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National Chicken Council's Comments

Renewable Fuel Assessment White Paper

Agricultural Sector Impacts

As the referred white paper notes, "The RFS has unfolded as expected, but in others (respects) it has not." Further, "the overall energy landscape has changed since 2007." The National Chicken Council agrees that it is now prudent and worthwhile to conduct an assessment of the RFS. A number of unintended consequences have complicated the mandate for corn, especially for traditional users of corn. The answers provided by the National Chicken Council to the nine stated questions can provide the committee with information that will allow for the consideration of a more rational and reasonable RFS program.

The RFS has impacted market forces by spurring the rapid 2007-2012 increase in U.S. ethanol production. Significant quantities of corn have been directed to ethanol production and are central to the committee's concerns. If the RFS has played little or no role in impacting feed costs, food prices, and related aspects of agricultural production, marketing, and consumption, then there is little need to reform the current program. If, however, the RFS is a significant driver, is distorting markets, and the market has played a secondary role, then not only is a debate in order, but appropriate Congressional action is warranted to resolve a most burdensome, mandatory program.

With respect to the nine questions stated in the white paper, the National Chicken Council's response is as follows.

1. What has been the impact of the RFS on corn prices in recent years? What has been the impact on soybean prices? Have other agricultural commodity prices also been affected?

The RFS has been the single, most important, major driver in increasing corn usage for ethanol production. This unprecedented demand has caused corn inventories to decline to crisis levels for the most recent three years. In a market-driven world, ethanol would be priced competitively with gasoline. That situation has not been the situation since RFS1 was created under the Energy Policy Act of 2005. This Act required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. This quantity was, perhaps, manageable given that about 7.5 billion gallons of ethanol is needed for octane enhancement and oxygenation. As such, ethanol was originally worthy of a premium to gasoline. At current production levels, ethanol is being used for its energy content, which is about 67 percent of gasoline. At current (April 18, 2013) gasoline price levels, ethanol has a market value of about $1.80 per gallon for its energy content. The national average wholesale price was about $2.70 per gallon today.

At $1.80 per gallon, an ethanol plant can afford to pay only $3.80 per bushel for corn. At $2.70 per gallon for ethanol, the affordable corn price for an ethanol producer is $6.65 per bushel. This simple, one day, example of how far from true market value the RFS has taken corn prices is typical of what has been driving daily corn prices since 2008.

A secondary and even more troublesome effect has been increased corn price volatility caused by the RFS putting severe pressure on the market. Compared with 2000-2006, corn price volatility has doubled since the RFS became law. The RFS has driven corn use growth faster than production. The result is corn inventories are chronically depleted to minimum levels, causing market prices for corn and other agricultural commodities to gyrate dramatically, depending on the changes in the weather or unpredictable events.

Iowa State's FAPRI econometric model has generated results that suggest that lowering the RFS would have little impact on corn prices. Market forces were the primary driver of corn prices escalating, according to the study's conclusion. However, there are at least two facts in evidence that strongly suggest that the role of the RFS has been the primary force in the rapid development of U.S. corn-based ethanol and the resulting impact on corn and competing crop prices.

First is the simple fact that nowhere in the world have there been any significant biofuel production created without a robust government support programs in the form of mandates and/or taxpayer subsidies. Normal market forces have not been the primary driver. China, Canada, and the EU, once strong proponents of biofuels, have significantly backed away from increasing biofuel production by mandates and subsidies. The U.S. RFS program is by far the most ambitious biofuel mandate in the world, and the most inflexible program.

If biofuels were truly a marketplace phenomenon, driven by entrepreneurs who see market-based opportunities, biofuel industry investments would occur without mandates and subsidies. It is difficult, if not impossible, to find any free market investments happening. Clearly the RFS is the primary driving force behind U.S. ethanol production, and thus, makes the RFS debate of vital and timely importance.

The second fact in evidence is the biofuel sector's strong negative reaction to this debate. If the sector had any faith in its ability to maintain and grow its market based on the merits of its products it would not object strenuously to RFS reform. The leadership of the ethanol industry is fully aware that if the support of the RFS mandates is reduced or eliminated, their business will suffer. This fact further validates the RFS as the key driver behind ethanol industry growth.

Corn is by far the most important food ingredient in U.S. agriculture. Other farm commodity prices are highly correlated with corn. That list includes wheat, soybeans, sorghum, barley, oats, and hay. In addition, by-product feed prices such as distillers' grains, wheat milling by-products, edible fats, meat and bone meal, oilseed meal are greatly influenced by corn prices.

As has been explained, the RFS has driven up corn prices substantially since its implementation. [1/] These effects can be seen in distortions to the theoretical operation of the corn market, in actual changes to

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[1/] The following comments address corn production only.

corn prices because of the RFS, and in the artificially high demand for corn-based ethanol created by the RFS.

The Distortions to the Corn Market

By far the two largest purchasers of corn are feed and food producers and ethanol refiners, although that has not always been the case. The RFS blending requirement has significantly—and artificially—disrupted the market for corn by requiring an ever-growing, predetermined amount be diverted to ethanol use. The RFS increases demand for corn by forcing more users to compete for a supply that has not kept pace with demand. Approximately 15 percent of the 2005/2006 corn crop was devoted to ethanol production. For the 2010/2011 harvest, ethanol production consumed 40 percent of the crop. [2/] Future RFS requirements will most likely consume an even greater percentage of the corn crop and drive corn prices even higher.

This pressure on corn prices is exacerbated by the fixed blending requirements. The fixed blending requirements create an inelastic demand curve for corn purchased by blenders. Blenders must purchase the predetermined amount of corn required by federal law regardless of the price and have only a limited ability to reduce production due to corn price increases. Refiners and blenders may use RINs to offset production, but as of the Fall of 2012, only an estimated 2.6 billion gallons worth of RINS had accumulated during the RFS program, or the equivalent of 19 percent of the 2013 ethanol requirement.

Moreover, conventional wisdom holds that refiners and blenders are likely to hold onto their RINs to offset the "blend wall" that is fast approaching, the point at which ethanol will completely saturate the E10 blend market and gasoline producers will be unable to incorporate the increasingly higher levels of ethanol into their fuels. [3/] Because gasoline producers cannot meaningfully reduce consumption below the RFS mandate as prices increase, [4/] the remaining 60 percent of corn purchasers are forced to absorb 100 percent of the increase in corn prices and adjust to the drastically decreased supply. This imbalance significantly upsets the natural equilibrium that would be achieved, with the result being inefficiently high levels of corn purchased by ethanol refiners and inefficiently low amounts of corn going to feed and food uses. With too little corn to go around and at too high of prices, corn-based food production—especially food animal production—decreases, and the price of these foods increases.

A byproduct of ethanol production is a substance called dried distillers grain with solubles (DDGs). DDGs is returned to use in animal feed, but it can be used only in limited proportions for certain species and cannot wholly replace corn in animal feed. In particular, DDGs cannot substitute for corn in the diets of

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[2/] Energy Policy Research Foundation, Inc. (EPRINC), *Ethanol's Lost Promise: An Assessment of the Economic Consequences of the Renewable Fuels Mandate*, at 29, Sept. 14, 2012 [hereinafter EPRINC].

[3/] *See* Thomas E. Elam, President, FarmEcon LLC, *The RFS, Fuel and Food Prices, and the Need for Statutory Flexibility*, at 23, July 16, 2012, http://www.nationalchickencouncil.org/wp-content/uploads/2012/07/RFS-issues-FARMECON-LLC-7-16-12-FINAL.pdf [hereinafter Elam].

[4/] *See* Wallace Tyner, Farzad Taheripour and Chris Hurt, *Potential Impacts of a Partial Waiver of the Ethanol Blending Rules*, at 3 (Aug. 16, 2012), http://www.farmfoundation.org/news/articlefiles/1841-Perdue%20paper%20final.pdf [hereinafter Purdue] ("[T]here has been an 8% fall in ethanol production over the past even weeks as the higher corn price puts pressure on ethanol margins. . . . Adjustments might have been greater in the absence of the mandate.").

non-ruminants like poultry, which cannot break down the fiber in DDGs. Because DDGS can be substituted for corn to a limited degree in some species (but not in poultry production), the price of DDGs tracks that of corn; as corn prices increase, so do DDGs prices. [5/] Even taking into account reclaimed DDGs, 30 percent of U.S. corn production is devoted solely to ethanol. Moreover, although DDGs helps offset to a small extent corn consumed by ethanol production, its overall effect is very small, is limited to certain species, and does little to reduce the price pressures caused by the RFS.

In short, reserving more than 40 percent of the corn crop for mandatory use in ethanol production inevitably increases the price of corn. As a corollary, increased corn prices translate directly into increased food prices, especially the cost of poultry and livestock.

The RFS Is Increasing 2013 Corn Prices By At Least $2.00 per Bushel, or Nearly 25 Percent

Numerous economic studies have demonstrated that the RFS significantly increases the price of corn. One way to evaluate the RFS's effects on corn prices is to evaluate what eliminating some or all of the RFS requirements (*i.e.*, removing the arbitrary market distortions) would do to corn prices. As the amount of mandatory ethanol blending under the RFS is decreased, the demand for corn decreases, and corn prices would be expected to decrease, eventually reaching a market equilibrium in which most corn is used for food production, with some lesser quantity devoted to other uses, such as ethanol production, based on market conditions.

An August 2012 report prepared for the Farm Foundation by three Purdue University economists evaluates how an EPA waiver of the ethanol mandate would affect the corn and ethanol markets. [6/] The authors found that reducing the amount of ethanol blended into gasoline in 2013 by even 6.05 billion gallons—about a 44 percent reduction—would reduce corn prices by $2.00 per bushel, a nearly 25 percent reduction. [7/]

The authors modeled five scenarios, determining the expected price of corn under various drought conditions and various ethanol blending levels: [8/]

Full 2013 RFS before the drought

1. Full 2013 RFS (13.8 BG ethanol requirement) with the drought
2. 11.8 BG ethanol requirement, with the drought

[5/] EPRINC at 6.

[6/] See Purdue.

[7/] The authors based their original analysis on three corn production scenarios. Through correspondence with NCC, the authors have provided an updated analysis using the September 2012 USDA projected corn production of 10.73 billion bushels. The updated numbers are consistent with the findings from the original paper. The authors' approach of modeling the effects of a waiver of the RFS is the same as demonstrating the harm caused by the implementation of the RFS in the first place because the waiver scenarios reflect what would have occurred but for the RFS mandates.

[8/] The summer and fall of 2012 saw widespread, severe drought conditions that substantially reduced the overall corn harvest. The Purdue study demonstrated that, even controlling for this severe drought, the RFS still substantially increased corn prices.

3. 10.4 BG ethanol requirement, with the drought
4. 7.75 BG ethanol requirement, with the drought.

The authors selected these ethanol requirements because they reflected levels that might be reached through the use of RINs, a partial waiver of 25 percent of the ethanol requirement, or both, but "[f]or this analysis, it does not matter whether the reduced blending levels result because of the use of RINs or a partial waiver." [9/] Indeed, the ethanol production simply reflects levels selected by the authors to demonstrate the effect decreased ethanol production would have on corn prices. With this in mind, the third, fourth, and fifth scenarios reflect the corn prices that would result from decreasing ethanol levels 2 BG (14 percent), 3.8 BG (25 percent), or 6.06 BG (44 percent), respectively, from the 13.8 BG level required by the RFS. [10/] These levels are informative because they reflect ethanol production that would still be substantially greater than what would be expected under equilibrium conditions without mandatory production. In other words, without the RFS, there would be even less pressure on the demand for corn due to ethanol production, and corn prices would be even lower.

The authors modeled three drought scenarios—stronger, median, and weaker droughts. USDA crop yield estimates released since the authors wrote their paper indicate the corn crop will fall directly between the strong and median drought scenarios. The authors' model revealed that corn production would respond to reduced ethanol use by decreasing just slightly, while corn prices would drop by $1.99 (23 percent) if ethanol production decreased by 44 percent from the full RFS requirement. The authors' original results are reproduced in Table 1. [11/]

Table 1: RFS Waiver Effect Simulations from Purdue Study

Description	Expectation Before Drought	Drought with 13.8 BG Ethanol	Drought with 11.8 BG Ethanol	Drought with 10.4 BG Ethanol	Drought with 7.75 BG Ethanol
Stronger Drought:					
Corn production (Bil. bu.)	14.65	10.50	10.45	10.42	10.35
Corn used for ethanol	5.11	5.11	4.37	3.85	2.87
Domestic food and feed use	6.72	3.96	4.59	5.03	5.58
Exports	1.82	1.43	1.49	1.53	1.63
Corn price ($/bu.)	5.26	8.57	7.89	7.45	6.58
Median Drought:					
Corn production (Bil. bu.)	14.65	11.00	10.95	10.92	10.85
Corn used for ethanol	5.11	5.11	5.11	3.85	2.87
Domestic food and feed use	6.72	4.39	5.02	5.45	6.25
Exports	1.82	1.49	1.56	1.62	1.73
Corn price ($/bu.)	5.26	7.81	7.14	6.67	5.80
Weaker Drought					
Corn production (Bil. bu.)	14.65	11.50	11.45	11.42	11.35
Corn used for ethanol	5.11	5.11	5.11	3.85	2.87

[9/] Purdue at 7.

[10/] The most relevant comparison is between the projected price of corn with the full RFS in place in light of the drought and the projected price of corn with 7.75 BG ethanol production (*i.e.*, between the second and fifth scenarios). For completeness, all scenarios are shown in the table that follows.

[11/] *Id.* at 8.

Domestic food and feed use	6.72	4.81	5.42	5.84	6.62
Exports	1.82	1.58	1.66	1.72	1.86
Corn price ($/bu.)	5.26	7.02	6.36	5.89	5.02
Note: The corn yields for these three cases are 120, 126, and 132 bu/ac.					

Revised to reflect USDA's September 2012 estimated 10.73 billion bushel crop production, a reduction in ethanol production by 44 percent reduces the price of corn by $2.00 per bushel (24 percent) from its full RFS price, as shown in Table 2. [12/] Put differently, the marginal 44 percent of ethanol production caused by part of the RFS directly increases corn prices by $2.00.

Table 2: Purdue Model with Updated Corn Production Estimates

Description	**Expectation Before Drought**	**Drought with 13.8 BG Ethanol**	**Drought with 11.8 BG Ethanol**	**Drought with 10.4 BG Ethanol**	**Drought with 7.75 BG Ethanol**
Corn Price ($/bu.)	5.26	8.19	11.8	7.06	6.19

Numerous other studies have recognized the demand for corn by ethanol producers as a major driver of corn and food prices. [13/] A 2011 study demonstrated that the increasing prices of grains in recent years can be accounted for by only two factors: speculation by investors and the increase in corn to ethanol conversion. The authors concluded that the underlying upward trend in prices can be attributed to the increased diversion of corn to ethanol, once the spikes in prices caused by speculation are excluded. [14/] In particular, the study "suggests that there has been a direct relationship between the amount of

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[12/] In September 2012, USDA estimated U.S. corn production at 10.73 billion bushels. As the corn production forecasts have steadily decreased in the last three USDA reports, it is likely that corn production estimates will continue to shrink as we move further into 2012.

[13/] Donald Mitchell. Word Bank Development Prospects Group, *A Note on Rising Food Prices* (2008), http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2008/07/28/000020439_20080728103002/Rendered/PDF/WP4682.pdf (finding that 70 to 75 percent of the increase in food prices is due to increased demand for biofuels); Keith Collins, *The Role of Biofuels and Other Factors in Increasing Farm and Food Prices: A Review of Recent Development with a Focus on Feed Grain Markets and Market Prospects* (2008) (using a mathematical simulation to estimate that about 60 percent of the increase in corn prices from 2006 to 2008 may have been due to the increase in maize used in ethanol); John Lipsky, First Deputy Managing Director, International Monetary Fund, Commodity Prices and Global Inflation, Remarks and the Council on Foreign Relations (2008) (estimating that the increased demand for biofuels accounted for 70 percent of the increase in corn prices); Colin Carter et al., *The Effect of the U.S. Ethanol Mandate on Corn Prices*, UC Davis, http://agecon.ucdavis.edu/people/faculty/aaronsmith/docs/Carter_Rausser_Smith_Ethanol_Paper_submit.pdf (estimating that 2010 corn prices were 50 percent greater in log terms than they would have been if U.S. ethanol production stayed at its 2005 level, and that average prices over the period from 2006 to 2010 were 30 percent greater than they would have been had the increase in ethanol production not occurred).; Randy Schnepf and Brent D. Yacobucci, Renewable Fuel Standard (RFS): Overview and Issues (Jan. 23, 2012), http://www.fas.org/sgp/crs/misc/R40155.pdf (finding that "corn prices have trended steadily upward in direct relation to the added growth in demand from the ethanol sector").

[14/] Marco Lagi et al., *The Food Crises: A Quantitative Model of Food Prices Including Speculators and Ethanol Conversion* (2011), http://necsi.edu/research/social/food_prices.pdf.

ethanol produced and (equilibrium) food price increases." [15/] The RFS is the major force behind the diversion of corn to ethanol production, and the resulting increases in corn price.

Not only has the price of corn increased overall with implementation of the RFS, but the number of spikes in corn prices has also increased. Corn price volatility has more than doubled since 2007. [16/] This instability puts pressure on the food and feed industries as companies try to make production decisions for the future and injects substantial uncertainty into the market. Uncertainty leads to further speculation, so tightening markets makes the situation even worse. Research conducted by the United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) shows that a 50 percent waiver of the U.S. biofuels mandate in the same year as a spike in the global price of course grain could reduce the magnitude of a hypothetical spike in prices by 40 percent. [17/] A 75 percent waiver would result in a 55 percent reduction in the size of the spike. [18/] These results occur because removing U.S. mandates for biofuels makes the entire demand side of the grain market responsive to price, compared to just the food and feed components of demand, so demand from biofuels producers would contract along with demand in the food and feed markets. When the burden of the high demand for corn is shared, there is no driver of such high prices in the food and feed markets. Thus, a waiver of the RFS would significantly relieve producers and consumers of the adverse effects and uncertainty of corn price volatility.

As has historically occurred when the price of corn increases, the current increase in corn price will result in overall inflation in the price of food. The USDA's Economic Research Service has predicted that the increase in the price of corn will first affect the price of beef, pork, poultry, and dairy, while "[t]he full effects of the increase in corn prices for packaged and processed foods (cereal, corn flour, etc.) will likely take 10-12 months to move through to retail prices." [19/]

Finally, as a lynchpin of domestic food production, corn's price also affects the prices of other key commodities that are viewed by farmers as corn substitutes. Due to competition for land on the production end between corn, soybeans, and wheat, the prices of soybeans and wheat track the price of corn. When the price of corn increases, so do the prices of soybeans and wheat. Field corn also competes for land with sweet corn and other vegetables, and an increase in the price of field corn means farmers plant less of other vegetables and the prices of those vegetables increases accordingly.

Without the RFS, Demand for Corn-Based Ethanol Would Decrease Substantially to Efficient Market Levels

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[15/] *Id.* at 19.

[16/] Elam at 2.

[17/] Chris Durham et al., United Kingdom Department for Environment, Food and Rural Affairs, *Can Biofuels Policy Work for Food Security?: An Analytical Paper for Discussion*, at 2 (June 2012), http://www.defra.gov.uk/publications/files/pb13786-biofuels-food-security-120622.pdf [hereinafter Durham]. Notably, the European Commission recently announced plans to limit crop-based biofuels to 5 percent of transport fuel due to concerns about diverting too much of the corn supply from food to fuel. Charlie Dunmore, *Exclusive: EU to Limit Use of Crop-Based Biofuels – Draft Law*, Reuters (Sept. 10, 2012).

[18/] Durham at 5.

[19/] USDA, Economic Research Service, *U.S. Drought 2012: Farm and Food Impacts*, http://www.ers.usda.gov/newsroom/us-drought-2012-farm-and-food-impacts.aspx.

Implicit in the analysis of the price of corn under the RFS is the artificially high demand for corn-based ethanol caused by the RFS. Without the RFS in place, ethanol production would drop below even the 7.75 BG level modeled in the Purdue study. The Energy Policy Research Foundation has determined that, without the RFS, ethanol would be blended into gasoline only to the extent necessary as an oxygenate, which is about 400,000 barrels per day, or 6.1 BG annually. [20/] Ethanol production would decrease because, while ethanol is useful as an oxygenate, its poor energy levels per gallon relative to gasoline make it too expensive to use solely as a fuel source. [21/] Refiners and blenders would use only the amount of ethanol necessary to replace MTBE as an oxygenate. Thus, without the RFS, ethanol would still be used in transportation fuel, but at much lower levels, and only for its ancillary benefits, not as an actual energy source.

Further, the RFS is saturating the ethanol market, and the lowest-value uses of ethanol will decrease absent the RFS. The U.S. exports a significant amount of corn ethanol each year—1.2 BG in 2011. [22/] If it made economic sense to blend this ethanol into the U.S. fuel supply, refiners would not be exporting it. Without the RFS, corn use would shift away from this and other lower-value uses toward higher-value use in food and animal feed. [23/]

2. How much has the RFS increased agricultural output? How many jobs had it created? Have any jobs been lost? What is the net impact on the agriculture sector?

Although the weather disaster caused unfavorable crop conditions that resulted in reduced 2012 crop production, the data from 2012 can be used to help answer this question. Since the RFSII actually arrived in 2008 total corn, wheat and soybean production have not grown by any measurable account. In fact, corn production declined 10.8 percent, soybean production increased 1.6 percent, and wheat production was down 9.2 percent. Comparing 2011 with earlier years such as 2008, corn production was up 2.2 percent, soybeans were up 4.2 percent, and wheat was down 20 percent. While 2012 weather has played a role, since the current RFS was created total major crop production has not materially increased.

[20/] EPRINC at 10. A barrel contains 42 gallons. Elam at 10. Ethanol is efficiently used in gasoline in small quantities as an oxygenate and to increase octane levels. EPRINC at 2. Ethanol is a much less efficient substitute as an actual energy source in fuel, containing only about 67 percent as much energy than gasoline on a per-volume basis. Elam at 3.

[21/] Ethanol is efficiently used in gasoline in small quantities as an oxygenate and to increase octane levels. EPRINC at 2. Ethanol is a much less efficient substitute as an actual energy source in fuel, containing only about 67 percent as much energy than gasoline on a per-volume basis. Elam at 3. Ethanol would have to sell at 67 cents to the dollar against gasoline for its in gasoline solely as a fuel source to be economical. When the decreased fuel efficiency of ethanol (because each gallon of ethanol provides less energy) is considered, which could raise issues with meeting fuel-efficiency standards and pollution requirements, ethanol becomes an even less appealing substitute for gasoline and may require an even greater discount before used widely in fuels.

[22/] Elam at 4.

[23/] Notably, the European Commission has already decided to limit the amount of food-crop-based biofuels in motor fuel to 5 percent to reduce pressure on food commodity prices and out of concern about emissions and greenhouse gases. Charlie Dunmore, *Exclusive: EU to Limit Use of Crop-Based Biofuels – Draft Law*, Reuters (Sept. 10, 2012).

The jobs question is somewhat difficult to answer. Looking objectively at jobs created by various corn-using industries the answer is that increased ethanol has undoubtedly destroyed more jobs than it created.

Using a recent 2013 Renewable Fuels Association study, there were 11,971 jobs in the nation's ethanol companies in 2012. According to a 2009 American Meat Institute study, there are 524,500 direct jobs in meat and poultry processing. Both estimates are for direct employment only, and do not include indirect and induced effects.

Including direct, indirect and induced jobs, the Renewable Fuels Association study claims a total of 383,260 total jobs that are affected by ethanol production. This implies that every ethanol plant job supports, in a meaningful way, another 32.5 jobs in the economy. That "jobs multiplier" of 32.5 is about 10 times what is generally accepted by most economists.

The similar 2009 American Meat Institute study determined a jobs multiplier of 2.4 with total direct, indirect, and induced jobs of 1,269,500. The bottom line is that just the meat and poultry portion of food production supports a much larger labor force than the entire fuel ethanol industry.

Scaling jobs to the amount of corn used also shows large differences. A million tons of corn used to produce meat and poultry supports over 3,600 direct jobs. These jobs do not include the hundreds of family farmers who raise the chickens. That same volume of corn used by the ethanol sector supports only 145 jobs. Including indirect and induced employment (as claimed by the respective industry associations), one million tons of corn supports 5,117 ethanol-related jobs and 8,119 meat and poultry-related jobs. The ethanol industry claim is based on a jobs multiplier that is significantly higher than generally accepted.

To the extent that the RFS has diverted corn from food to fuel production, a very significant number of jobs have been lost. It is not just current jobs that were lost, but job creation opportunities that were not realized because food production was constrained or eliminated.

From 2007 to 2012, over 27.9 million tons of combined corn and distillers' grains were removed from total food production, of which meat and poultry processing is only a portion. Ethanol producers' corn use, net of distillers' grain returned to food production, increased about 40.6 million tons over this same period. Given the vastly different direct job multipliers, far more direct jobs, existing and potential, were destroyed in meat and poultry processing than were created by ethanol producers. To find a conclusion counter to the one stated here requires assumptions and a selection of data that most analysts would not find acceptable.

3. Was EPA correct to deny the 2012 waiver request? Are there any lessons that can be drawn from the waiver denial?

No, the waiver petition should have been granted. EPA's claim at least implied that the act set a very high bar for granting a waiver is a very judgmental argument. In essence, the bar apparently requires the U.S. economy to grind to a halt before a waiver can be granted. If that scenario was in fact the

actual situation required, the United States would be forced to address much more severe problems than the cost of food caused by the RFS.

Record-high corn prices, distress in the food sector, corn exports that declined by 50 percent, the closing of numerous ethanol plants, and skyrocketing D6 ethanol RIN values are all symptoms of severe economic distortions caused by the RFS. Market forces should have been allowed to allocate the limited corn supply, rather than a government mandate continuing to put greater demand pressure on a very limited supply of corn.

One important and primary lesson that was hopefully learned is that the EPA should not have the sole power to judge waiver requests. As one observer cited, it is the Environmental Protection Agency or the Ethanol Protection Agency? It is important to remember that EPA has actually denied two waiver requests – both made and supported by governors of states with significant agricultural economies – and in doing so has established an impossible standard for granting a waiver request. If an RFS is maintained, there must be clear and manageable standards for waiving quotas in light of dynamic economic situations.

4. Does the Clean Air Act provide EPA sufficient flexibility to adequately address any effects that the RFS may have on corn price spikes?

No, it is somewhat obvious that it does not provide the necessary and sufficient operating authority, at least according to how EPA interprets its legislative authority. The current mechanism is overly cumbersome, too inflexible, and does not fairly weigh the effects on all affected parties. The Clean Air Act should be amended or the entire conventional fuel RFS should be eliminated.

The two experiences with EPA's treatment of RFS waiver requests has made clear that the Clean Air Act does not provide EPA sufficient guidance on how to implement an RFS program in an economically responsible manner. EPA has interpreted the Clean Air Act's authorization to issue a waiver when the Administrator determines that "implementation of the requirement would severely harm the economy or environment of a State, region, or the United States" in a way that ensures a waiver will never be granted. 24/ In 2008, the state of Texas petitioned EPA to issue a 50 percent waiver of the RFS based on severe harm to the economy of Texas. In rejecting the petition, EPA offered its preliminary interpretation of the statutory requirements for issuing a waiver: EPA required (1) a showing that implementation of the RFS program itself is the cause of the severe harm; (2) a generally high degree of confidence that the implementation of the RFS "would" severely harm the economy of a state, region, or the United States; and (3) that the potential harm to the economy be "severe," which, although not fully defined, falls short of "extreme." 25/ EPA also noted that the party requesting the waiver should

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24/ Clean Air Act, Sec. 211(o)(7), 42 U.S.C. § 7545..

25/ EPA Notice of Decision Regarding the State of Texas Request for a Waiver of a Portion of the Renewable Fuel Standard, 73 Fed. Reg. 47168, 47170–72 (Aug. 13, 2008).

show severe harm to the entire economy of a state, region, or the United States, not merely one sector of the economy. 26/

As applied, this standard—which is not mandated by the Clean Air Act—has proven malleable enough that the agency can always justify its refusal to grant a waiver, whether by disregarding contrary economic impact studies in favor of conclusory assumptions, deciding that reasonable economic predictions do not offer enough certainty of harm, or some other means. If our nation's fuel policy is going to pit filling gas tanks against feeding citizens, Congress needs to provide the clear statutory guidance necessary to ensure that affordable food prices always prevail.

5. What has been the impact, if any, of the RFS on food prices?

The RFS impact on food prices is discussed extensively in the paper submitted with these comments, (please see "The RFS, Fuel and Food Prices, and the Need for Reform" by Dr. Tomas E. Elam, President of FarmEcon LLC, January 8, 2013). Since the RFS was most fully implemented in 2008, food price inflation has gone from slightly slower than general inflation to 60 percent higher than general inflation. Food affordability that had been increasing steadily since 1950 suddenly reversed that trend and food started to become less affordable. Higher food costs are damaging the economy's ability to create jobs, and holding down consumers' ability to increase discretionary spending. As stated at the beginning of this response, much of the reversal in food affordability is the result of the RFS and the market distortions it has caused.

The RFS has driven up food prices significantly, effectively taxing grocery dollars to pay for artificially inflated ethanol demand. And that tax falls hardest on those least able to afford it, food-insecure families struggling to put nutritious meals on the table each day. The effects of the RFS can be seen in both an overview of the food production chain and in specific economic analysis of food prices.

Effects of Corn Prices throughout the Food Production Chain

Corn is integral to our food supply, as approximately 75 percent of foods on grocery store shelves contain corn, corn byproducts, or corn processed-foods or is derived from an animal raised on corn. The vast majority of corn planted in the United States is field corn, which is used in applications such as livestock feed, cereal products, alcohol, and processed foods including corn sweeteners, corn-based vegetable oils, corn starch, and corn flour. Field corn is used for ethanol production. A very small percentage of corn acreage is devoted to sweet corn, which is consumed directly as food. Because field corn and sweet corn compete for the same acreage, their prices track one another; as the cost of field corn rises, sweet corn becomes more expensive, too.

The National Research Council estimates that an increase in the price of corn of 20 to 40 percent results in a 2 to 4 percent increase in the prices of corn-based food products at the retail level. 27/ USDA's

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26/ *Id.* at 47172.

Economic Research Service states that on average, a 50 percent increase in corn prices results in a 1 percent increase in overall food prices (including in this average food without corn in its supply chain), with particular categories of food, including meat, poultry, and dairy, affected more severely. 28/ More generally, as the price of a commodity increases, about 15 percent of that increase is passed on to retail prices for products that use that commodity as an ingredient. 29/

The U.S. corn supply is used extensively in producing meat, poultry, and dairy products. Corn feeds the nation's livestock and poultry and comprises 94 percent of the grains fed to animals. 30/ For every $1 increase in the price of corn per ton, feed costs increase 45-67 cents per ton. 31/ Further, feed represents the dominant cost in producing animal products. For example, for broiler chickens, feed costs constitute 69 percent of live production costs. 32/ Meat, poultry, and dairy producers are heavily dependent on corn as a feedstock, thereby linking increased corn prices with increases in meat, poultry, and dairy prices.

Short-term spikes in corn prices are particularly devastating for poultry and livestock producers due to their longer production cycles and inflexible animal diets. 33/ Livestock and poultry producers face a production lag that makes it difficult to adjust quickly to increased feed costs by reducing animal numbers. For example, the time between breeding parent stock to retail sales of fresh product from the resulting offspring ranges from 10 weeks for broiler chicken meat to about 10 months for milk and pork to about 30 months for beef. Thus, production decisions for broiler products consumed today were made nearly three months ago (more than two years ago for beef products), leaving livestock and poultry producers unable to respond to price increases in the interim. Livestock and poultry producers are thereby held captive to increasingly high corn prices.

Further, while livestock such as cattle can switch (in part) to other diets when the cost of grains increases, poultry and swine are more reliant on high-energy grains and have a limited ability to use other energy sources. For example, during the two years from 2006 to 2008 when feed costs increased by two-thirds, resulting in an 80 percent increase in total live-production cost, the ratio of corn in broilers' diets held constant. Over those two years, the cumulative effect of the increased feed costs to the broiler industry exceeded $7.8 billion. 34/ Poultry producers, with nearly three-month production

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27/ Committee on Economic and Environmental Impacts of Increasing Biofuels Production, National Research Council, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy* 133 (2011), http://www.nap.edu/openbook.php?record_id=13105&page=1 [hereinafter National Research Council].

28/ USDA, Economic Research Service, *Food Price Outlook: Highlights*, http://www.ers.usda.gov/data-products/food-price-outlook/highlights.aspx; Hibah Yousuf, *Corn Price Spike: Food Inflation a "Real Threat*," CNN Money, July 18, 2012, http://money.cnn.com/2012/07/18/investing/corn-prices-food-inflation/index.htm.

29/ USDA, Economic Research Service, *Food Price Outlook: Highlights*, http://www.ers.usda.gov/data-products/food-price-outlook/highlights.aspx.

30/ National Research Council at 134.

31/ *Id.*

32/ *Id.*

33/ National Research Council at 135-36.

34/ M. Donohue and D.L. Cunningham, *Effects of Grain and Oilseed Prices on the Costs of U.S. Poultry* Production, 18 J. APP. POULTRY RES. 325-337 (2009).

lags and long-term growing contracts, cannot meaningfully adjust to the rapid changes in feed prices caused by the RFS. Both poultry and livestock producers are severely harmed by increases in the price of their primary feedstock.

The U.S. chicken industry has suffered in the years since the implementation of the RFS, in contrast to the industry's average annual growth rate of 4.0 percent and historical resiliency even during difficult economic times. In 2009, U.S. broiler production decreased by 3.8 percent, the largest decrease since 1970. In 2012 broiler production again decreased. These recent trends demonstrate that an historically resilient industry has seen the greatest decrease in growth (indeed, it has shrunk) in more than forty years during the implementation of the RFS, when it has seen demand for one of its primary inputs drastically and artificially increased. Because of the importance of corn in so many aspects of food production, the entire food industry—and ultimately, the consumer—is suffering because of the RFS.

Food Prices are Higher Directly Because of the RFS

The RFS has unmistakably driven up food prices. As with its effects on the price of corn, the effects of the RFS on food can be easily seen by looking at what eliminating some or all of the RFS would do to the price of food today.

As explained in response to Question 1, the RFS drives up the price of corn by more than $2.00 per bushel. 35/ A decrease in the price of corn by $2.00 per bushel would significantly alleviate pressures on both consumers at the grocery store and the food, livestock, and feed industries. Given the vital role of corn in U.S. food production, as the price of corn decreases, so do the prices of meat, poultry, and dairy products, and the foods that contain corn-based sweeteners, starches, flours, and oils, as well as substitute products such as wheat and soybeans and any foods made using them.

A marginal decrease in corn price of 24 percent, based on a reduction in the price of corn by $2.00 per bushel, would result in a decrease of approximately 2.4 percent in retail food prices. 36/ USDA estimates that food prices will increase 3–5 percent this year. In other words, less than half of the price increase caused by the RFS requirement is equivalent to half-to-nearly-all of the projected increase in the price of food. 37/

Even more dramatically, a decrease of $2.00 in the price of corn per bushel is equivalent to a decrease of $71.43 per ton of corn, which results in feed costs that are $32.14 to 47.86 lower per ton for

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35/ In reality, the RFS drives up the price of corn by significantly more than $2.00 per bushel; the studies modeled only up to a 44 percent reduction in the ethanol mandate, which would still distort the market into producing more corn-based ethanol than it otherwise would. If anything, this discussion represents a very conservative analysis of the effects of the RFS on food prices.

36/ *See* National Research Council at 133.

37/ Additional studies, including those conducted by the Energy Policy Research Foundation, FarmEcon LLC, and the United Kingdom's Department for Environment Food and Rural Affairs have similarly demonstrated that the RFS causes severe economic harm by driving up corn prices. *See generally* EPRINC; Elam; Chris Durham et al., United Kingdom Department for Environment, Food and Rural Affairs, *Can Biofuels Policy Work for Food Security?: An Analytical Paper for Discussion* (June 2012), http://www.defra.gov.uk/publications/files/pb13786-biofuels-food-security-120622.pdf.

poultry. 38/ The broiler chicken industry uses 1.25 billion bushels of corn each year. 39/ Savings of $2 per bushel of corn would amount to $2.5 billion in annual savings to the broiler industry, which would result in lower food prices.

Finally, increased costs of corn affect the entire production chain from farm to table. As processing plants find themselves unable to keep pace with the increasing costs of grain, the growers and farmers who produce poultry and livestock suffer. And when poultry processing plants shutter, the economic effects ripple through the entire local community, reaching those employed both directly and indirectly by the plant. In total, the chicken industry directly employed about 251,100 employees in 2011 and indirectly generated an additional 759,150 jobs in the supplier and ancillary industries, including feed mills, hatcheries, and trucking. 40/ Thus, the total direct and indirect employment by the U.S. chicken industry in 2011 was about 1,010,250 workers, producing wages of $47.3 billion and generating $197.6 billion in economic activity. At the local level, a single processing plant is supported by about 300 farm families. The direct effect of the increased price of corn is to put local farmers and workers employed by the chicken industry out of business.

6. What role could cellulosic biofuels play in mitigating the potential effects of the RFS on corn prices?

If cellulosic-based biofuels were to actually become a commercially-viable energy source, the impact would be to lessen the demand pressure on the corn market. Unfortunately, it is very difficult to envision a time in the future when cellulosic-based biofuels will become a reality in the energy market place. Assuming there is the break-through in the technical aspect of turning cellulosic material into a biofuel, like ethanol, at an economically-competitive cost, there remains another major hurdle. That challenge involves transporting, storing, handling, and processing a tremendous quantity of raw material to produce a relatively limited amount of ethanol. Removing one half of the corn stalks from harvested corn fields will not only prove quite costly, but also impact the availability of organic matter in the soil. It is possible that the removal of this organic matter will affect the yields of the crop planted following such removal. Such a continual practice may not prove to be sustainable and, therefore, renewable. This issue raises the question of "What is really renewable?" Does putting over 200 pounds of nitrogen per acre on a corn field qualify corn to be considered "renewable?

At one time corn-based ethanol was to be a transitional source of biofuels until cellulosic-based biofuels became commercially viable. As the dream of cellulosic-based biofuels continues to remain a dream,

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38/ These figures are based on estimates that for every $1 increase in the price of corn per ton, feed costs increase 45-67 cents. There are ostensibly a standardized 56 pounds of corn per bushel and 2000 pounds in a ton. Although a bushel is generally viewed as containing 56 pounds of corn, a bushel is technically a volumetric measurement. As the quality of corn decreases, so does its average weight per bushel. The current year's corn crop is likely to weigh in at 54 pounds per bushel. This would drive up feed prices even more (and the RFS would even further distort market pricing) because livestock and poultry are fed by weight, not volume, meaning more bushels of corn would be required to feed each animal.

39/ This estimate is based on the facts that in 2011 8.34 billion broilers were produced with live weight of 48.28 billion pounds. It requires 106 billion pounds or 53 million tons of feed to produce that quantity of broilers, including broilers, pullets, and breeders. Given that two-thirds of the chicken feed ration is corn and corn by-products, 35.5 million tons or more than 1.25 billion bushels of corn were fed to chickens in 2011.

40/ The Poultry and Egg Industry Economic Contribution Study: 2012, http://chicken.guerrillaeconomics.net/public/res/Poultry%20Impact%20Methodology.pdf.

the argument that the RFS burden will be lifted from corn is less and less debated. While it may be worthwhile to pursue the necessary technical break-through for cellulosic-based biofuels, there is a legitimate question regarding the hundreds of millions of dollars being invested to build plans that may or may not event produce cellulosic-based biofuels. To the extent that federal, state, and local governments guarantee and/or underwrite the financing for these plants, the question becomes even more of an issue.

7. What impact are cellulosic biofuels expected to have on rural economies as the production of such fuels ramps up?

Since it is highly unlikely that cellulosic-based biofuels will come into commercial operation before 2022, it would be very speculative to assess the impact on rural economies. To the extent that a cellulosic-matter crop could be produced on land now considered unproductive for traditional agricultural crops and would not negatively impact the environmental features of such land, the development of cellulosic biofuels could be seen as beneficial.

8. Will the cellulosic biofuels provisions succeed in diversifying the RFS?

Theoretically, the answer is yes. But we explained in Question 7 the likelihood of cellulosic biofuels achieving a meaningful level of commercial production remains quite doubtful, especially before 2022. When Congress approved the Energy Independence and Security Act of 2007, the view of and hopes for cellulosic-based biofuels was apparently based on something other than a full and careful analysis of the science and economics needed to bring such a biofuel to commercial fruition.

9. What is the scale of the impact of the RFS on international agricultural production and global land use changes?

Relatively high corn prices and similarly high prices for competing crops compared with somewhat more stable production costs have provided a very strong stimulus for farmers around the world to produce more grains and oilseeds. Clearly, the impact of the RFS has not just been on U.S. agriculture. With more and more land being shifted from grassland, pastures, and land having environmental concerns, the issues involved become more apparent and raises the question of the real cost of certain unintended consequences. In hindsight it is somewhat obvious the RFS schedule was too aggressive and lacked the needed options for a more workable mechanism for re-consideration.

It is the National Chicken Council's hope that the responses received to this white paper can be the basis for a much warranted re-consideration of the RFS.

<u>Concluding Note</u>

Attached is a February 5, 2013 power point presentation prepared by Dr. Thomas E. Elam, President of FarmEcon, LLC. This presentation, "The Renewable Fuel Standard: Real Costs, and Need for Reform" will provide the Committee with additional information that should be helpful in assessing the answers to the nine questions.

Attachments