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IMPACTS OF WAIVING THE RENEWABLE FUEL STANDARD (RFS) ON HOUSEHOLD SPENDING ON FOOD AND FUEL

The governors of Arkansas and North Carolina recently submitted letters to Environmental Protection Agency (EPA) Administrator Lisa Jackson requesting a waiver of the Renewable Fuel Standard (RFS) in 2012 and 2013. While acknowledging that this summer's historic drought is the root cause of the economic challenges facing their states' livestock and poultry industries, the governors also allege that the RFS is a significant driver of recent higher feed costs. Further, supporters of a waiver suggest suspending the RFS would substantially reduce retail food prices in 2013.

While this summer's drought has undoubtedly caused billions of dollars in damages to the entire U.S. agriculture sector, the impact of the RFS on the average American household's budget has been mischaracterized by waiver proponents. In fact, as this analysis shows, waiving the RFS requirements for 2013 would actually result in a *net increase* in annual household spending of approximately **\$24-\$85** due to increased spending on gasoline. The increase in household gasoline expenditures that would result from an RFS waiver would far outweigh the nearly imperceptible reduction in food prices. *Thus, waiving the RFS in 2013 would do more harm to American consumers than if EPA allows the program to continue to function as designed.*

Waiving the RFS for 2013 could *conservatively* increase annual household spending on gasoline by **\$33-\$88**, while only reducing household spending on food by **\$3-\$9** for the entire year. A waiver would result in a net *increase* in yearly spending per household of
\$24-\$85.

IMPACT OF AN RFS WAIVER ON HOUSEHOLD SPENDING ON FOOD

According to the U.S. Department of Agriculture (USDA), a 50% increase in the farm price of corn translates into a 0.5%-1.0% increase in retail food prices, as measured by the Consumer Price Index (CPI).¹ Thus, every 1% increase or decrease in the price of corn translates to a 0.01-0.02% increase or decrease in the CPI for food.

Economists at Iowa State University and Purdue University have recently estimated the potential impacts on corn prices of various RFS waiver scenarios. The Iowa State University analysis estimates a full waiver of the 2013 RFS would result in a 7.4% reduction in 2012/13 average corn prices and a reduction in ethanol production of 500 million gallons.² The Purdue study's "strong drought" case (10.5

¹ Leibtag, Ephraim. ["Corn Prices Near Record High, But What About Food Costs?"](#) USDA-ERS. Amber Waves, Vol. 6 Issue 1. February 2008.

² Babcock, Bruce. ["Updated Assessment of the Drought's Impacts on Crop Prices and Biofuel Production."](#) Center for Agricultural and Rural Development, Iowa State University. 12-PB8. August 2012.

billion bushels of corn production in 2012) estimates a partial waiver of the 2013 RFS would result in a 5.6% reduction in 2012/2013 corn prices and a reduction in ethanol output of 1.4 billion gallons.³

Based on the Iowa State and Purdue analyses, a waiver of the 2013 RFS could result in corn prices being reduced by 5.6%-7.4%. Thus, according to USDA's estimate of the impact of corn prices on food inflation, a waiver of the RFS might be expected to reduce the CPI for food by 0.056%-0.148% (56- to 148-thousandths of 1 percent).

According to the Bureau of Labor Statistics, the average American household spent \$6,315 annually on food from 2008-2010.⁴ USDA currently expects food inflation in 2013 to reach 3.5%, only slightly above the 10-year average of 2.9% year-over-year food inflation.⁵ This means that if 2012 household expenditures on food are \$6,315 (e.g., in line with the most recent three-year average), then 2013 average household food expenditures without a waiver of the RFS would increase \$221 to \$6,536.

Based on the research cited above, if EPA waived the RFS for next year, food inflation might instead reach 3.35%-3.44% and average household food expenditures for 2013 might fall to \$6,533-\$6,527. In other words, waiving the RFS might save **\$3-\$9 per household for the full year**, or roughly \$0.008-\$0.025 per day.⁶

The nearly imperceptible impact of a waiver on food prices is further demonstrated by examining potential retail price changes for several common grocery items that include corn as a major input. As shown in the table below, prices for items like a box of corn flakes and a 2-liter bottle of soda would theoretically decrease by less than \$0.01 based on the estimated change in corn prices under an RFS waiver. Even prices for products that use larger amounts of corn as inputs, such as chicken, pork, and eggs, would *theoretically* see just a \$0.02-\$0.03 reduction per pound (per dozen, in the case of eggs).

Retail Grocery Item	Corn Input Required (lbs.)	Embodied Value of Corn Input		
		Without RFS Waiver (\$7.85/bu) ^d	With RFS Waiver (\$7.34/bu) ^e	Difference ^f
Box of corn flakes, 18-oz.	0.8 ^a	\$0.114	\$0.106	\$0.007
Bottle of soda, 2-liter	0.9 ^a	\$0.132	\$0.123	\$0.009
Chicken, 1 lb.	2.6 ^a	\$0.364	\$0.341	\$0.024
Pork, 1 lb.	3.5 ^b	\$0.491	\$0.459	\$0.032
Eggs, 1 dozen	3.2 ^c	\$0.449	\$0.419	\$0.029

Notes:

- a. Leibtag, Ephraim. ["Corn Prices Near Record High, But What About Food Costs?"](#) USDA-ERS. Amber Waves, Vol. 6 Issue 1. February 2008.
- b. Tyson Foods, Inc. Fiscal 2011 Fact Book. Available at ir.tyson.com

³ Tyner, Wallace, Christopher Hurt, and Farzad Taheripour. ["Potential Impacts of a Partial Waiver of the Ethanol Blending Rules."](#) Purdue University and Farm Foundation. August 16, 2012.

⁴ Bureau of Labor Statistics. ["Average annual expenditures and characteristics of all consumer units."](#) Consumer Expenditure Survey, 2006-2010. September 2011. Most recent available.

⁵ USDA-ERS. [Food Price Outlook, 2012-2013](#). Accessed Aug. 24, 2012.

⁶ A reduction of \$3-\$9 in food expenditures is equivalent to a 0.006%-0.018% decrease in total annual household expenditures based on three-year average total household annual expenditures. See footnote 4.

- c. Table 32. USDA-ERS. "An Analysis of the Effects of an Expansion in Biofuel Demand on U.S. Agriculture." ("The feed conversion ratio for egg production is approximately 4 pounds of feed per 1 dozen eggs...Approximately 80 percent of egg-type feed is corn.")
- d. \$7.85/bu is the mid-point between estimated corn prices under the "no waiver" cases in the Iowa State University (\$7.89/bu) and Purdue University (\$7.82/bu) studies.
- e. \$7.34/bu represents a 6.5% reduction from \$7.85/bu. The 6.5% figure is the mid-point between the estimated corn price reduction resulting from a waiver in the Iowa State University (7.4%) and Purdue University (5.6%) studies.
- f. Difference in embodied value of corn input with and without RFS waiver may not sum due to rounding.

IMPACT OF AN RFS WAIVER ON HOUSEHOLD GASOLINE SPENDING

Several recent studies have examined the impact of ethanol blending on wholesale and retail gasoline prices. One recent study conducted by economists at Louisiana State University examined the incremental gasoline price impacts of each 1 billion gallons of ethanol added to supply.⁷

The Louisiana State study found gasoline prices are reduced \$0.06/gallon for each 1 billion gallons of ethanol added to the gasoline pool, simply as a result of increasing the supply of gasoline relative to demand. This effect is independent of the savings resulting from simple blending economics, as discussed below. Assuming the response modeled by Louisiana State is linear, reducing the amount of ethanol available for gasoline blending by 100 million gallons would raise gas prices by \$0.006/gallon. Thus, the 500-million-gallon reduction in ethanol output resulting from an RFS waiver analyzed by Iowa State would increase gas prices by \$0.03/gallon. The 1.4-billion-gallon reduction in the Purdue analysis would increase gas prices by \$0.08/gallon.

According to the Energy Information Administration, the average household consumes approximately 1,100 gallons of gasoline annually.⁸ Based on results of the Iowa State and Purdue studies, waiving the RFS would increase average household gasoline expenditures by at least **\$33-\$88 for the year**, offsetting the miniscule savings a waiver might produce on food expenditures.⁹

The impacts on gasoline expenditures may be significantly understated here for several reasons. One is that ethanol continues to sell at a considerable discount to gasoline. The spread between gasoline and ethanol has averaged \$0.70/gallon in 2012, but has narrowed to approximately \$0.40/gallon in recent months. Thus, based purely on this price spread, drivers have theoretically saved \$0.07/gallon this year when purchasing E10 versus gasoline containing no ethanol. This effect is on top of the aggregate price impact of gasoline supply extension examined in the Louisiana State study. However, it is difficult to

⁷ Marzoughi, Hassan, and P. Lynn Kennedy. ["The Impact of Ethanol Production on the U.S. Gasoline Market"](#) No. 119752, 2012 Annual Meeting, February 4-7, 2012. Birmingham, Alabama. Southern Agricultural Economics Association.

⁸ EIA. Table A2. [U.S. Per Household Vehicle-Miles Traveled, Vehicle Fuel Consumption and Expenditures, 2001](#). This data set was discontinued; however, according to EIA, total gasoline consumption in 2001 (132 billion gallons) was nearly identical to estimated 2012 consumption. Thus, we assume current average household consumption is similar to 2001 levels.

⁹ This equates to increased spending of roughly \$0.09-\$0.24 per day for the average American household, and represents a 0.067%-0.179% increase in total household expenditures. Such an added expense would amount to a 1.4%-3.9% increase in annual household spending on gasoline and motor oil, based on three-year average annual expenditures. See footnote 4.

predict how this price spread would respond to a waiver and potentially reduced ethanol output, so it is omitted here.

Another important factor that may result in greater impacts on gasoline prices, and therefore household expenditures, is octane replacement cost for refiners if ethanol production is curtailed under a waiver. It is well established that many refiners blend ethanol with sub-octane gasoline to increase octane content to the minimum levels necessary for sale at retail. If a waiver of the RFS resulted in less ethanol output, some refiners may be forced to use other, more expensive, sources of octane. Toluene, for example, is an alternative source of octane that is currently selling for 160% the price of ethanol. Another octane source, benzene, has sold for as much as \$5/gallon in recent weeks (nearly double current ethanol prices). Using these sources of octane in lieu of ethanol would raise the cost of producing finished gasoline, and those increased costs would be passed on to consumers in the form of higher retail prices. Additionally, there is growing concern about the long-term adverse health effects of using toxic “aromatics,” such as benzene and toluene, as octane sources in gasoline.

CONCLUSION

Proponents of a waiver of the 2012 and 2013 RFS requirements have rhetorically suggested such an action would reduce food prices for consumers. However, supporters of a waiver have not only failed to quantify potential impacts on food expenditures, but they have also disregarded the likely effects of a waiver on gasoline prices. Transportation and food are the second- and third-largest expenditures, respectively, for the average American household budget. Only housing expenses consume a larger fraction of household income. Therefore, any discussion of the potential impacts of a waiver of the RFS must include an examination of the effects on gasoline expenses. When the increase in gasoline expenditures that would result from a waiver is weighed against the negligible reduction in food spending, it is clear that a waiver would result in an increased burden on the household budget. We have demonstrated that a waiver might be expected to reduce the household’s annual food expenses by **\$3-\$9**, while increasing annual gasoline expenditures by a conservative estimate of **\$33-\$88**. The impact on gasoline prices discussed here is likely understated, as other factors (such as ethanol’s wholesale discount to gasoline and octane replacement costs) were beyond the scope of this simple analysis.

In summary, **waiving the RFS likely would result in a net increase in annual household spending of at least \$24-\$85 in 2013**. This increased burden on the family budget would be particularly unwelcome at a time when unemployment remains high and economic recovery remains sluggish.