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Testimony of Tom Buis

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Before the House Committee on Energy and Commerce Subcommittee on Energy and Power

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Chairman Whitfield, Ranking Member Rush, and Members of the Subcommittee on Energy and Power, thank you for the opportunity to present testimony on the Renewable Fuel Standard (RFS).

My name is Tom Buis, and I am the CEO of Growth Energy, the country's leading trade association of ethanol and renewable fuel producers. We represent 79 ethanol plants in 14 different states and 81 associate members involved in the value chain of producing ethanol. In addition, we have over 40,000 supporters in our grassroots group called Growth Force. Our plants produce ethanol from grain and are leaders in innovating second-generation fuels from sources like plant wastes, algae, and woody biomass.

We see the RFS as an overwhelming success that has created American jobs, revitalized rural America, injected much-needed competition into a monopolized vehicle fuels market, lowered the price at the pump, improved the environment, and made our nation more energy independent. That is a great record of accomplishment – one that I would call a resounding success and a modern American success story.

In particular, the RFS:

- Cracks the monopoly stranglehold petroleum-based fuels have on our transportation system, injecting much needed competition and providing drivers a choice at the pump.
- Provides a template to get safe and effective ethanol fuel blends like E-15 into the marketplace. When approving this fuel, the Department of Energy tested 86 different vehicles and drove them a total of 6 million miles, while the oil industry-funded study by the Coordinating Research Council (CRC) tested only 8 vehicles, including 2 that had known engine durability problems.
- Lowered the price at the pump by 83 cents a gallon in 2011 according to a recent LSU study.
- Supports 400,000 American jobs and $42 billion in annual economic activity.

These are real, tangible results that benefit every American today. But if some of the panelists had their way, we would throw all of this progress away so the oil industry can shut out competition and maintain its grip on the wallets of American drivers.

We see a different path forward for the United States. The Renewable Fuel Standard and higher-level blends of ethanol present the first real opportunity to create fuel diversity in the United States. It has been over 100 years since Americans had a choice in what they use in their automobiles. Now, the oil lobby has begun a sustained, multipronged campaign to kill our industry just as it ramps up and decreases oil's market share.

But the premise that America's newfound oil and gas resources mean we no longer need renewable fuels is simply not true. If the past is any indication of the future, more oil drilling has not done anything to reduce gas prices. Despite having record levels of domestic oil production, gas prices are still high and only going higher. This is because we don't control the cost of oil. The price of oil is still set in the global marketplace, and OPEC countries and Middle East politics still control the cost movements of oil. No matter how much we drill, we will still be subject to global events if we maintain the oil monopoly in this country.

With the success of the RFS, the United States is on the brink of energy independence and energy diversity. On behalf of Growth Energy, the biofuel industry, and America's farming communities, I urge you stay true to the Renewable Fuel Standard that is working and already showing results while still in its infancy.

The RFS has created competition in the vehicle fuels market. It has reduced fuel costs for American families, has freed the taxpayer from having to hold up the agricultural economy, and spurred significant investments in rural America. My testimony today covers eight key topics:

- How E15 is safe and ready for use
- The so-called "blend wall"
- The success of the Renewable Fuel Standard (RFS)
- How the RFS has revitalized rural economies
- How the RFS has helped livestock producers
- Biofuel production's limited impact on food prices
- The environmental improvements from the use of biofuels
- The national security benefits of the RFS

E15 is Safe and Ready for Use

When the RFS was first created, it was apparent that our nation's energy infrastructure and economy needed a wider market for renewable fuels. Even under fuel-use assumptions made in 2007 when the RFS was expanded, lawmakers knew higher-level ethanol blends like E15 would be required in order to meet the volumes originally set when the RFS was enacted. Unfortunately, the oil industry has decided to erect every legal, legislative, public relations, and regulatory hurdle possible to avoid moving to any fuel containing more than 10 percent ethanol. Instead of working to accommodate fuel choice for consumers, the oil industry has chosen to shut out competing fuels from their vertically integrated monopoly.

Because the oil industry continues to stifle fuel choice at the pump, consumers don't have access to E15. In the few dozen fueling stations where retailers have decided to offer E15 despite pressure by the oil industry, we have seen robust sales. This is because E15 is less expensive, safe for use, and high-performance.

Figure 1

Over four and a half years ago, Growth Energy led the way by filing a waiver with the U.S. EPA to allow the sale of ethanol blends up to E15 beyond the current 10 percent ethanol in today's current fuel supply. By moving the nation to E15, we would reduce the price at the pump, add 136,000 new American jobs, reduce greenhouse gas emissions, and could reduce the demand of gasoline from foreign oil by 7 billion gallons. In addition, E15 would reduce the use of aromatics in gasoline, which are petroleum-derived fuel components known to harm human health.

When Growth Energy filed the original waiver for E15 with the U.S. EPA, we sought approval for all gasoline-powered engines and provided ample data to demonstrate this fuel's safety and efficacy. The Environmental Protection Agency (EPA) chose to narrow their specific testing by putting E15 on a path for approval for only 2001 and newer vehicles because they concluded that finding vehicles with low enough mileage to run a lifetime of miles for testing was extremely difficult. And, in fact, more testing was done on E15 than any other fuel ever approved by EPA under the

Clean Air Act, with the Department of Energy (DOE) testing 86 vehicles for a total of 6 million miles. DOE's testing found absolutely no issues with emissions equipment or with engine durability. With DOE's data in hand, the EPA ultimately approved our waiver in January, 2011 for all 2001 and newer passenger vehicles – over 80 percent of the vehicles on the road today. In fact, Ford, General Motors, and Volkswagen have already started labeling their vehicles as approved for E15 – General Motors for model years 2012 and 2013, Ford for model year 2013, and Volkswagen starting with model year 2014. Further, NASCAR has been running on E15 for 3 years for a total of 4 million miles in some of the world's toughest driving conditions and they have seen an increase in horsepower and no mileage loss suggesting that E15 is more than safe for use in everyday automobiles.

The only studies questioning the safety of E15 were conducted with no scientific basis whatsoever and used dubious technical assumptions. Like recent advertisements levied by the oil industry, little regard seems to be given to a factual underlying basis. For example, an oil industry funded-study of E15 by the Coordinating Research Council (CRC) is significantly flawed and DOE itself publicly released a direct critical response entitled "Getting It Right: Accurate Testing and Assessments Critical to Deploying the Next Generation of Auto Fuels" (http://energy.gov/articles/getting-it-right-accurate-testing-and-assessments-critical-deploying-next-generation-auto).

First, the CRC was extremely limited – only testing eight vehicles while the DOE tested 86. Second, CRC failed to test the engines on E10, the standard consumer gasoline found throughout the United States. Third, CRC only tested 3 of the 8 vehicles on ethanol-free gasoline and even one of those failed. Fourth, and perhaps most disturbing, CRC chose two engines that had existing durability issues – one of which had even been recalled. Finally, the test used was specifically designed to overly stress the engine valve train, so as to be unrealistic with real-world conditions. To sum up their findings, DOE said, "We believe the [CRC] study is significantly flawed."

It has also been argued by the oil lobby that gas mileage takes a major hit if E15 is used. This is not true. Any mileage loss is negligible, and any reduction is substantially offset by price reduction of fuel. Further, it is worth noting that refiners often make sub-octane gasoline, which is cheaper, poorer quality gasoline, because they can utilize the high octane and high performance benefits of ethanol to meet minimum octane standards.

It should be made clear to all on this Committee that E15 is a voluntary choice both for retailers and for consumers. Furthermore, fuel retailers who follow the misfueling mitigation rules should not face any significant incremental risk for offering E15. In addition, the decision to offer E15 is voluntary and based on a retailer's assessment of return on invested capital, customer mix, and retail station configuration.

We expect retailers to begin to adopt E15 because it is good business. At the close of business on Friday, ethanol was trading 65 cents lower than gasoline, and the upcoming corn harvest could push the spread to over a dollar. Because of this steep discount, increasing the ethanol blend in gasoline will save consumers even more and will give retailers offering E15 or higher level ethanol blends an edge in marketing to consumers, who largely base their fuel choice on price and performance. At a time of record gas prices, it only makes sense for refiners to comply with the law and allow sale of E15 and higher ethanol blends in the fuel marketplace as renewable fuels ensure competition in the marketplace.

For small and marine engines, and any other gasoline engine other than 2001 and newer passenger cars and light duty vehicles, the law explicitly prohibits E15. Further, the EPA has issued a specific rule to mitigate consumer misfueling, including a label specific to E15. In fact, ethanol is the only fuel that requires a warning label at the pump. Additionally, ethanol is the only ingredient labeled in gasoline even though gasoline is a chemical cocktail which contains approximately 200 different components.

Therefore, because E15 is a highly-tested, legal, cheaper, and better quality fuel than gasoline, the United States will benefit from its continued rollout across the nation.

The So-Called "Blend Wall"

Recently, the oil industry has falsely blamed the Renewable Fuel Standard as the cause of higher gasoline prices. These stories revolve around a false premise – that prices for a RFS compliance mechanism demanded by the oil industry when the RFS was first passed into law – Renewable Identification Numbers (RINs) – are responsible for the increase in domestic gasoline prices. In reality, these charges are clearly an attack organized by the oil industry to keep their stranglehold on America's fuel supply, eliminate consumer choice at the pump, and eliminate the competition from domestically produced renewable fuels.

It is a charge that is also objectively false. RIN prices are not the cause of higher gas prices. RINs for ethanol are provided free of charge to oil companies when they blend ethanol. Any added value comes from trading RINs in an opaque marketplace between oil companies. Ethanol has consistently been trading and will likely continue trading significantly cheaper than gasoline. At the close of business on Friday, wholesale ethanol was 65 cents less expensive than wholesale gasoline.

Yet, RIN prices are increasing because of refiners' unwillingness to blend ethanol and instead are willing to pay a premium specifically **not** to blend additional ethanol, even though it is cheaper in price. This is a business decision made by refiners, **not** by ethanol producers. Put simply, the blend wall is a self-inflicted wound because the oil industry is afraid of competition. Meanwhile, oil companies are currently making record margins. EPA clearly stated there is not a shortage of RINs for 2013. In fact there are over 2.6 billion carry-over RINs from 2012.

The simple solution to this oil industry created problem is to require the higher level ethanol blends such as E15. As soon as the oil companies adopt the higher blends, plenty of RINs will become available. The oil industry has erected hurdle after hurdle to defeat E15 and mid-level ethanol blends and continue to fight to try to eliminate the RFS. By refusing to sell higher ethanol blends, the oil companies only maintain the status quo: high gas prices for the consume, and record profits for the five largest oil companies.

The RFS continues to call for increasing amounts of biofuel to be blended into the country's fuel supply. However, there are market limitations put in place by the oil industry effectively "capping" the amount of renewable fuel that can be blended. This creates overproduction in a saturated fuel market.

Many have termed this the "blend wall," and breaking the blend wall is vital to the success of the RFS. Ethanol is consistently trading at a significant discount to wholesale gasoline while yet again oil has climbed over $100 a barrel and gasoline is climbing toward $4 a gallon. It makes little sense to prevent

E15 and even higher ethanol blends into entering the market, unless the objective is to benefit the oil industry. With the goal of the RFS to reach 36 billion gallons of renewable fuel by 2022, it was clear at the outset of the authorizing legislation in 2007 (EISA 2007) that higher blends of ethanol would be required regardless of the level of fuel consumption.

In fact, the Volumetric Ethanol Excise Tax Credit (VEETC) was designed to provide a financial incentive to provide ethanol blenders – not ethanol producers – to blend ethanol and make sure the blend wall didn't occur. The primary recipients of this incentive were integrated oil companies. VEETC paid out tens of billions of dollars to help these integrated oil companies upgrade their distribution network to meet the future need for higher inclusion rates of ethanol. Obviously they did not spend the proceeds on infrastructure upgrades to allow for higher blends at retail stations.

Success of Renewable Fuel Standard (RFS)

The RFS is the bedrock federal policy that has spurred billions of dollars of investment in America's cutting-edge biofuels industry. It has been the primary driver behind the only large-scale, commercially-viable alternative to regular gasoline – ethanol. Because of the forward-looking, long-term nature of the policy, the United States leads the world in innovation in biofuels, attracting investment from around the world. Today, because of the RFS, there are more than 200 ethanol biorefineries across the country and dozens of projects that will make advanced or cellulosic biofuels.

The RFS has provided U.S. drivers with a vehicle fuel that is made up of 10 percent biofuel, and that fuel blend is available in all 50 states. If the U.S. ethanol industry were a foreign suppler, only Canada would supply the U.S. with more fuel than the U.S. ethanol industry. This newfound biofuel supply is a key component to reducing our dependence on foreign oil by 25 percent since 2005.

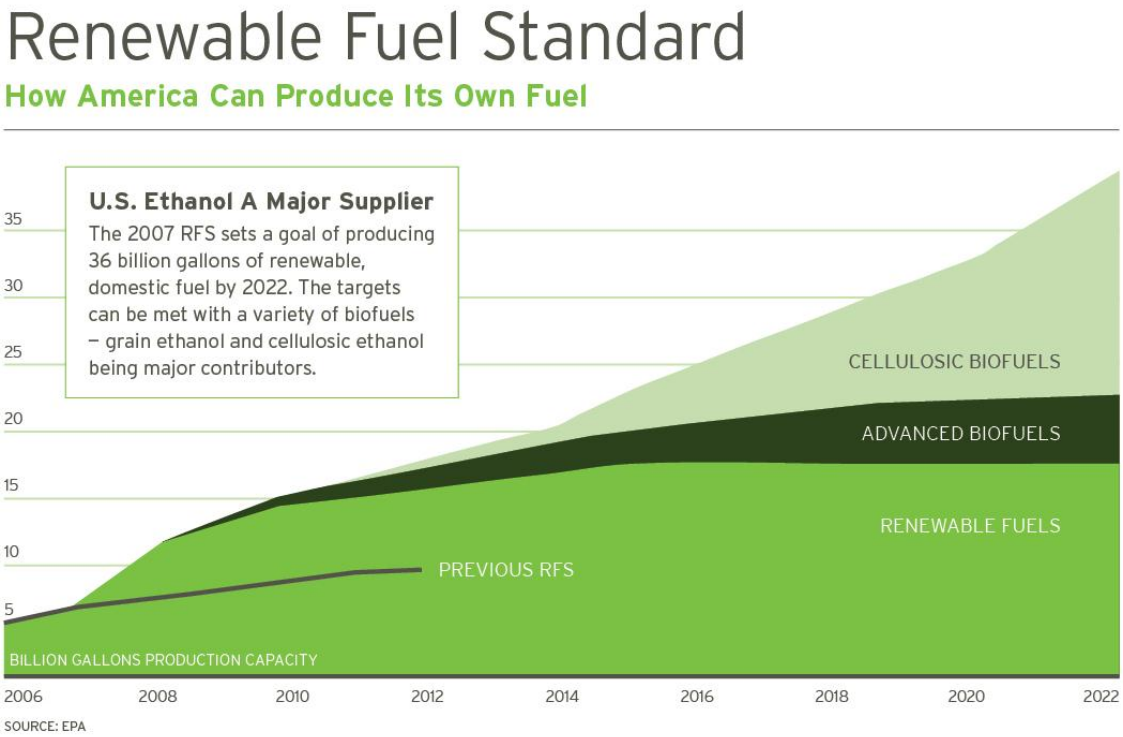

Figure 2

Advanced and cellulosic biofuels research, investment, and development are occurring right now. Growth Energy has several members who are producing these fuels because of the market signal provided by the RFS. These include:

- A cellulosic ethanol plant that is poised to produce the first commercially available cellulosic biofuel from corn stover in early 2014.
- A first of its kind algae bioreactor utilizing carbon dioxide and waste water that has operated for over two years.
- A project to utilize pine beetle killed wood as a fuel feedstock.
- A project to convert the fiber in corn kernels into cellulosic ethanol.
- A process to use grain sorghum and biogas to produce an advanced biofuel.

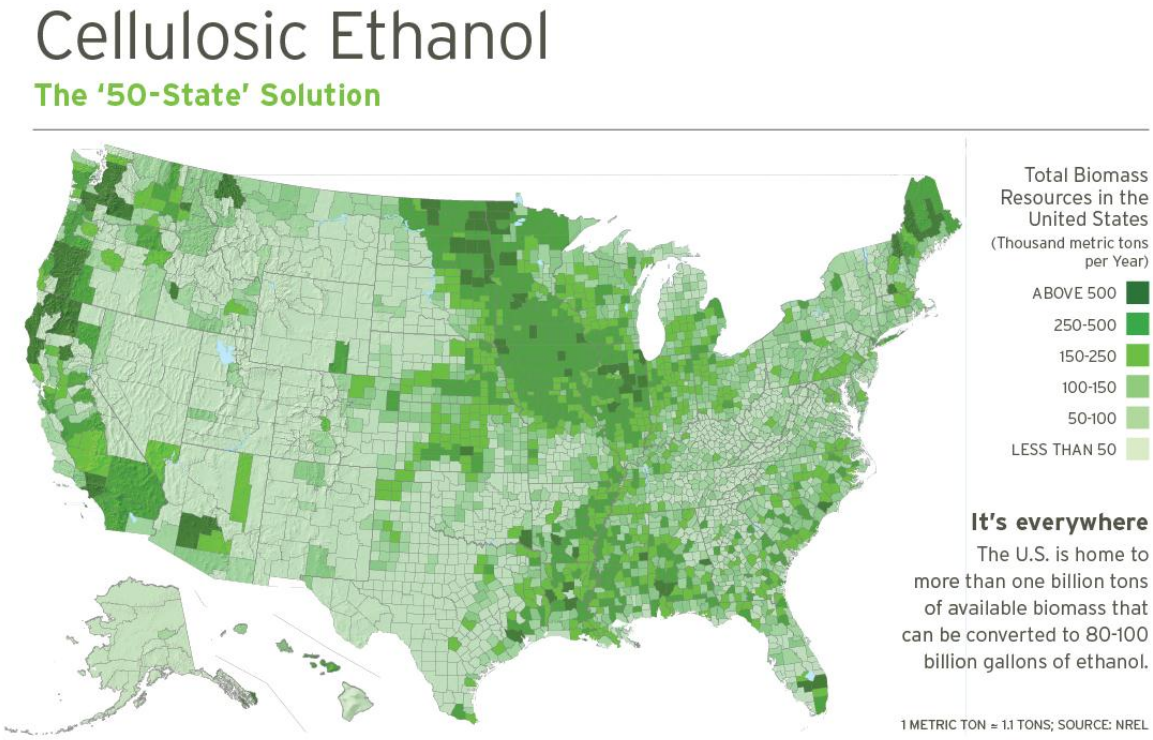

Figure 3

These exciting projects are just among our membership, and many more are taking place around our nation. Advanced and cellulose fuels that are now under development would provide benefits and economic opportunity to every state in the country. Any change to the RFS would kill investment in any advanced or cellulosic fuel project. Changing the RFS would put at risk an entire American-made, American-built industry at a time we can least afford to lose jobs. Also, amending the RFS would put at risk future research and development of advanced and cellulosic biofuels, which occupy the largest portion of the RFS. We are just 5 years into a 15-year plan, and we are just three years removed from when the Environmental Protection Agency finalized RFS regulations. Yet there are those in the oil industry who would look at the minor challenges we have faced in the short-term and embellish them in hopes of killing a rising competitor. Any changes to this policy will have devastating effects, and big oil seeks to exploit this fact to the benefit of its monopoly.

How the RFS Has Revitalized Rural Economies

The RFS has a tremendous positive impact on rural communities and the agriculture sector. Net farm income grew by 51 percent from 2005 to 2011 due in part by the RFS. The RFS also supports 400,000 jobs and over $40 billion in economic activity.

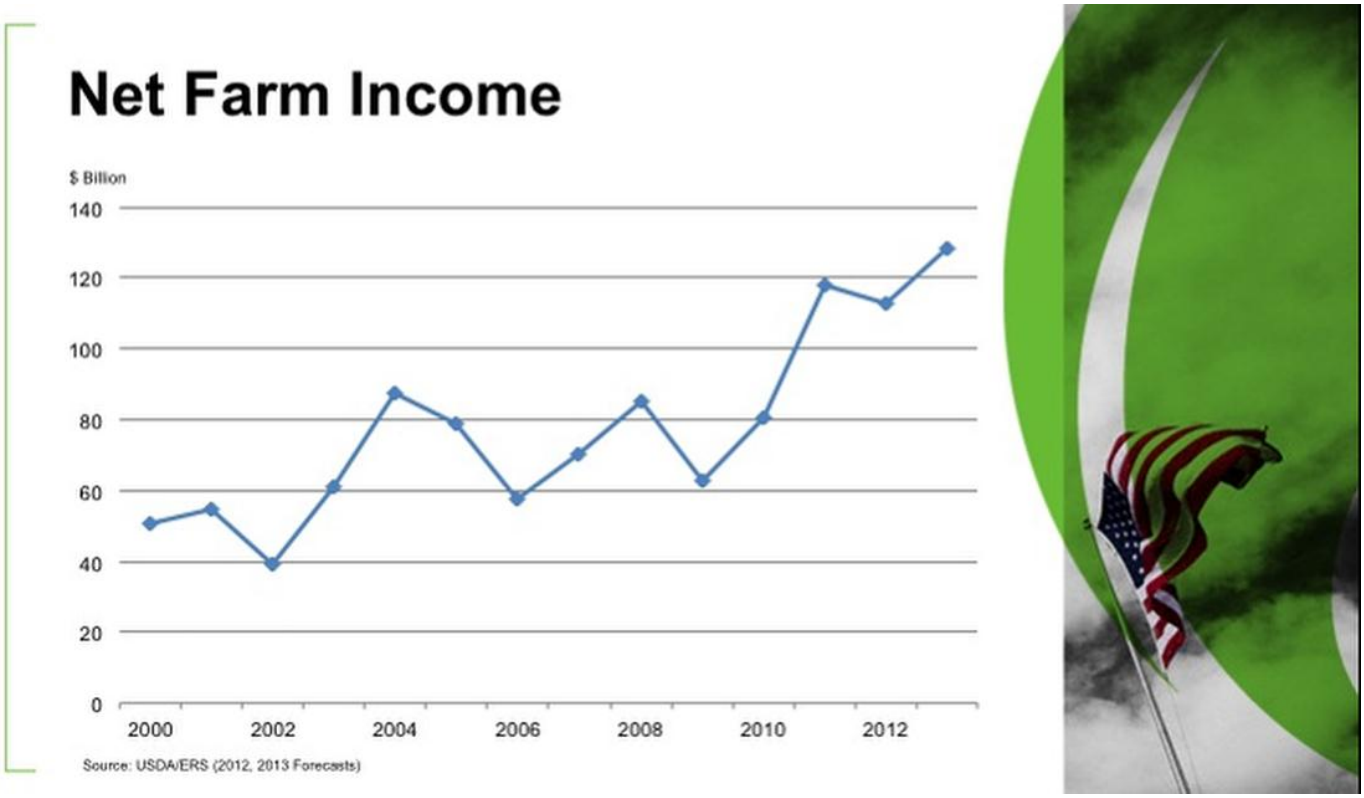

Figure 4

In addition, renewable fuels helped create a balance in supply and demand for crop commodities that alleviated the need for most forms of government payments and created a market-based, rather than a government-based, agricultural economy. This in turn drives farmers to utilize technology and soil resources to produce crops. According to USDA, since 2004, planted acres of corn increased from 80.93 million acres to 97.28 million acres for 2013. Harvested corn acres increased from 73.63 million acres in 2004 to 87.38 million acres in 2012. Similarly, production drives technology and efficiency – since 2000, corn yields went from 137 bushels per acre up to 153 bushels per acre in 2010. Likewise, taking an example from the poultry industry, USDA shows that turkey production was $2.89 billion in 2004 increasing to $4.99 billion in 2013. These figures prove the RFS has, and will, continue to drive growth across American agriculture.

Like any commodity, the market responds to natural forces such as supply and demand. The market for corn is no different. While the RFS created additional demand for corn, more importantly, it drives additional corn production that otherwise would not occur. For decades, farmers were paid far less than the price of production for their corn, and the American taxpayer heavily subsidized the price. Last year, ethanol critics alleged the RFS caused prices to rise more than $8 per bushel, when, in fact, the price increase was a direct result of one of the worst droughts in our nation's history. In fact, those purchasing corn could have locked in prices for under $5 per bushel as late as June 2012. On Friday, the price of corn was $5 per bushel and actually was trading under $5 for part of the day. The RFS has the flexibility built in that allows states to waive the RFS in cases of severe economic harm. Twice, states petitioned the EPA to waive the RFS and both times the petitioners failed to make the case.

A final point that should not be overlooked concerns the taxpayer savings from reduced farm program payments that occurred as the RFS was implemented. According to data from the Congressional Budget

Office, the average federal farm program payments to corn producers averaged over $4.4 billion per year for the 2002 – 2006 crop years. Corn payments averaged about $1.9 billion per year from 2007 to 2011, a reduction in taxpayer costs of almost 57 percent.

How the RFS has Helped Livestock Producers

Biofuel production only removes the starch from the corn. The protein, fiber, and oil are returned to the animal feed supply in the biofuel feed co-product known as distiller's grains. Distiller's grains amount to one third of the corn used in ethanol production. According to USDA, 80 percent of the calories from the decline of corn-based livestock feed are returned to the livestock industry in this form. Distiller's grains also replace soybean meal in feed rations, meaning there is less demand for soybeans, requiring fewer acres planted to soybeans.

Distiller's grains feed cattle, hogs, poultry, and other animals around the world. American farms can create food and fuel. In fact, the ethanol industry produced 38.8 million tons of distiller's grains just last year, the weight equivalent of almost 400 aircraft carriers.

American corn growers demonstrated they have more than enough capacity to satisfy all demand for livestock feed, exports, and ethanol. Because of new technology that allows farmers to grow more crops on fewer acres of land, corn farmers are poised to increase plantings even more to take advantage of the growing market for renewable fuels. On July 11, 2013 USDA pegged this year's corn crop at 14 billion bushels.

One of the biggest myths perpetuated by those who dislike the RFS is that 40 percent of the corn crop goes to biofuels. This is not only wildly false, it is completely misleading.

As the following chart shows, only 17.5 percent of net corn acres are used for renewable fuels. Only the starch is used for ethanol. Distiller's grains displace corn and soybean meal. Corn yields are three times that of soybean yields.

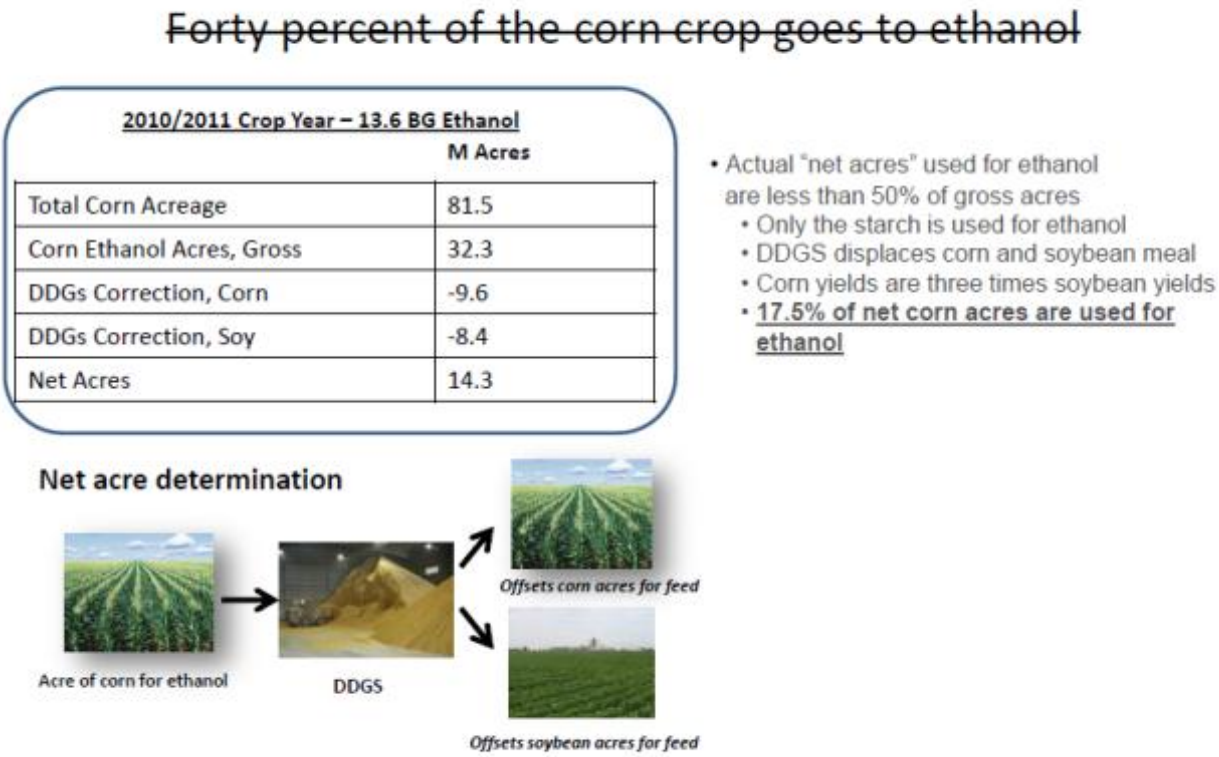

Figure 5

In the fall of 2012, Growth Energy put together significant comments to the EPA in response to requests to waive the RFS from various state governors. In those comments, we demonstrated that waiving the RFS would jeopardize farmers, rural jobs and economies and would increase consumers' prices at the pump. Specifically, we estimated that waiving the RFS could result in up to $7.8 billion in lost revenue and 8,300 jobs lost in ethanol producing areas. Additionally, waiving the RFS would result in a cost of $7.5 billion a year to consumers in higher fuel costs and between a $5.8 and $27 billion loss to American farmers. Finally, companies already spent billions of dollars building facilities, harvesting cellulosic materials and planning on the certainty of a fifteen-year RFS program as they move to the next generation of biofuels.

In fact, under the most recent corn usage data from USDA, it is estimated that the corn demand lost from 2011 to 2012 due to the drought was far greater for ethanol than for livestock feed. The demand lost from the ethanol industry was over 350 million bushels from 2011 to 2012, while the demand lost from animal feed was less than 100 million bushels. And with a 14 billion bushel crop projected this year (a 31 percent increase compared to last year's 10.7 billion bushel crop), corn demand for animal feed is projected to increase by 16 percent to 5.2 billion bushels, while corn demand for ethanol production is projected to increase by 5 percent to 4.9 billion bushels.

Despite overwhelming data, some leaders in the livestock and poultry industry blamed ethanol for rising feed costs and declining profit opportunities throughout the livestock production sector. The difference

between the total value of U.S. livestock and poultry production and the cost of feed is increasing, not declining. In fact, for the 7 years prior to the enactment of the RFS, the margin averaged $83.4 billion per year. In the 7 years since RFS became law, the margin increased by nearly 18 percent to an average of $98.2 billion per year.

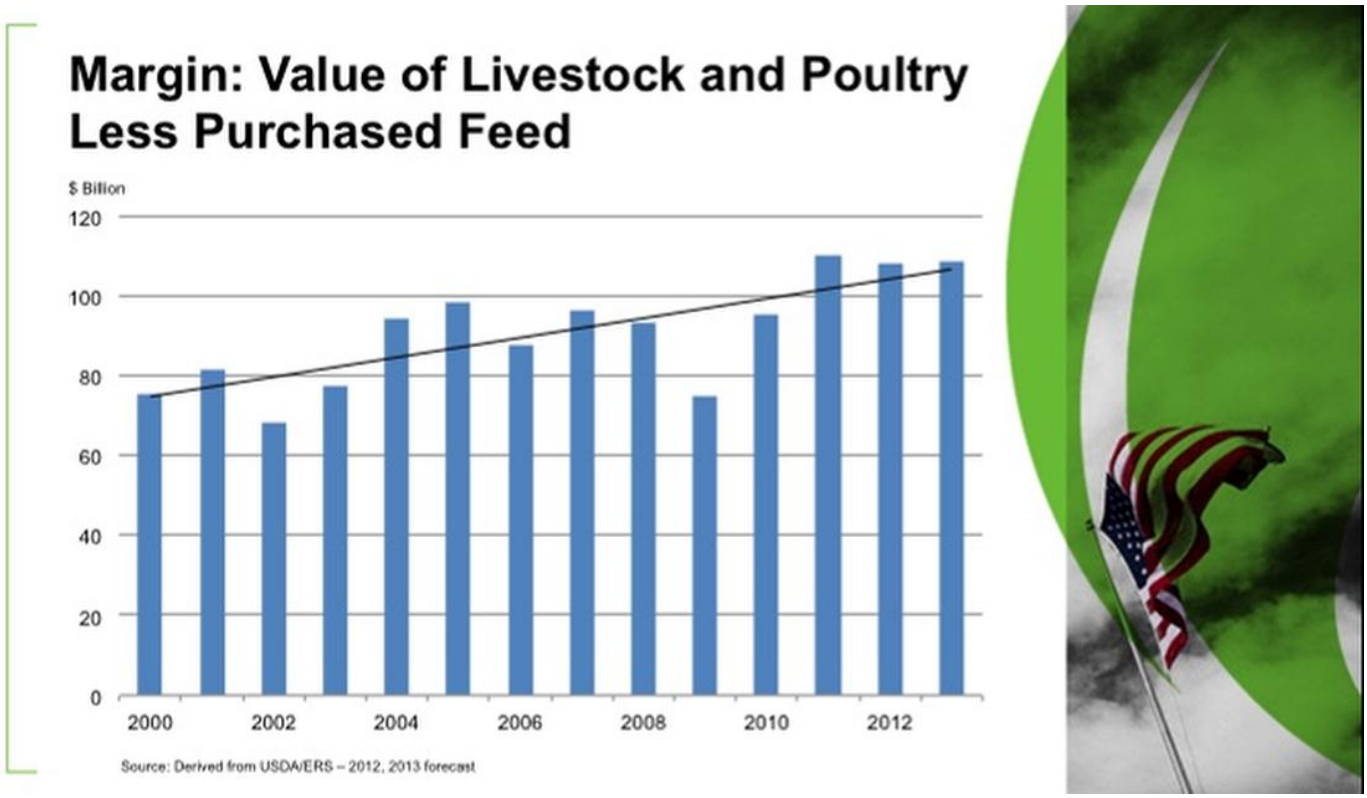

Figure 6

This chart shows what happened to the production of the four major livestock categories – beef, pork, broilers, and turkey over the 2003-14 period. To its credit, the livestock industry became far more efficient in managing their animal feeding operations and contrary to the claims of some, livestock production has actually increased by about 5 billion pounds over the period charted.

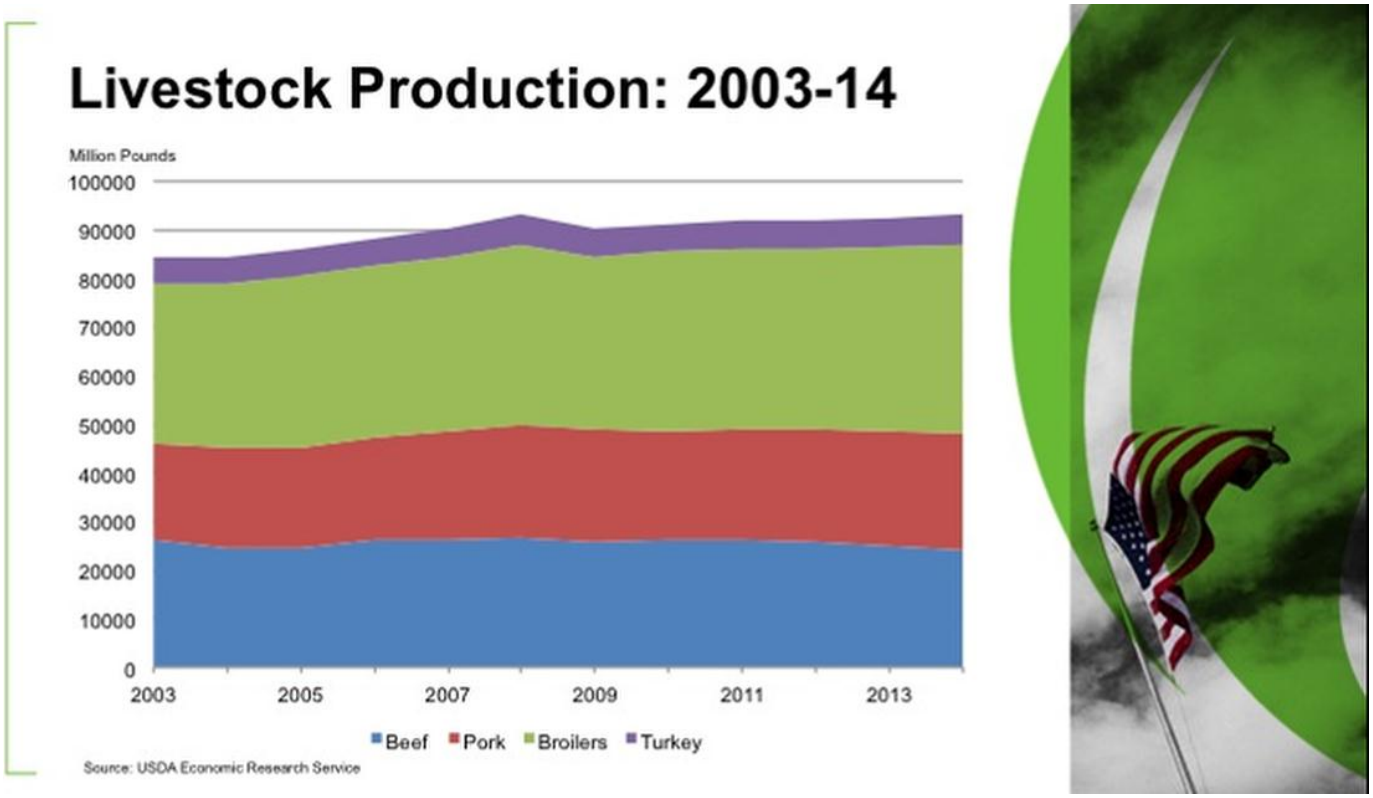

Figure 7

When prices are viewed in conjunction with production, one must question the veracity of the statements by those who suggest the RFS is causing the demise of the U.S. livestock industry. Not only has livestock production increased since the enactment of the RFS, but prices for beef, pork, broilers, and turkey also rose compared to the years prior to the RFS.

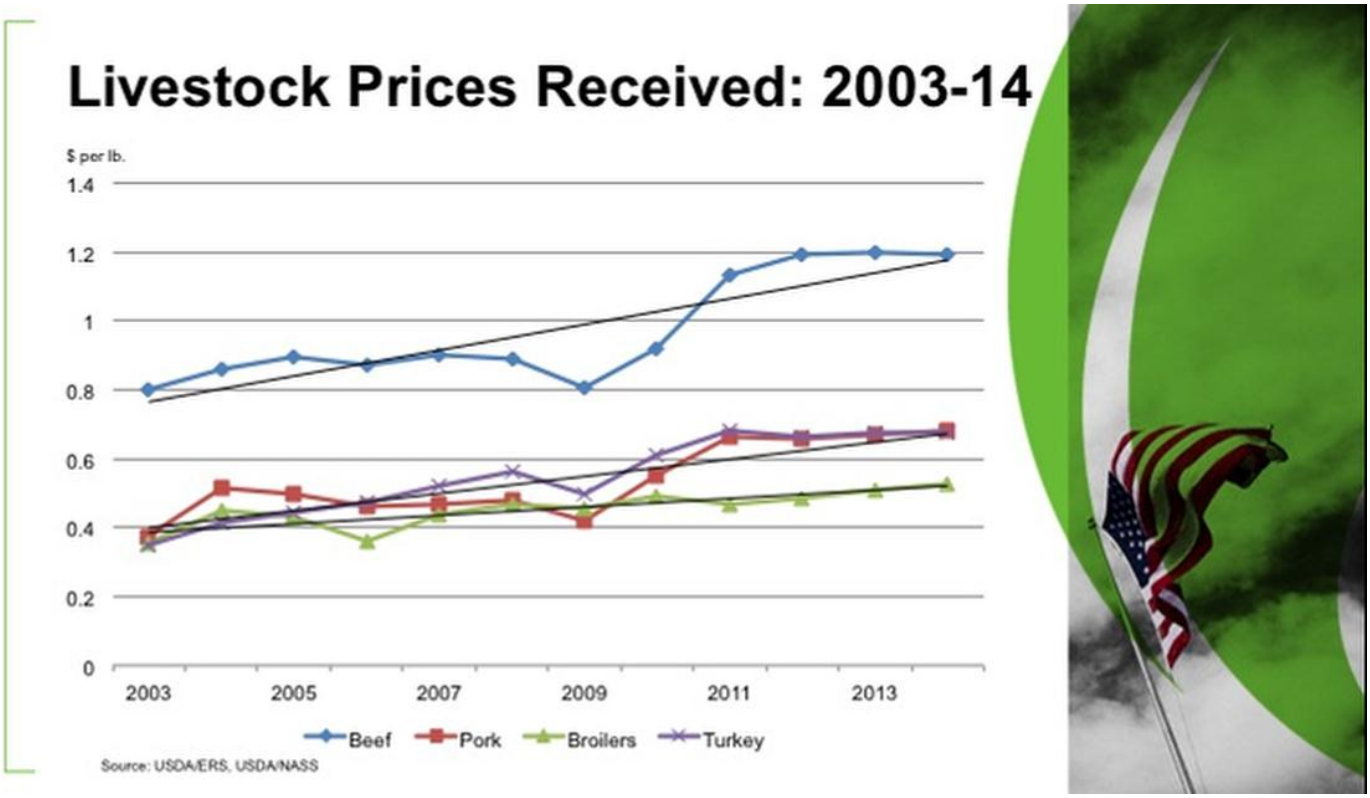

Figure 8

To summarize these charts: livestock production is up, livestock prices are up, and the margin between livestock values and the cost of feed grew appreciably all since the RFS was enacted. This hardly paints a picture of an economically distressed U.S. livestock sector.

Biofuel Production's Limited Impact on Food Price

There are many factors that impacted food prices, including crop production shortfalls and increased demand overseas. On June 26, 2013, Dr. Joseph Glauber, Chief Economist at the United States Department of Agriculture testified before the Subcommittee on Energy and Power of the House Committee on Energy and Commerce that the total impact of changes in the corn market on retail food prices was small. This is consistent with prior analysis done by USDA, the World Bank, and many other independent groups.

Countless academic, economic, and government studies disprove the misplaced notion that biofuels production increased the cost of food. These studies instead found that record-high oil prices, Wall Street speculators and the high costs of manufacturing, packaging, and transportation have far more impact than ethanol on everyday grocery prices. There is no substantial link between ethanol production and grocery prices. Despite the proven facts, misinformed critics still actively try to stoke illegitimate fears that demand for ethanol will somehow drive up food prices.

Corn is only a fraction of overall food and grain costs. For every $1 spent at a grocery store, 85.9 cents go to marketing, which includes labor, transportation, energy, and packaging costs. Just 14.1 cents are associated with farm costs, and of that, only 3 cents are associated with the value of corn. The USDA forecasts that the price of food will increase by 3.5 percent in 2013, slightly above historical inflation

averages of approximately 3 percent per year. Food prices rise when oil prices rise. The price of food is driven up by transportation and packaging – not by renewable fuels like ethanol. Food processing is energy intensive, and packaging frequently uses petroleum-based raw materials. Transporting food worldwide also requires large amounts of fuel and, subsequently, large amounts of oil.

Figure 9

Contrary to the unsubstantiated opinions of those who would repeal the RFS, the chart below graphs the Consumer Price Index from 2005 to May, 2013 for all items, food, and gasoline. This clearly demonstrates that gasoline prices play a far bigger role in rising consumer prices than food costs.

Figure 10

Since 2005, the CPI for food increased about 18.3 percent, roughly in line with the CPI for all items including food and gasoline which rose by about 16 percent. The index for gasoline increased by nearly 40 percent, and in recent years, the trend has followed a very steep upward path. Interestingly, this is occurring as we increased the amount of ethanol blended into our gasoline supply. Every credible analysis concluded that consumer gas prices would be even higher if it were not for ethanol holding prices down.

The following three charts that graph the prices spreads between retail, wholesale, and farm values help provide the answer. Farm values for choice beef, pork, and broilers – the primary livestock products demanded by consumers – rose slightly over the last decade. For the most part, wholesale values paralleled the upward movement of farm values. However, the retail to wholesale/farm price spread increased at a much faster rate.

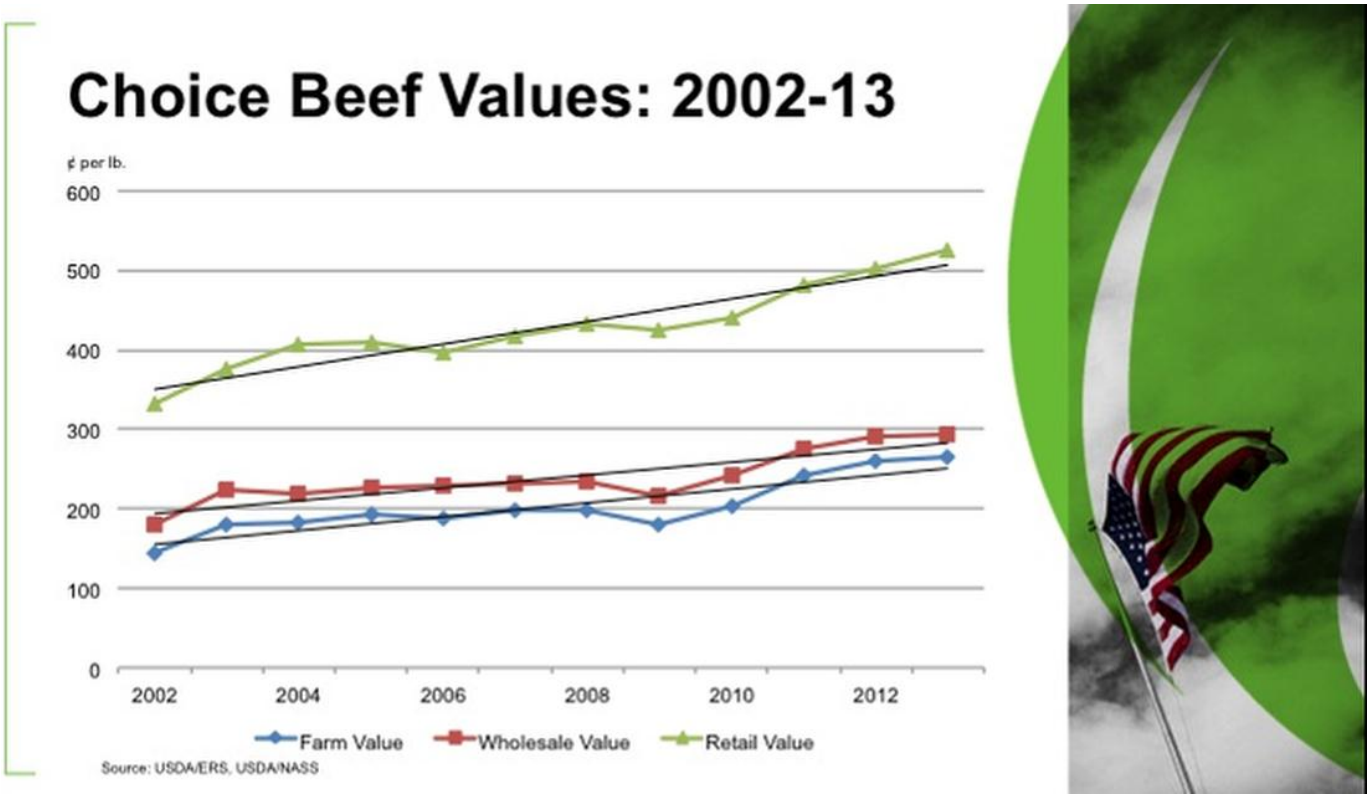

Figure 11

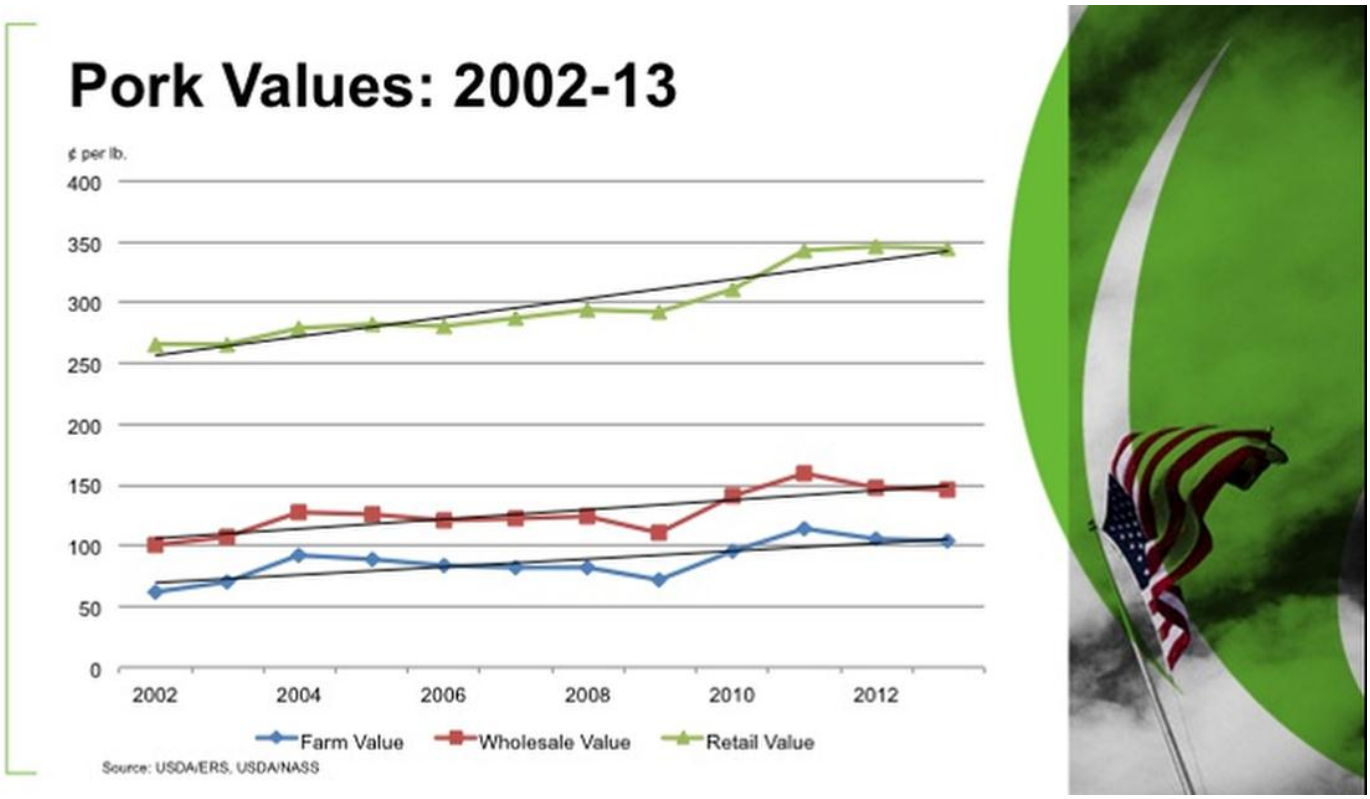

Figure 12

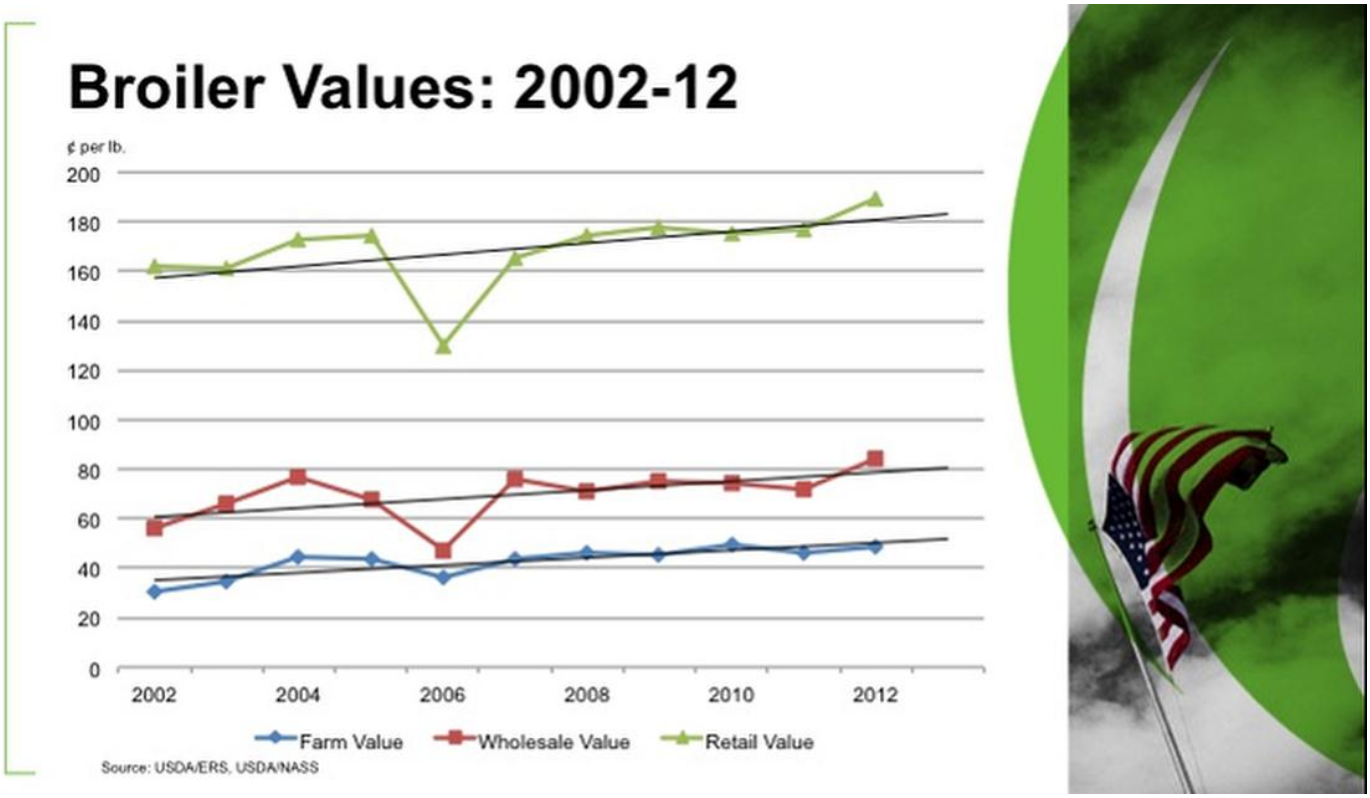

Figure 13

The primary cause of increased consumer prices rests not with livestock producers or those who process their products, but with the same food companies who complain about the RFS. According to the World Bank, over 50 percent of the global increase in food prices is due to energy costs, and for the U.S. the increase in the retail price spreads suggest that either energy costs and other non-farm cost factors are passed on to consumers or retained by the food companies as increased profit margins.

The takeaway conclusion from the independently generated World Bank report: certain actors are taking advantage of rising food prices which are, in turn, caused by oil price increases.

Environmental Benefits of Biofuels

The RFS is one of the most successful energy policies of the last forty years. It is reducing greenhouse gas emissions, reducing our dangerous dependence on foreign oil, and creating American jobs. The EPA estimates that by 2022, the RFS will reduce greenhouse gas emissions by 138 million metric tons or the equivalent of taking 27 million passenger vehicles off the road. In particular, studies show that traditional corn ethanol reduces greenhouse gas emissions as much as 59 percent compared to gasoline (*Improvements in Lifecycle Energy Efficiency and Greenhouse Gas Emissions of Corn-Ethanol*, Liska et al., which can be found here: http://onlinelibrary.wiley.com/doi/10.1111/j.1530-9290.2008.00105.x/abstract).

As we move to the next generation of biofuels, greenhouse gas emissions will be even further reduced. Recent studies show that using switchgrass and corn stover to produce cellulosic ethanol will reduce greenhouse gases as much as 94 percent and over 100 percent respectively (*Energy and Greenhouse Gas Emission Effects of Corn and Cellulosic Ethanol with Technology Improvements and Land Use Changes*,

Wang et al., which can be found at http://www.sciencedirect.com/science/article/pii/S0961953411000298).

The long-term certainty of the RFS drove significant investment in the next generation of biofuels and new technologies both in ethanol production and in agriculture. By increasing yields, increasing efficiency, and deploying new technologies, ethanol and agriculture production continues to soften its footprint on the environment – particularly as fossil fuels like crude oil and natural gas become harder and harder to extract. Just in the past four years, we saw significant results – we get more ethanol from each bushel of corn: 2.82 gallons/bushel in 2012 vs. 2.78 gallons/bushel in 2008, using less water: 2.70 gallons of water per gallon of ethanol in 2012 vs. 2.72 gallons of water per gallon of ethanol in 2008, and are using less energy to produce a gallon of ethanol: 23,862 BTU/gallon in 2012 vs. 26,208 BTU/gallon in 2008 (Mueller and Kwik, *2012 Corn Ethanol: Emerging Plant Energy and Emerging Technologies*, http://www.erc.uic.edu/PDF/mueller/2012_corn_ethanol_draft4_10_2013.pdf).

Additionally, some of these newer technologies will be "bolted-on" to existing biofuel production facilities to take advantage of current power and resource streams – maximizing efficiency and driving greenhouse gas emissions even further down. Only by keeping this policy in place will we continue to see this type of drive towards more efficient systems to benefit our environment.

National Security Benefits of the RFS

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 chains. During the last decade, the price of oil nearly quadrupled, going from roughly $25 per barrel in 2001 to over $100 per barrel today. That price disruption 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 $3.67 per gallon today. Despite significant increases in domestic oil production, we still import millions of 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).

We also spend billions of dollars each year to protect oil supply routes in the Middle East – these costs could be dramatically reduced if we turned to more home-grown renewable ethanol. As an example, according to RAND, the U.S. spends between $67 billion and $83 billion per year protecting global oil interests ("Imported Oil and U.S. National Security", RAND Corporation, 2009). 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 oil to China rather than exporting to the United States (http://www.northerngateway.ca/). Even 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 have seen Iran choke off the Strait of Hormuz, workers strike in Venezuela, pipelines burst, massive oil spills off our shores, oil-laden rail cars destroy small towns, and the list goes on – all of these situations 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 watched refineries being 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.

Conclusion

The RFS is a policy that is working. It is working to the benefit of the American people, and to the detriment of the age-old big oil monopoly. To implement the suggestions of some of the witnesses today and repeal or modify the RFS would effectively cede control of all transportation fuels to the oil industry. This would be a radical and poorly advised decision – one that history would judge as a colossal mistake.

The key to reducing prices at the pump is to inject competition in transportation fuels, and the RFS does that. If you want to reduce greenhouse gas emissions, the only statute that has required GHG reduction is the RFS. If you want to expand American made energy, the RFS does that. If you want to reduce foreign oil, the RFS does that.

The bottom line is that this is a policy that benefits all Americans. With oil prices yet again well over $100 a barrel and gasoline yet again climbing to $4 a gallon, we can no longer afford to be 90 percent dependent on fossil fuels.

I thank the Subcommittee for allowing me to testify and look forward to any questions.