National Corn Growers Association

Testimony of

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Overview of the Renewable Fuel Standard: Stakeholder Perspectives
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Chairman Whitfield, Ranking Member Rush and members of the Subcommittee, thank you for the opportunity to testify about the impacts of the Renewable Fuel Standard on the agricultural sector.

My name is Pam Johnson. I am a 6th generation farmer from Floyd, Iowa where I raise corn and soybeans with my husband and two sons. I currently serve as President of the National Corn Growers Association (NCGA). NCGA was founded in 1957 and represents over 39,000 dues-paying corn growers. NCGA and its affiliated state associations work together to help protect and advance corn growers' interests. Corn fuels nations around the world, as a food ingredient, a feedstock, a fuel, a fiber and ingredient in building materials and beyond. It is possibly the most versatile crop in the world and demand is at an all-time high.

The Renewable Fuel Standard (RFS) is a critical piece of our nation's energy policy. Since its enactment in 2005, it has created jobs, lessened our dependence on foreign oil and improved the

environmental footprint of our nation's transportation fuels. In 2012 alone, the RFS supported more than 300,000 jobs across the country, displaced the equivalent of 465 million barrels of imported oil, and lowered the price consumers paid at the pump by at least 89 cents per gallon. It is also spurring innovation and helping drive the development of advanced and cellulosic biofuel facilities. In short, it is doing exactly what it was designed to do – spur the development of a significant alternative to petroleum that ignites economic development for those who produce these new fuels and for those who use it.

Corn farmers have responded to the increased demand of ethanol from the RFS by producing more corn on roughly the same amount of land. In the last 30 years, corn production has improved on all measures of resource efficiency, by *decreasing* per bushel: land use by 30 percent, soil erosion by 67 percent, irrigation by 53 percent, energy use by 43 percent and greenhouse gas emissions by 36 percent.[1] All of these improvements have continued despite the increased demand of corn for ethanol.

This testimony will provide an overview of the manner in which the Renewable Fuel Standard has positively impacted the agriculture sector by creating jobs and promoting rural development, reducing greenhouse gases and allowing our nation to grow our energy at home.

FOOD PRICES AND FOOD SECURITY

There is no credible evidence to support the notion that the RFS is adversely affecting consumer food prices. The RFS has little direct impact on agricultural commodity prices; because the farm

[1] "Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States" Field to Market: The Keystone Alliance for Sustainable Agriculture, July 2012.

value of commodities represents such a small share of retail food prices, the impact of the RFS itself on food prices is indiscernible. That said, higher energy prices as a result of increased petroleum costs play a much larger role in consumer food prices. In 2013, the World Bank found that nearly two-third of the increase in food prices since 2004 are the result of the increased price of crude oil.

According to the USDA, across all commodities, the farm share of the food dollar is 15.5 cents for 2011. This is below the average of 16.1 cents per dollar for the time period 1993-2011. Because the farmer is getting a smaller percent of the food dollar, it is unlikely that commodity prices alone or a factor like the RFS are large contributors to food price inflation.[2]

Commodity prices, not just corn, have increased since the mid-2000s. These price increases are a result of several factors—increased corn demand for fuel ethanol being only one of those factors. For commodity producers, this increase has not been all profit. In fact, cost of production has increased as a result of higher energy costs, which has significantly impacted a producer's break-even point. At the beginning of the last decade, corn producers where facing significantly depressed prices averaging $2 per bushel. Through the 2002 farm bill, Congress responded to this economic disaster in rural America to help commodity producers survive tough times. At the same time, livestock producers benefited considerably from these significantly below market prices. However, the prices received for livestock products were considerably lower during this period as well. As commodity prices have rebounded in the last five years, the Federal Government has seen significant savings in the commodity title of the farm bill. Livestock producers, like grain farmers, are "price takers" in that they sell a commodity and have to accept a market price. Meaning no single producer is large enough to move the market, nor are they

[2] http://www.ers.usda.gov/data-products/food-dollar-series/food-dollar-application.aspx.

able to pass increased costs of production onto the next player in the marketing chain. Meat production has expanded in almost every sector since the passage of the RFS. Fortunately for livestock producers, during this same period of increased feedstuff costs, the U.S. has been expanding export markets for meat products. Increased exports have driven up the cost of meat and livestock and thereby covered much of the higher costs of production.

While the cost of production, partially due to higher feedstuff costs, has risen, a more likely explanation of the increased food costs are factors outside of agriculture. Specifically, rising diesel fuel and labor costs have greatly impacted food prices. All food sold in a grocery store is delivered by truck. In 2007, the average price of a gallon of diesel fuel was $2.88; by 2012 that had increased to $3.97, a 37.8 percent increase (Chart 1). Likewise, while U.S. labor wages may have stagnated due to the on-going recession, other labor costs, most notably health care has not. Unlike farmers, meat packers, wholesalers and food retailers are not "price takers" and increased costs of production can more easily be passed onto consumers. As the USDA data cited above indicates, the vast majority of the retail food dollar arises after products leave the farm.

The lack of any perceptible relationship between the RFS and retail food prices is further illustrated by the fact that the average American household spends less of its disposable income on food today than it did prior to existence of the ethanol industry and the RFS. Since enactment of the RFS2 in 2007, Americans have spent an average of just 9.7 percent of their income on food.[3] In the 10 years prior to adoption of the RFS2, spending on food accounted for 10 percent of disposable income. Spending on food, as a share of income, has trended down steadily since the 1940s and the emergence of ethanol and passage of the RFS have in no way interrupted this trend.

[3] USDA-ERS (2013). *Food Expenditures.* http://www.ers.usda.gov/data-products/food-expenditures.aspx

BENEFITTING RURAL DEVELOPMENT AND CREATING JOBS

The expansion of the ethanol industry has catalyzed substantial growth in the agriculture sector's output, efficiency and value. The role of the RFS has been to create a certain and stable market environment for renewable fuels producers and feedstock providers. In turn, this certainty has enabled investment in new agricultural technologies, such as more efficient farm machinery and higher-yielding corn seed. Agricultural gross domestic product (GDP), net farm income, livestock receipts and crop receipts have all hit new record highs in recent years indicating that the net impact of ethanol expansion on the agriculture sector has been resoundingly positive.

Expansion of the ethanol industry of the past decade has created and/or supported tens of thousands of jobs across all sectors of the economy. In 2012 alone, the RFS supported more than 300,000 jobs across the country.[4] While it is difficult to assess how much of the increase in farm revenue is attributable to RFS demand versus increased export demand, farm income has risen.

Despite the negative effects of the ongoing recession in the manufacturing sector, agricultural equipment manufacturers have been largely immune to the downturn. This is solely because as farm income has risen, farmers have expanded and recapitalized their operations. A large part of this recapitalization is new equipment purchases. Likewise, as farm returns and income have risen, land prices have also risen. This has expanded the property tax base in rural America which is vital to funding schools, roads and other public services. Finally, according to the USDA, total net agriculture income has risen since the passage of the RFS. In 2006, average farm income was $57.4 billion. In 2012, farm income was $112.8 billion, a 97 percent increase.

[4] Renewable Fuels Association.

As Table 1 indicates, while farm income has increased, this increase was not solely in the crop sector. Livestock receipts have increased over this time period as well.

It is nearly impossible to prove that any jobs were lost because of the RFS. U.S. meat output has grown steadily since the original RFS was enacted in 2005. In fact, 2013 production of red meat and poultry is projected to be the second-highest on record (only behind 2008) and 7 percent higher than output in 2005.[5] If, as some critics claim, the RFS has been overly detrimental to the livestock industry, annual meat production should have declined post-RFS. This can also be used as a proxy for employment in the meat sector. A decline in meat production would have resulted in a loss of jobs. This is not to say some companies did not bear the brunt of the change, but overall the sector appears to have increased production.

While the emergence of the ethanol industry has increased demand for corn, U.S. farmers have responded by growing significantly larger corn crops. The average annual U.S. corn crop averaged 7.2 billion bushels (bbu.) in the 1980s and last year 10.8 bbu. were produced. Of this increased crop, 39.5 percent was used for livestock feed, 30.8 percent was utilized for ethanol, and 9.2 percent was processed into dried distillers grains (DDGs).[6] According to the U.N Food and Agriculture Organization, DDGs have become the most popular alternative ingredient used in beef, dairy, swine and poultry diets in the United States and in over 50 countries worldwide due to the "abundant supply, excellent feed value and low cost relative to maize and soybean meal."[7] As a result of larger annual corn harvests and the growing production of animal feed co-products, increased ethanol production has not affected availability of corn for traditional users.

[5] USDA (April 2013). World Agricultural Supply and Demand Estimates.
[6] USDA, ERS Feed Outlook, Jan 15, 2013.
[7] U.N. Food & Agriculture Organization (2012). *Biofuel Co-products as Livestock Feed.* Makkar, H. (Ed.). Rome, Italy: FAO Press.

ENVIRONMENTAL BENEFITS

Between 1900 and 2012, the world's population grew from 1.6 billion to more than 7 billion. The Food and Agriculture Organization of the United Nations estimates that the world's population will increase to 9 billion by 2050. With the increased demand for conventional agriculture, it is more important than ever to produce crops today while looking towards the future health of the planet. Corn farmers work hard to be good stewards of the land and environment while producing crops that will be used for animal feed, fuel, food and hundreds of other applications. Farmers know first-hand that they must embrace and seek practices that will sustain the soil and climate to produce the crops of the future.

Fortunately, U.S. agriculture has made incredible technological advances. In 1960, the average U.S. farmer fed 26 people; today, due to these advances, the number has increased to 155 people. In fact, in the last 30 years, corn production has improved on all measures of resource efficiency, by decreasing per bushel: land use by 30 percent, soil erosion by 67 percent, irrigation by 53 percent, energy use by 43 percent and greenhouse gas (GHG) emissions by 36 percent.[8] Corn crops have doubled between 1980 and 2009 by only planting just 3 percent more acres. All of these improvements have continued while the ethanol industry has increased corn demand.

With increasing yields in agricultural production, farmers have avoided clearing additional acres of land that would have been required to produce the same amount of food. The impact of the higher yields has curbed greenhouse gases equal to a third of the total emissions since the dawn

[8] "Environmental and Socioeconomic Indicators for Measuring Outcomes of On-Farm Agricultural Production in the United States" Field to Market: The Keystone Alliance for Sustainable Agriculture, July 2012.

of the Industrial Revolution in 1850. No other industry can claim to have done more. A 2010 study[9] from Stanford University found that advances in high-yield agriculture have prevented massive amounts of GHG from entering the atmosphere, the equivalent of 590 billion metric tons of carbon dioxide (CO_2). In fact, the study concludes that "improvements of crop yields should therefore be prominent among a portfolio of strategies to reduce global greenhouse gas emissions."

Today's transportation sector contributes 28 percent to the nation's greenhouse gas production and is predicted to maintain this share for the next several decades.[10] Since the U.S., 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. As you know, the RFS was implemented in part to reduce the production of GHG by increasingly substituting ethanol into the transportation fuel sector. Ethanol produced from corn has multiple environmental attributes when compared to gasoline from petroleum. A few comparative facts are worth review:

1. Ethanol is made from a renewable resource, corn, with additional feedstocks being developed and driven to commercialization because of the RFS. Petroleum (and natural gas) took millions of years to form and thus are considered non-renewable. Many of the new supplies require more energy intensive extraction and processing methods. In fact, exploration for oil is growing rapidly in some of the most fragile ecosystems on the planet including the boreal forests of Russia and Canada, the tropical forests and

[9] http://news.stanford.edu/news/2010/june/agriculture-global-warming-061410.html
[10] Fairly, P. (2011). Introduction: next generation biofuels. Nature 474:S2-S5.

savannas of central Africa, the wetlands and seas of Myanmar and Southeast Asia and the Peruvian Amazon.[11]

2. In the U.S., corn processed into ethanol represents less than 6 percent of harvested cropland. When corn grows, it takes CO_2 from the air and converts it into part of the plant, namely starch and cellulose (fiber). Numerous studies show that the growth of corn increases soil health, through the return of carbon via the roots and decomposing corn stalks.[12,13] In contrast, petroleum extraction does not return carbon back to the Earth.

3. Ethanol, because of its non-toxic and inherent octane properties, was chosen to replace petroleum-derived MTBE (methyl tertiary-butyl ether), a ground-water contaminant. In order to extract petroleum, landscape fragmentation and generation of toxic, hazardous, and potentially radioactive waste streams often occur.[14]

4. When the RFS was enacted and then modified in 2007, the EPA calculated that by 2022, corn starch ethanol would produce approximately 20 percent less GHG than the isolation and conversion of petroleum into gasoline. Corn conversion to ethanol has already reached this level today. Corn starch derived ethanol has not only reached the 2022 goal of reduced GHG emissions today, but due to significant advances in agriculture and ethanol production practices, it produces nearly 50 percent fewer GHG emissions

[11] Orta-Martinez, M. and Finer, M. (2010). Oil frontiers and indigenous resistance in the Peruvian Amazon. Ecol Econ 70(2): 207-218.
[12] Clay, D., et al. (2012). Corn yields and no-till affects carbon sequestration and carbon footprints. Agronomy Journal 104(3): 763-770.
[13] Kwon, H, et al. (2013). Modeling state-level soil carbon emission factors under various scenarios for direct land use change associated with United States biofuel feedstock production. Biomass and Bioenergy, http://dx.doi.org/10.1016/j.biombioe.2013.02.021.
[14] Parish, E. et al. (2013). Comparing scales of environmental effects from gasoline and ethanol production. Environmental Management 51:307-338.

compared to gasoline. Conversely, the U.S. oil and gas industry generates more solid and liquid waste than municipal, agricultural, mining and other sources combined.[15]

The RFS is not only one of our best options to substantially reduce greenhouse gas emissions from the transportation sector but is also a critically important component to the development of new technologies and of other efforts that will continue to be doing the same.

ENERGY SECURITY AND NATIONAL SECURITY

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 decreases 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.

[15] Ibid.

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. 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.

Since gasoline production is responsible for approximately 45 percent of U.S. oil consumption,[16] a 10 percent decrease in gasoline consumption corresponds to an approximately 4.5 percent decrease in overall oil consumption. 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.

In addition to creating a stable energy supply, the RFS has also had a positive impact on gas prices. 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

[16] 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.

supplied to consumers.[17] 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].

Even as recent as last weekend, E85 was dramatically lower than the traditionally blended E10 in St. Ansgar, Iowa (Photo 1).

CONCLUSION

In conclusion, NCGA appreciates the Subcommittee's interest in better understanding the market dynamics surrounding the RFS. We strongly believe the RFS is doing exactly what it was intended to do. It is successfully driving adoption of renewable fuel alternatives to petroleum, supporting jobs across the country and ensuring the United States remains a global leader in developing new energy sources here at home. Corn growers will continue to meet the growing demands in an economical and environmentally responsible manner.

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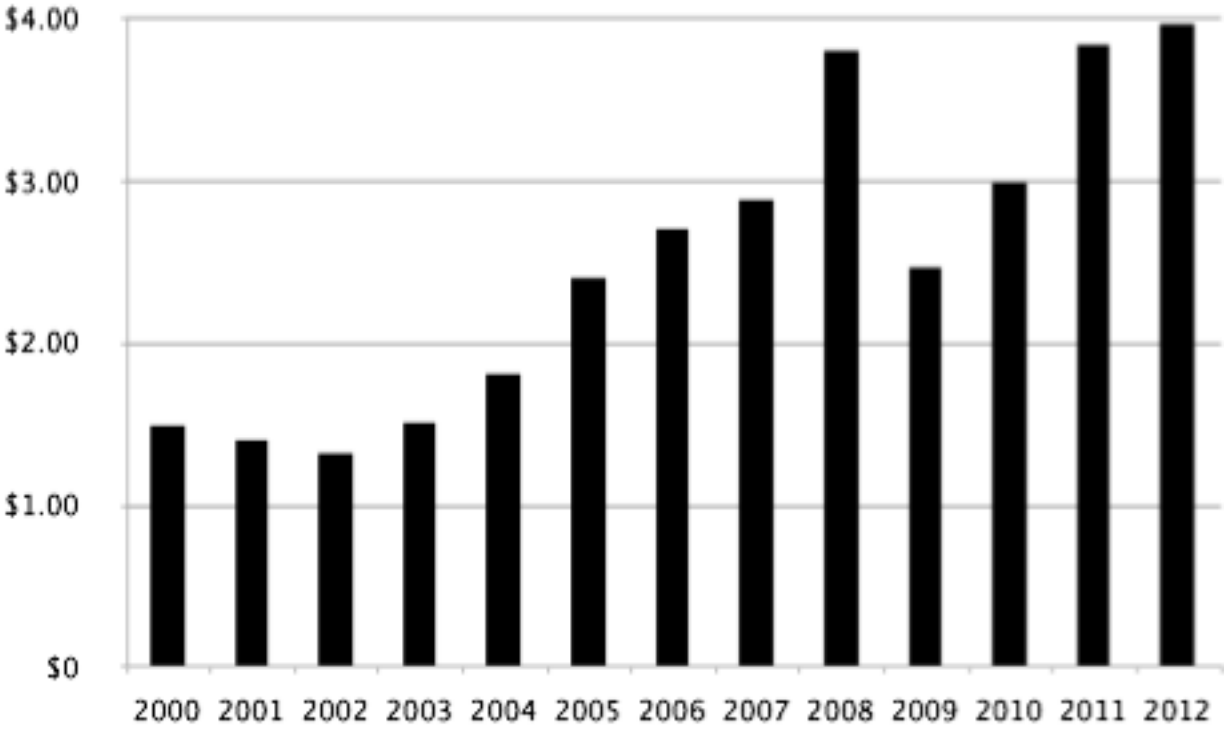
[17] Most gasoline contains 10% ethanol, thus price reduction is 10% of $0.48

APPENDIX

Chart 1: Average Price of a Gallon of Diesel Fuel



Source: DOE. EIA

Table 1: Income Statement for the U.S. Farm Sector (billion $)

	2006	2007	2008	2009	2010	2011	2012F	2013F
Crop Receipts	122.1	150.1	175.0	168.9	179.6	208.3	219.6	216.3
Livestock Receipts	118.5	138.5	141.6	120.3	141.6	166.0	171.7	176.5
Gross Income	290.2	339.5	377.7	343.3	365.6	428.5	446.5	481.1
Total Expenses	232.8	269.5	292.6	280.3	285.2	310.6	333.7	352.9
Net Farm Income	57.4	70.0	85.1	63.0	80.4	117.9	112.8	128.2

Photo 1:
Gas Prices in St. Ansgar, Iowa on Friday, July 19. 2013