS_DPG&f=W)

[8] This benefit was estimated by multiplying the $5.31 per gallon premium for petroleum-based transportation fuels by the projected consumption of U.S. biomass-based diesel, which is projected to be at least 1.28 billion gallons in 2013. This results in approximately $6.8 billion in energy security benefits for biomass-based diesel alone.

RENEWABLE FUELS ASSOCIATION

June 21, 2013

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
U.S. House of Representatives

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives

Dear Chairman Upton and Ranking Member Waxman:

The Renewable Fuels Association (RFA) is the national trade association representing the U.S. ethanol industry. The RFA appreciates the opportunity to respond to the questions posed in the fourth white paper, "Energy Policy," as part of the Committee's review of the Renewable Fuel Standard (RFS).

As noted in the Committee's white paper, U.S. dependence on imported oil and petroleum products has fallen in recent years. According to Energy Information Administration (EIA) data, the share of U.S. petroleum consumption represented by imports has fallen steadily from 60% in 2005 to 40% today. It is important to note that this measure includes net imports of both crude oil *and* all other petroleum products. If just crude oil is considered, import dependence was 57% in 2012, meaning that the most significant reduction has been in petroleum products, i.e., finished gasoline. While several factors are responsible for the decrease in petroleum import dependence in recent years, the rapid emergence of ethanol production under the RFS stands out as a particularly important catalyst, largely eliminating the need for imported finished gasoline. Indeed, EIA cites "increased use of domestic biofuels (ethanol and biodiesel)" as a major driver behind the decrease in petroleum import dependence.[1] In fact, cumulative new ethanol production since 2005 has accounted for 62% of new domestically-produced liquid fuels, while cumulative new U.S. crude oil production has accounted for 38%.

While increased domestic oil production from fracking has also been a factor in reducing petroleum import dependence from 2005 levels, its role has been exaggerated by oil and gas proponents. Oil production from fracking is a relatively recent phenomenon, and U.S. oil production was actually declining steadily until 2009. Further, the scale of technically recoverable crude oil from U.S. shale resources needs to be placed in context. The 4.3 billion barrels of technically recoverable tight oil from the Bakken shale play (as estimated by the U.S. Geological Survey) is less than one year's worth of crude oil consumption by U.S. refineries (U.S. refiner input of crude oil was 5.5 billion barrels in 2012).

[1] http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm

In any case, the recent boom in tight oil production from fracking doesn't change the fact that fossil fuels are finite and exhaustible. The fracking boom has simply delayed the inevitable. Referring to the recent developments in U.S. unconventional oil production, a recent paper published in *Energy Policy* concluded:

> However important these developments are, they do not change the central argument of Peak Oil…Rather than continuing to argue for or against the topic, Peak Oil should be acknowledged as part of a complex energy situation with the realization that cheap fuel is no longer available and we now face circumstances where prices will increase and high energy-based growth will be limited. With this acceptance, and while there still is sufficient oil, *there should be investment in new energy source*s (emphasis added).[2]

One new energy source — ethanol — is already making a difference. Because of the RFS, ethanol already accounts for 10% of the nation's gasoline supply. Because of the RFS, ethanol displaced the need for the amount of gasoline refined from 462 million barrels of imported crude oil in 2012.[3] Because of the RFS, the biofuels industry stands ready to contribute substantially more to our nation's energy and economic security.

Below please find RFA's responses to the specific questions set forth by the Committee on energy policy impacts.

1. **How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?**

Because the oil market is global in nature, and because the United States constitutes a relatively small share of world production, the U.S. economy remains highly vulnerable to oil supply and price disruptions. While domestic oil production has increased in recent years, the U.S. accounted for just 8.6% of world crude oil production in 2012.[4] By comparison, OPEC nations produced 43% of the world's crude oil in 2012, and the Middle East region specifically accounted for 32%. Notably, U.S. crude oil imports from the Persian Gulf region hit a four-year high in 2012, while imports from the Gulf nations of Iraq and Saudi Arabia reached their highest levels since 2008.

Meanwhile, the United States continues to lead the world in the consumption of oil and petroleum products. The United States accounted for 21% of global petroleum use last year, nearly double the

[2] Chapman, I., The end of Peak Oil? Why this topic is still relevant despite recent denials. Energy Policy (2013), http://dx.doi.org/10.1016/j.enpol.2013.05.010

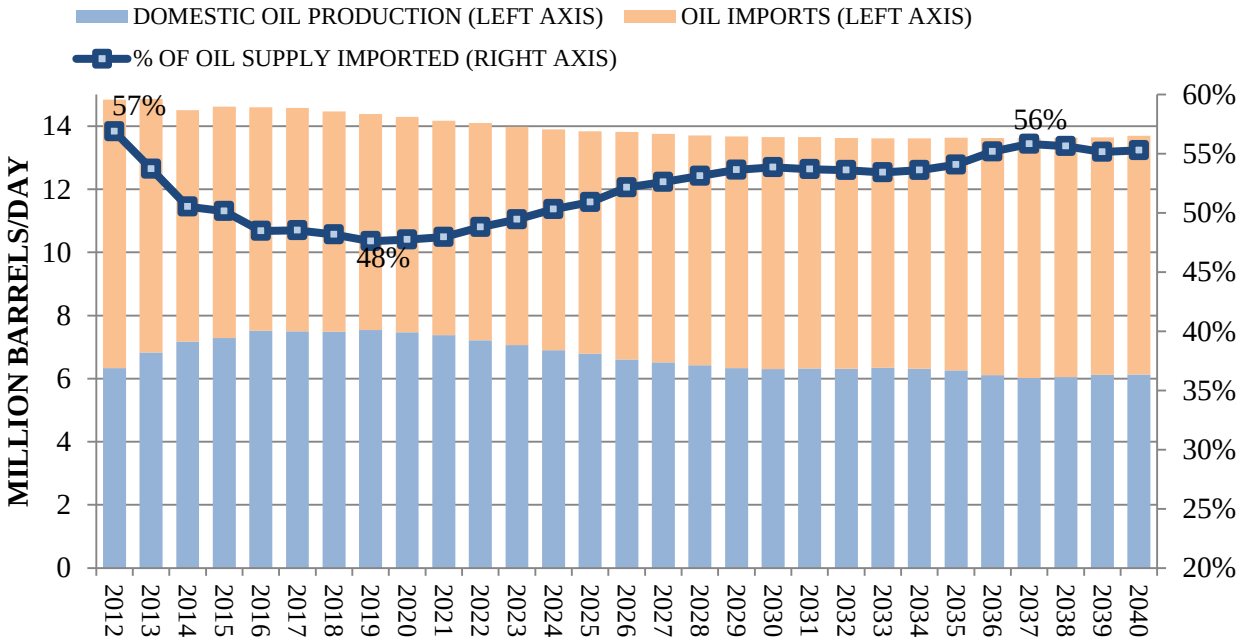
[3] 2012 ethanol production totaled 317 million barrels. 214 million barrels of gasoline would be needed to replace the energy found in 317 million barrels of ethanol. 462 million barrels of crude oil are needed to refine 214 million barrels of gasoline.

[4] U.S. production of crude oil (including lease condensate) in 2012 was 6,505 thousand barrels per day (tbpd), while global production was 75,582 tbpd. Energy Information Administration, International Energy Statistics: Production of Crude Oil (including lease condensate). http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm

amount consumed by China.[5] In fact, the U.S. used 67% more oil and petroleum products than it produced in 2012. Despite the potential for increased domestic oil production through 2020, EIA projections show the United States remaining heavily dependent on crude oil imports in the long term.[6] According to EIA projections, oil imports account for more than 50% of total crude oil supply through 2015, then drop to a low of 47.6% in 2019, then rebound to the 50-56% range in 2024-2040 (Figure 1). As stated recently by Hampshire College Professor Michael Klare in *The Nation*:

> While output from unconventional oil operations in the United States and Canada is likely to show some growth in the years ahead, there is no "golden age" on the horizon, only various kinds of potentially disastrous scenarios. Those…who claim that the United States can achieve energy "independence" by 2020 or any other near-term date are only fooling themselves, and perhaps some elements of the American public. They may indeed employ such claims to gain support for the rollback of what environmental protections exist against the exploitation of extreme energy, but the United States will remain dependent on Middle Eastern and African oil for the foreseeable future.[7]

FIGURE 1. U.S. CRUDE OIL PRODUCTION, CRUDE OIL IMPORTS, AND % OF CRUDE OIL SUPPLY IMPORTED (EIA AEO2013)



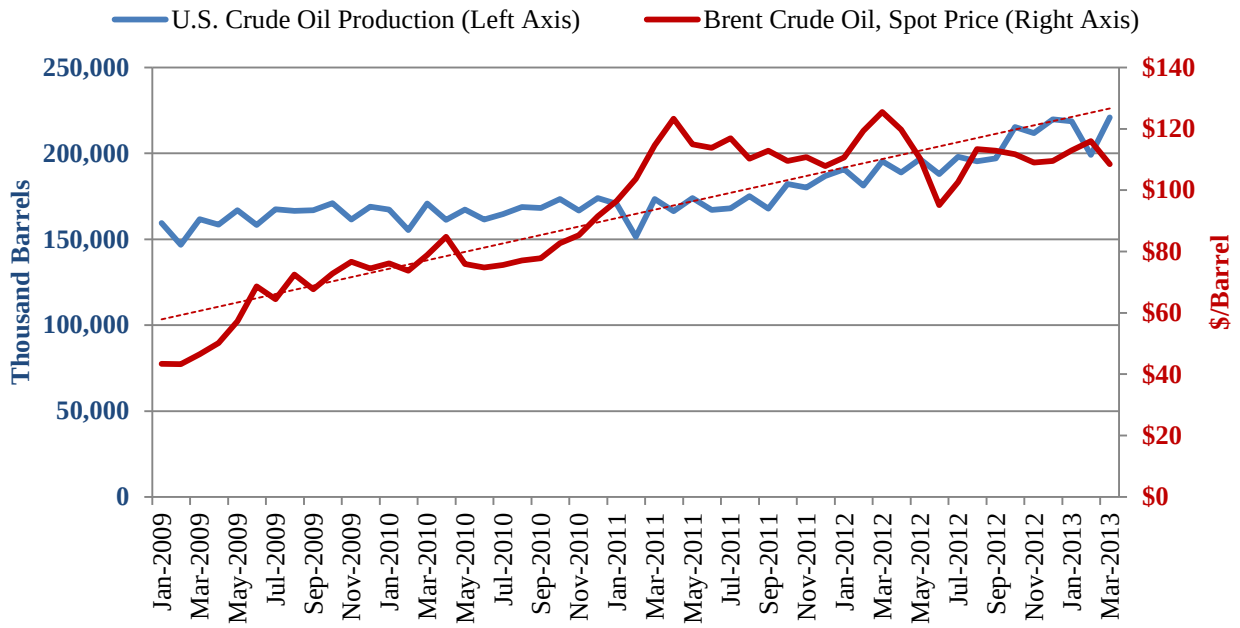
Source: EIA, Annual Energy Outlook 2013

Oil prices are determined at the global scale by a complex combination of economic, political and environmental factors. Supply shifts in a country that represents a fairly small share of global production

[5] Energy Information Administration, International Energy Statistics: Total Petroleum Consumption. http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm
[6] Energy Information Administration, Annual Energy Outlook 2013. http://www.eia.gov/forecasts/aeo/
[7] http://www.thenation.com/article/170353/new-golden-age-oil-wasnt#ixzz2WafzadV2

will not meaningfully influence world — or even domestic — prices. This can be seen by examining spot prices for Brent crude oil relative to U.S. oil production over the past four years (Figure 2). Brent crude oil prices have continued to trend higher since 2009 despite a considerable increase in U.S. production.

FIGURE 2. US CRUDE OIL PRODUCTION & BRENT CRUDE SPOT PRICE



The vulnerability of the United States to global oil price shocks is further underscored by the fact that Americans spent a record amount of disposable income on gasoline in 2012, despite domestic oil production reaching its highest level in 17 years. Indeed, an analysis of 36 years of monthly, inflation-adjusted gasoline prices and U.S. oil production by The Associated Press (AP) shows no statistical correlation between domestic production and the price at the pump. According to the AP:

> U.S. oil production is back to the same level it was in March 2003, when gas cost $2.10 per gallon when adjusted for inflation. But that's not what prices are now. That's because oil is a global commodity and U.S. production has only a tiny influence on supply. Factors far beyond the control of a nation or a president dictate the price of gasoline. …the United States alone does not have the power to change the supply-and-demand equation in the world oil market.[8]

Similarly, a recent report by the RAND Corporation entitled *Imported Oil and U.S. National Security* concluded that increases in U.S. oil production would have little or no effect on prices:

> …even if total U.S. imports were cut sharply, the price of oil in the United States would still be determined by global, not national, shifts in supply and demand. A large, extended reduction in the global supply of oil would trigger a sharp rise in the price of oil and lead

[8] http://www.guardian.co.uk/world/feedarticle/10154733

> to a sharp fall in economic output in the United States, no matter how much or how little oil the United States imports.[9]

Since oil prices are determined at the global level, and because the United States will continue to consume significantly more crude oil than it can produce, policies that encourage the domestic development and use of *alternatives* to fossil fuels remain critically important. Indeed, diversifying away from reliance on petroleum is the most effective means available for reducing prices and volatility in the U.S. fuel market. According to the RAND study:

> The United States would also benefit from policies that would push down the world market price of oil by curbing demand or increasing competitive supplies of oil, domestic and foreign, ***and alternative fuels***. U.S. terms of trade would improve, to the benefit of U.S. consumers; rogue oil exporters would have fewer funds at their disposal; and oil exporters that support Hamas and Hizballah would have less money to give these organizations (emphasis added).[10]

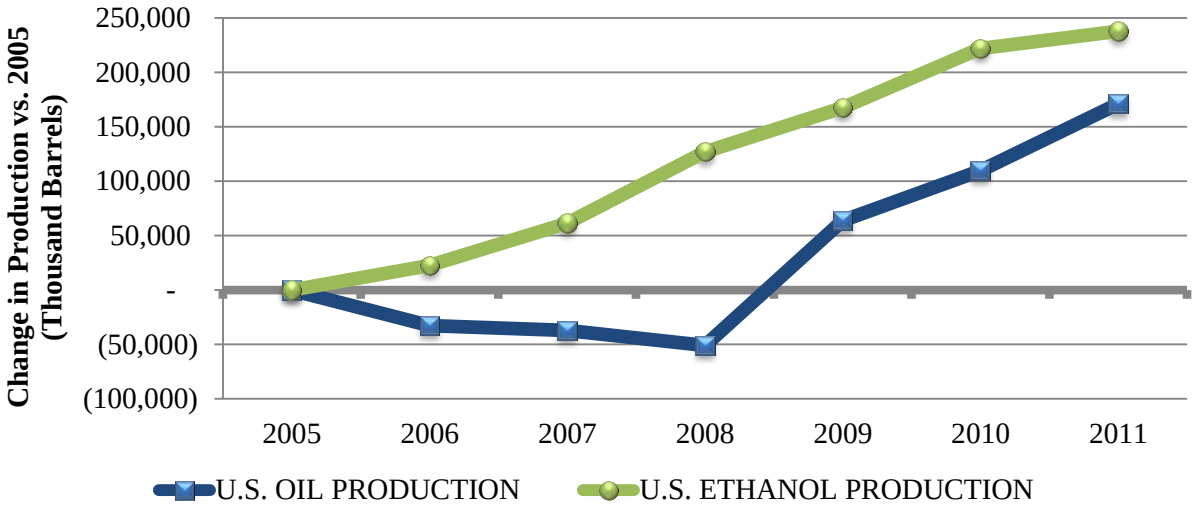
The RFS has worked as designed to increase competitive supplies of renewable alternatives to imported crude oil and to diversify the U.S. liquid transportation fuels marketplace. Already, ethanol use has grown to account for 10% of U.S. gasoline usage, significantly reducing demand for imported crude oil and finished gasoline.

2. How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

The RFS has unquestionably played a major role in reducing oil imports and enhancing energy security. U.S. oil import dependence (crude oil & petroleum products) peaked at 60% in 2005 and has fallen in every year since. The oil industry is quick to credit increased domestic production from fracking as the reason for falling import dependence since 2005. But it is important to remember that fracking is a relatively recent development and that U.S. production was actually *decreasing* until 2009 (see Figure 3).

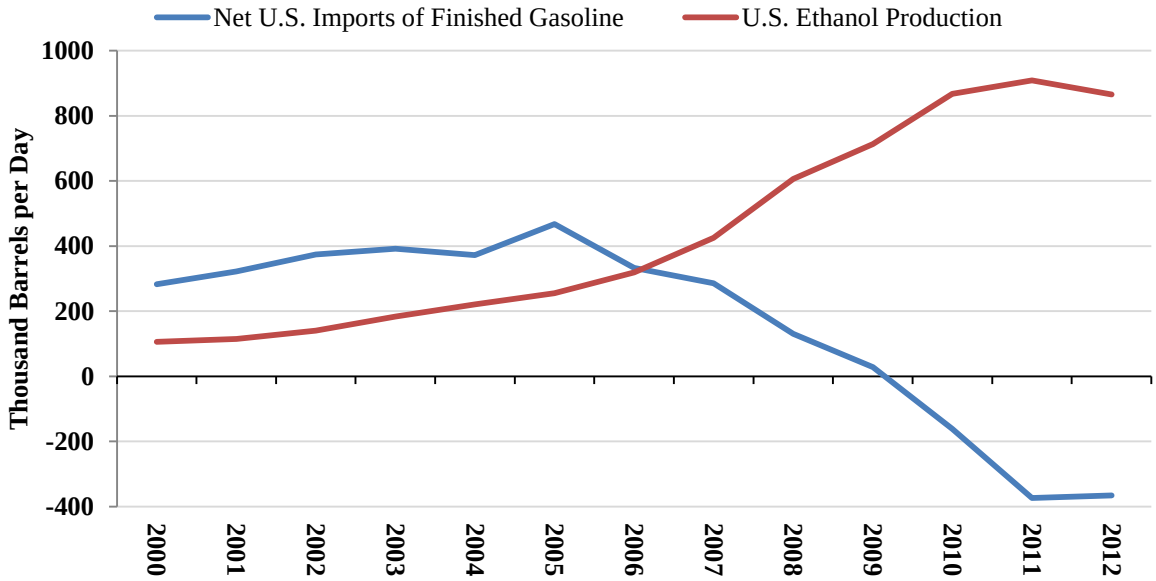
[9] http://www.rand.org/content/dam/rand/pubs/monographs/2009/RAND_MG838.pdf
[10] Ibid.

FIGURE 3. U.S. ETHANOL GROWTH COMPARED TO U.S. OIL GROWTH: ANNUAL CHANGE IN PRODUCTION VS. 2005 LEVELS



In fact, on a cumulative basis between 2005 and 2012 (i.e., accounting for annual gains *and* losses in production), ethanol has added significantly more volume to the U.S. liquid fuel supply than domestic crude oil. Cumulative new ethanol production since 2005 has accounted for 62% of new domestically-produced liquid fuels, while cumulative new U.S. crude oil production has accounted for 38%. In addition to displacing crude oil imports, the rise in ethanol production has eliminated the need for imports of finished gasoline (Figure 4). In fact, since 2010, the United States has been a net exporter of gasoline.

FIGURE 4. NET U.S. GASOLINE IMPORTS & ETHANOL PRODUCTION

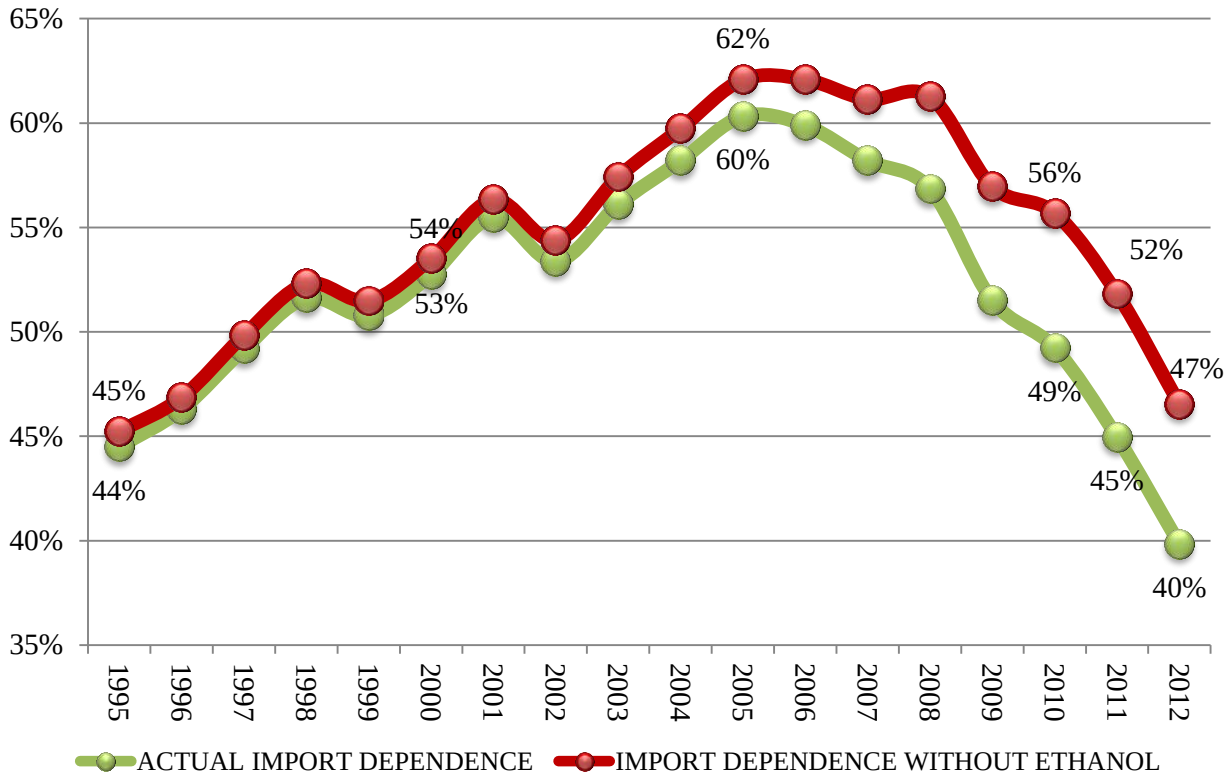


Improved fuel economy and reduced travel are frequently cited as reasons for reduced oil imports. While it is true that more fuel efficient vehicles have contributed to reduced gasoline consumption, this too has

been a fairly recent phenomenon. Additionally, after falling in 2008-09, total vehicle miles traveled have been stable in recent years.

While fuel efficiency standards, moderation in vehicle miles traveled, and recent increases in U.S. oil production all have played a role in reduced oil imports, the rapid expansion of ethanol has also been a critical factor. Under the RFS, 1.81 billion barrels (75.8 billion gallons) of ethanol have been added to the domestic gasoline supply since 2005, significantly curtailing demand for imported crude oil and finished gasoline. Without ethanol during this period, an additional 1.23 billion barrels of gasoline (and/or hydrocarbon octane sources) would have been needed to meet demand. To refine that amount of gasoline, 2.6 billion barrels of crude oil would have been needed (assuming 19.7 gallons of gasoline per barrel of crude oil). Thus, the RFS has had a tremendous impact on reducing imports of crude oil and finished gasoline. Figure 5 shows U.S. dependence on imported crude and petroleum products with and without ethanol production (the calculations underlying the chart assume 0.67 gallons of gasoline would be needed to replace every one gallon of ethanol; and 1.42 gallons of imported crude oil are needed to refine 0.67 gallons of gasoline). In recent years, import dependence would have been roughly 7 percentage points higher in the absence of ethanol.

FIGURE 5. U.S. OIL (CRUDE & PRODUCTS) IMPORT DEPENDENCE WITH AND WITHOUT ETHANOL



3. **In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?**

As indicated earlier, the United States will remain susceptible to the whims of the global oil market as long as petroleum serves as the primary energy source for transportation. While the share of the U.S. crude oil supply represented by imports is expected to dip slightly below 50% in the coming years, the country will remain heavily dependent on foreign suppliers (see Figure 1). This dependence will become even more acute if the United States reverses progress on renewable fuels or abandons the RFS. According to the RAND study, the U.S. economy will continue to be impacted by global oil markets "…no matter how much or how little oil the United States imports."

The only way to better insulate the U.S. economy from the vagaries of the world oil market is to meaningfully diversify the sources of energy used for transportation in the U.S. The greatest opportunity for energy security rests with fuel sources for which the United States exercises substantial market power. As the world's dominant leader in the production and consumption of biofuels, the United States exerts significant market power and influence over the behavior of the world biofuels marketplace.

4. **How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?**

The RFS is the *only* existing policy that accomplishes the multiple purposes of diversifying the transportation fuels market, reducing dependence on foreign oil, decreasing tailpipe pollutants and greenhouse gas emissions, and bolstering the rural economy. Importantly, these objectives are being accomplished at no cost to the U.S. taxpayer. We are unaware of any similar Federal policies that were designed with the same objectives in mind. While energy conservation policies such as fuel economy regulations can reduce oil consumption, they do not necessarily encourage diversification of transportation energy sources, nor do they provide the same broad economic stimulus to a wide array of U.S. industries.

In terms of net macroeconomic costs and benefits, a recent paper published by scientists at Oak Ridge National Laboratory found that implementation of the RFS results in resoundingly positive outcomes for American consumers.[11] The study found that full implementation of the RFS in 2022 results in U.S. gross domestic product being 0.8% higher than would have been the case without the RFS (for context, 0.8% of current GDP is approximately $120 billion). According to the authors, "The employment implications [of the RFS], measured by percentage changes in labor use, follow the same pattern as the GDP effects."

[11] Oladosu, D., et al. (2012). *Global economic effects of U.S. biofuel policy and the potential contribution from advanced biofuels.* Biofuels 3:6, 703-723.

5. **What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?**

In modeling the impacts of implementation of the RFS2, researchers from Oak Ridge National Laboratory found, "[a]s expected, fossil energy prices, particularly oil, declined as biofuels replace increasing portions of liquid fuel use in the USA. The reduction in oil prices accelerated from -3% in 2015 to approximately -7% in 2022." This leads to reduced GDP in the Middle East and Africa, traditional oil exporting regions, the researchers found.[12]

Several analyses in recent years have estimated the impacts of increased ethanol blending on wholesale and/or retail gasoline prices. While the published estimates of ethanol's impact on gasoline prices vary, they are directionally consistent and all of the studies indicate that using ethanol does in fact result in meaningful savings at the pump. Estimates of the reduction in gasoline prices due to increased ethanol use have ranged from $0.17 per gallon (adjusted for ethanol's lower energy density) in 2008 to $1.09 per gallon in 2012.

The impact of ethanol and the RFS on gas prices first came into focus in the summer of 2008, when Texas Governor Rick Perry requested a waiver of the RFS. In June 2008, the U.S. Departments of Energy and Agriculture conducted an analysis that concluded, "We estimate that, if we had not been blending ethanol into gasoline, gasoline prices would be between 20 cents per gal. to 35 cents per gal. higher." That same month, analysts at Merrill Lynch found, "On a global scale, biofuels are now the single largest contributor to world oil supply growth. We estimate that retail gasoline prices would be $21/bbl higher ($0.50/gal.), on average, without the incremental biofuel supply." In the fall of 2008, McKinsey & Company released a detailed analysis it conducted for the National Renewable Energy Laboratory (Attachment 1). The McKinsey study found, "Ethanol blending in the U.S. [at 2008 levels; ~6% of gasoline supply] is keeping U.S. retail gasoline prices about 17 cents per gallon lower than they would be with no ethanol…As mentioned above, this takes into account the lower mileage impact of ethanol. If available ethanol volumes can be increased economically, ethanol has the potential to lower gasoline prices even further: with economic blending to an average ethanol concentration of 20 percent nationwide, the per-gallon savings (mileage adjusted) could reach 18 to 63 cents."

Du & Hayes of the Center for Agriculture and Rural Development (CARD) published a paper in Energy Policy in August 2009 that concluded, "…the growth in ethanol production has caused retail gasoline prices to be $0.29 to $0.40 per gallon lower than would otherwise have been the case." Du & Hayes updated their analysis in April 2011, finding that "…over the sample period from January 2000 to December 2010, the growth in ethanol production reduced wholesale gasoline prices by $0.25 per gallon on average. Based on the data of 2010 only, the marginal impacts on gasoline prices are found to be substantially higher given the much higher ethanol production and crude oil prices. The average effect increases to $0.89/gallon…"

[12] *Ibid.*

In February 2012, Marzoughi & Kennedy of Louisiana State University presented a paper (Attachment 2) finding that "…every billion gallons of increase in ethanol production decreases gasoline price as much as $0.06 cents. Adding ethanol to gasoline has the same impact on gasoline as a positive shock to gasoline supply." They further concluded that, "Based on estimation results for the impact of ethanol production on gasoline price, [the amount of ethanol produced in 2011] can lower the gasoline price as much as $0.78 cents per gallon. …This low price means around $107 billion in annual savings for U.S. drivers as a whole." Finally, Du & Hayes updated their analysis (Attachment 3) again in May 2012, finding that, "…over the period of January 2000 to December 2011, the growth in ethanol production reduced wholesale gasoline prices by $0.29 per gallon on average across all regions. Based on the data of 2011 only, the marginal impacts on gasoline prices are found to be substantially higher given the increasing ethanol production and higher crude oil prices. The average effect across all regions increases to $1.09/gallon…"

There are at least three important dynamics explaining ethanol's ability to reduce gasoline prices.

- **The effect of fuel supply extension on gasoline prices**. Cumulatively, more than 75 billion gallons of ethanol were added to the gasoline supply from 2005-2012—an average of 9.4 billion gallons annually. Basic economic theory establishes that increasing the supply of substitutable-in-consumption goods will reduce the price for those goods, ceteris paribus. This effect can be understood by considering the analogous example of butter and margarine: prices for butter are forced downward when margarine (a cheaper substitute) is introduced to the marketplace and overall supply of these two substitute goods is enlarged. In the case of ethanol, according to Hayes, "It is as if the US oil refining industry had found a way to extract 10% more gasoline from a barrel of oil." The magnitude of this effect will depend on the amount of the substitute good introduced to the market, the time period over which the good is introduced, the price elasticity of demand, and other factors.

- **The wholesale discount of ethanol to gasoline blendstock**. Ethanol has consistently sold at a discount to gasoline blendstock at the wholesale level since 2007. Since 2010, ethanol prices have averaged approximately 83% the price of RBOB, or $0.47/gallon less (at times, the "spread" has been $1/gallon or wider). This means E10 has been an average of about $0.05/gallon cheaper than unblended gasoline based strictly on straightforward blending economics. The wholesale spread between ethanol and gasoline during this period has served as a strong economic incentive for gasoline blenders and refines to maximize their use of ethanol. Ethanol opponents often suggest ethanol's discount to gasoline is offset by its lower energy content—this argument ignores the larger supply extension effects (discussed in the first bullet point above) and the actual role of ethanol in gasoline blends (discussed in the bullet point below).

- **The price differential between ethanol and other oxygenates and octane sources**. Ethanol is a high-octane fuel that is used ubiquitously by refiners and blenders to increase gasoline octane to the minimum levels required for sale (87 AKI in most states). Using ethanol in lieu of other octane enhancers has allowed refiners to reduce the use of energy-intensive alkylation and reforming units, significantly reducing gasoline production costs. Ethanol has consistently been priced far below other sources of octane over the past several years. In the absence of ethanol,

refiners would be required to use much higher-priced octane sources (many of which, incidentally, are highly toxic in nature), which would necessarily increase gasoline prices at wholesale/retail. A recent analysis by the Department of Energy (Attachment 4) found that even if ethanol prices were 110% the price of CBOB gasoline (compared to 80-85% today), it would still be more economical for refiners to use ethanol for octane enhancement rather than producing octane from other petroleum processes in the refinery.

6. **Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?**

No, the RFS should not be modified in any way. The current structure is working as intended to enhance domestic energy security and diversify the transportation fuels portfolio. The range of qualifying fuels is already quite broad and should not be expanded. Natural gas derived from biogenic sources (i.e., "biogas") used as transportation fuel already qualifies to generate RIN credits under the existing RFS. Similarly, renewable electricity (e.g., from wind, solar, hydro) qualifies for RIN credit generation if used as a transportation fuel. Indeed, there are only two overarching criteria that transportation fuels must meet in order to qualify for the RFS: 1) that the fuels are derived from "renewable biomass," and 2) that the fuels reduce greenhouse gas emissions by specified levels relative to petroleum. If a fuel meets these two basic criteria, it can qualify for the RFS.

Further, it is important to be mindful of the multiple purposes of the RFS. In addition to enhancing energy security and reducing crude oil consumption, the policy was intended to create a stable market for *renewable* fuels with *superior environmental performance* to petroleum. Opening the RFS to nonrenewable fossil-derived fuels such as natural gas from fracking would substantially undermine Congress' intent to encourage development of more environmentally sustainable transportation fuels. Even the petroleum industry has seemingly acknowledged the inherent problems associated with converting natural gas into ethanol to generate RFS credit. According to a recent analysis released by the Institute for Energy Research, "Producing ethanol from natural gas is expensive, emits significant amounts of additional carbon dioxide, and is wasteful of the energy content as well as the hydrogen content of the natural gas that can be used more efficiently in alternate applications." Finally, the refueling infrastructure for alternative transportation fuels such as compressed natural gas (CNG) or electricity is virtually nonexistent today. Installation of such infrastructure would require far greater investment than would be required to continue the transition to greater biofuels usage.

* * * * *

Thank you again for the opportunity to comment. If there is any additional information you would like RFA to provide, please do not hesitate to ask.

Sincerely,

Bob Dinneen
President & CEO

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Steptoe
STEPTOE & JOHNSON LLP

June 21, 2013

TO: House Energy and Commerce Committee

FROM: Society of Independent Gasoline Marketers of America

RE: Renewable Fuel Standard Assessment White Paper – Energy Policy

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The Society of Independent Gasoline Marketers of America ("SIGMA") applauds the Energy and Commerce Committee for conducting its review of the renewable fuel standard ("RFS"). SIGMA represents a diverse membership composed of approximately 260 independent chain retailers and marketers of motor fuel. SIGMA's members know first-hand the legal and logistical complexities associated with the RFS, and are pleased to provide answers to the questions set forth in the Committee's most recent White Paper.

As a preliminary matter, the White Paper appears to recognize that the *supply* of renewable fuel (or any product, for that matter) cannot be analyzed independent of the *cost* of such fuel. Although the RFS contains a number of mandates, the program does not mandate that consumers purchase anything. As operators of retail motor fuel outlets with large street-side price display signs for consumers to view without leaving their vehicles, SIGMA members are well aware that consumers make purchasing decisions based on price. Indeed, statistics establish that consumers will drive well out of their way to purchase the cheapest fuel available.

Thus, in considering the extent to which the RFS has accomplished its original objectives (*i.e.*, moving the United States toward energy independence while reducing the country's dependence on fossil fuels), analyzing any increase in fuel supply the RFS generates without also examining the price of this additional supply is of little utility. Only when renewable fuels are able to be priced competitively with petroleum-based fuels will the RFS displace fossil fuels and accomplish the program's goals.

1. ***How vulnerable is the United States currently to major oil supply and price disruptions in the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?***

As long as oil is a commodity traded on a world market, as it is today, supply disruptions in any part of the world can and likely will have an impact on the price of fuel in the United States. However, it is clear that the United States is *less* vulnerable to disruptions of supply than before Congress enacted the RFS. With the increased use of domestic renewable fuels, the country is less dependent on foreign sources of energy. Motor fuel marketers support diverse supply options. When oil prices spike, marketers and consumers benefit from the marketer's ability to purchase and blend less expensive fuels into the fuel mix. Thus, while the fluctuating price of oil has the same impact on the price of petroleum, the fact that motor fuel in the United States generally contains 10% less petroleum today than it did in 2007 serves to moderate the price impact of these disruptions on the U.S. market.

As for the importance of further reducing our dependence on oil, particularly foreign oil, basic economics dictate that the country's trade deficit, currency and overall economy would be stronger if the U.S. required less fuel from abroad.

In the last several years, we have seen a number of favorable developments regarding America's future energy supply. SIGMA members have not seen a correlation where such increased supply translates to lower *prices* at the pump, however. It stands to reason that increases in supply will have a positive impact on prices, in effect driving them down, but they have yet to translate into lower prices at the pump. If domestically produced sources of energy that are intended to serve as an alternative to petroleum cost more than the petroleum, it will do little to decrease our dependence on foreign energy.

Overall, when SIGMA members consider America's "dependence" on foreign oil, they are considering the adequacy of <u>competitively priced</u> domestic supply. SIGMA urges the Committee to view dependence—and the success of the RFS—in that light as well.

2. ***How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?***

SIGMA is not equipped to assess the extent to which improved energy security and a reduction in oil imports can be attributed to the RFS. It is SIGMA's belief that the RFS has *contributed* to the fact that U.S. consumers now use more renewable fuels from domestic sources, which displaces some demand from foreign sources. Of course, there are likely other factors that have contributed to the reduction in U.S. oil imports, such as the augmented CAFÉ standards as well as the recent recession and prolonged economic recovery.

3. ***In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?***

The phrase "U.S. energy security" as used in the question can be interpreted in one of two ways: it could be referring to the volume of *physical product* to which Americans have access or the term could reference a larger variety of *cost-competitive supply* to which Americans have access. SIGMA members view energy security to mean the latter. Thus, when SIGMA is asked to what degree the RFS has contributed to U.S. energy security, its membership considers the extent to which the RFS has contributed to adequate supply of product that can be priced competitively with petroleum.

In this regard, the RFS has contributed to U.S. energy security inasmuch as it has decreased U.S. reliance on foreign fuels (through the enhanced use of ethanol in gasoline and diesel fuels) and thus helps moderate the impact of global price fluctuations on the U.S. energy market. Petroleum is susceptible to fluctuations because it is priced in a world market. Renewable fuels, conversely, are normally priced in the U.S. market at a discount to petroleum; if there is a price spike in oil, it does not require a comparable change in the price of renewables. Thus, renewables can mitigate the impact of petroleum price fluctuations.

Of course, this concept is only true if renewables cost less than petroleum-based fuels (otherwise, consumers will not buy renewable fuels). Today, corn-based ethanol is cost-competitive with petroleum, but cellulosic ethanol—to the extent it is available—is not. If cellulosic ethanol becomes more price-competitive with petroleum, it will enhance the positive role the RFS has played in contributing to U.S. energy security.

4. ***How do the costs and benefits of the RFS compare to those of other federal policies to diversify fuels used in the transportation sector, diversify transportation options, and reduce oil dependence through other means?***

"Fuel diversity" is analogous to "energy security" in that fuel diversity is beneficial if it moderates the impact of the world petroleum market's oscillations on U.S. consumers. A diverse supply of fuels, whether derived from natural gas, biodiesel, ethanol, or other products, only truly enhances our energy security if it is available to consumers as a competitive *alternative* to traditional petroleum-based fuel.

5. ***What has been the impact of the RFS on oil prices? What has been the impact on gasoline and diesel fuel prices? What has been the impact on oil and fuel price volatility? How will these impacts change in the years ahead?***

Looking retrospectively, the RFS has sporadically exercised a moderating influence on gasoline and diesel prices. This was particularly the case when marketers received a tax credit for blending renewable fuels into traditional motor fuel, thus lowering the effective price of the renewable fuel and therefore making it more competitive with petroleum. Apart from such subsidization, however, corn-based ethanol is at present cheaper than petroleum. As long as that is the case, the RFS serves to modify retail fuel prices to the extent it is the reason corn-based

ethanol is utilized. (Of course, if corn-based ethanol is the lowest-cost octane available, it is likely that it will be blended with gasoline even *without* the RFS.)

Looking forward, the RFS's impact on oil and fuel price volatility will depend on the same factors discussed above: to the extent the RFS is responsible for increased use of fuels that are priced separate and apart from—and competitive with—the price of oil on world markets, the program will mitigate the impact of oil price volatility on U.S. markets. However, it is impossible to accurately predict the extent to which the RFS will do this in the years ahead.

6. ***Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?***

The RFS could be modified to enhance energy security (as we define it). For example, it could theoretically mandate the *use* of particular products by end-use consumers instead of mandating the production of such fuels. This is similar to what occurred with the introduction of unleaded gasoline and ultra-low sulfur diesel ("ULSD"). Even if use of higher blends (such as E15) were mandatory, the RFS would naturally reduce the demand for petroleum and make the country more "energy secure." Of course, if the RFS mandates use of particular fuels that are not tied to global oil price fluctuations, it will only lower Americans' cost of energy if the mandatory fuels are cheaper than oil.

R. Timothy Columbus
Counsel

June 21, 2013

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry A. Waxman
Ranking Member
Energy and Commerce Committee
U.S. House of Representatives
2322A Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

Virent is pleased to comment on the U.S. House of Representatives Committee on Energy and Commerce's fourth white paper reviewing the Renewable Fuel Standard (RFS2).

Virent is a Madison, Wisconsin based company that uses patented catalytic technology to convert plant-based materials into a range of products identical to those made from petroleum, including gasoline, diesel, jet fuel, and chemicals used to produce plastics and fibers. Key investors and partners include Shell, Cargill, Honda and The Coca-Cola Company. Please visit www.virent.com for more information.

As the committee is aware, the Renewable Fuel Standard was expanded as part of the Energy Independence and Security Act of 2007, which created specific requirements for advanced biofuels, including the biomass-based diesel, advanced, and cellulosic biofuels pools. The clear vision of Congress in drafting this statute was to enhance our nation's energy security by encourage the production of an entirely new range of fuels from a broad and diverse array of feedstocks. We agree that many factors including our ongoing reliance upon and venerability to the global petroleum market and the potential of second generation biofuels to meet these challenges makes this an appropriate time to assess the course and implementation of the RFS2 program. We applaud the committee's efforts in this regard.

Based on Virent technology and positioning within the biofuels and biobased chemicals industry, we feel it is appropriate for us to comment on four (excluding questions 4 and 5) of the six questions posed by this white paper.

Question 1: How vulnerable is the United States currently to major oil supply and price disruptions? In the context of rising domestic oil production and falling demand, how important is it to adopt new and strengthen existing policy measures to further reduce our dependence on oil?

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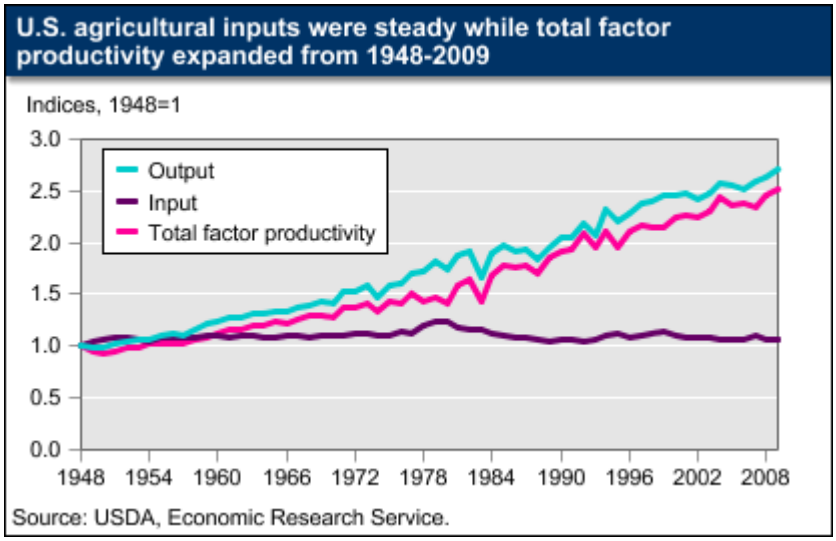
Despite the very positive trends in domestic oil and gas production noted by the committee, our nation remains vulnerable to oil supply and price disruptions. Even with the increase in domestic production, oil prices have remained high and (as noted in the white paper) it is predicted by most that growing global demand will continue to propel those prices higher in the coming years. We still import approximately one third[1] of our oil and the global market will continue to be affected by world events that continue to raise the risk of formidable supply issues and the resultant volatility will be passed along to American consumers.

However, because natural gas is more costly to transport than crude, the shale gas boom has greater impact domestically, providing low cost supplies. These lower natural gas prices have helped decreased the cost of electricity, reduced manufacturing costs, increased investment in chemicals manufacturing, and spurred job creation throughout the economy. How we manage these abundant, but exhaustible resources is another source of debate in Washington.

The good news is that our nation is in the midst of another long running expansion of homegrown energy resources – the steady growth in and capability of US agriculture production[2].



Over the years we have invested heavily (both public and private funds) in developing an US agricultural industry second to none. This industry has historically delivered the food, feed, fiber and fuel required for our population and other geographies around the world. And like natural gas, agricultural resources are of greatest advantage in local markets, providing an inherent advantage to domestic industries. The RFS is designed to leverage this strength to provide innovative new fuels that will diversify our sources of supply, improve our environment, create

[1] 2012 imports at 40% and 2014 imports projected at 30% by EIA, see http://www.eia.gov/forecasts/steo/report/us_oil.cfm

[2] USDA ERS Agricultural Productivity in the U.S.; http://www.ers.usda.gov/data-products/agricultural-productivity-in-the-us/documentation-and-methods.aspx

un-exportable jobs and prove a source of renewable liquid fuel energy to our country, forever. The advanced biofuels envisioned by the RFS, made from a broader array of feedstocks, will permit greater biofuel volumes to enter the market without negatively impacting food supplies. The renewability of these resources provides value to our nation well beyond the short-term value inherent to the exploitation of tight oil and shale gas. Domestic biobased feedstocks are inexhaustible, have lower carbon intensity and represent infinite energy reserves far into the future. Congress understood this reality when they passed the 2007 EISA and, even in light of the recent successes in the development of additional domestic oil and gas resources, that reality remains true today.

Therefore, we believe that the RFS should be preserved and strengthen to promote the development of innovative, advanced biofuels that will further reduce our dependence on petroleum and expand the production of renewable fuels beyond ethanol and across the entire range of fuel markets.

Question 2: How has the RFS contributed to improved energy security? To what degree should the reduction in U.S. oil imports be attributed to the RFS?

As noted by the committee, the rapid growth of domestic ethanol and biodiesel production has certainly contributed to the drop in US crude oil imports. Drop-in fuels that can access the jet and diesel markets coupled with the production of renewable chemicals at integrated biorefineries will allow biofuels to enter additional markets without "blend wall" constraints, enhancing these positive developments.

Question 3: In the context of rising domestic oil production and falling demand, to what extent does the RFS currently contribute to U.S. energy security and to what extent will it further contribute going forward?

Rising domestic production and falling gasoline demand are positive trends and contribute to US energy security, however true security will be best achieved through diversification. Corn ethanol provides a level of diversification, adding an additional path from one feedstock to one fuel molecule for use in the gasoline pool. Fortunately, the RFS envisions and may eventually encourage the development of an entire suite of fuels, produced by a dispersed network of biorefineries and process technologies, which utilize an array of feedstocks. This would not only help shield us from global supply disruptions, but the very nature of this industry would also shield us from local price spikes like those experienced this spring in the Midwest where gas

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prices rose as much as $0.43/gallon in one week due to unexpected shut-downs within our limited petroleum refinery infrastructure.[3]

Question 6: Could the RFS be modified to enhance energy security further? Should the range of qualifying fuels be expanded? If so, how? If not, why not?

Yes, the current RFS is not well mechanized to encourage the significant investment needed for the development and scaling of more useful drop-in biofuels. The statue should be revised to include the following provisions:

- *A cap on the percentage of ethanol in the gasoline pool will greatly strengthen incentives for the production of drop-in biofuels.*
- *Establishment of performance based incentives, requiring infrastructure compatibility, and rewarding incremental improvements in GHG reduction in addition to the existing incentives for higher energy content.*
- *Allow chemicals and other biorefinery co-products that displace fossil carbon to also qualify for RINs. This would broaden the pool of available RFS compliant product streams.*

This would overcome the physical barriers associated with the "blend wall" and allow wider adoption and use of biofuels – in keeping with the original intent of the legislation. A stronger RFS would promote the diversification of our supply of transportation fuels, reduce price volatility, and provide a renewable and sustainable source for the liquid energy critical to our economy.

Once again, we appreciate the opportunity to comment and hope this information is beneficial to the Committee as it continues its review of the RFS. If there are any questions please do not hesitate to contact me at (202) 507-1316 or david_hitchcock@virent.com.

Sincerely,

David M. Hitchcock
VP, Government Affairs

[3] See **http://www.usatoday.com/story/money/2013/05/16/midwest-great-lakes-regions-driving-national-gas-prices-higher/2166845/**

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WVONGA

WEST VIRGINIA OIL AND NATURAL GAS ASSOCIATION

June 18, 2013

United States House of Representatives
Committee on Energy and Commerce
Chairman Fred Upton
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and the Committee on Energy and Commerce,

As you review existing energy policy measures and debate methods of reducing U.S. oil imports, it is important to remember that there are more options we can tap right here at home, particularly when it comes to producing conventional ethanol. Ethanol made from natural gas is an extremely attractive and viable option. Natural gas-based ethanol can be manufactured more cheaply than corn-based ethanol ($1.50 to $2.00 a gallon when natural gas is priced under $6.00), and it doesn't have the same transportation issues because a plant can be located wherever there is a natural gas pipeline.

Natural Gas to ethanol technology is real and ready to be implemented. The only thing stopping this practical solution is the Renewable Fuel Standard. We are writing to encourage you to support expanding the definition of feedstocks allowed under the conventional biofuels definition of the RFS to include natural gas.

We've been in the oil and natural gas business for a long time, and we can say from personal experience that the US remains extremely vulnerable to the influence and manipulation of oil supplies and prices from foreign countries. We believe the RFS has improved our energy security by weaning us off of foreign oil, but its limitations and short-sightedness has put a drag on this positive development and the growth of the domestic alternative fuel industry in general.

As stakeholders in this debate, we sincerely hope you will take the utmost care in considering effective solutions to a broken energy policy, and we suspect we would all benefit from increased competition among available technologies.

Sincerely,

Nicholas "Corky" DeMarco
Executive Director

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