



Renewable Fuels Association

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ESTIMATING THE IMPACT OF INCREASED ETHANOL PRODUCTION ON U.S. HOUSEHOLD SPENDING

In the past 18 months, food price increases have occurred seemingly in tandem with advancing corn prices and growth in U.S. ethanol production. The concurrence of these events has led to speculation that increased ethanol production is a major driving factor of higher corn prices, and in turn, higher food prices. While the case can be made that expanded ethanol production is a minor factor in increased spending on food, additional food spending increases are more than offset by savings resulting from the inclusion of more ethanol in the U.S. gasoline supply. As this analysis of data from government, academic and financial sources demonstrates, the average U.S. household saved between \$204.29 and \$510.72 between March 2007 and March 2008 as a result of increasing ethanol production.

Estimating the Impact of Ethanol on Household Gasoline Spending

Ethanol today is priced significantly cheaper than gasoline. The Oil Price Information Service average price for ethanol for the week ending May 30, 2008, in the Chicago spot market was \$2.46 per gallon. Energy Information Administration average price for gasoline in New York Harbor for the week ending May 30, 2008, was \$3.27 per gallon. Based on this 81 cent differential between wholesale ethanol and gasoline prices together with the 51-cent per gallon blenders tax credit, consumers should be realizing a 13 cent savings per gallon by utilizing gasoline blended with 10 percent ethanol if refiners are passing along the savings. That is a direct savings for consumers at the pump.

Several recent studies have quantified the impacts of ethanol on gasoline prices. In a June 11, 2008, analysis prepared for the Senate Committee on Energy and Natural Resources, the U.S. Departments of Energy and Agriculture concluded that without ethanol "...gasoline prices would be between 20 cents per gallon and 35 cents per gallon higher."¹ For this analysis, we adopt the 20-cent figure as the lower bound of estimates on ethanol's impact on gasoline prices. An April 2008 study by the Center for Agriculture and Rural Development at Iowa State University found ethanol is saving 29 to 40 cents per gallon². Merrill Lynch Commodity Strategist Francisco Blanch recently concluded that gasoline prices would be 15 percent higher without increased

¹ U.S. Department of Energy and U.S. Department of Agriculture. Responses to Questions From Senator Bingaman. June 2008.

² Du, Xiaodong and Dermot Hayes. Center for Agriculture and Rural Development, Iowa State University. "The Impact of Ethanol Production on U.S. and Regional Gasoline Prices and On the Profitability of the U.S. Oil Refining Industry." April 2008. www.card.iastate.edu

biofuels production.³ Based on the 2008 year-to-date average of \$3.308 per gallon⁴ for regular unleaded gasoline, this equates to a savings of 50 cents per gallon. This figure represents the upper bound of estimates for this analysis. (Note: Based on AAA's average gasoline price on June 2, 2008 of \$3.98 per gallon, the savings would be nearly 60 cents per gallon.) A June 6, 2008, report released by Merrill Lynch verified Blanch's earlier estimate by stating, "...retail gasoline prices would be \$21/barrel higher, on average, without the incremental biofuel supply."⁵ This equates to 50 cents per gallon.

According to the Federal Highway Administration, the average household (which owns 1.9 vehicles) drives 21,252 miles per year.⁶ Average fuel economy for light-duty vehicles in 2007 was 20.2 miles per gallon, according to EPA⁷. Thus, average gasoline consumption per household can be calculated at 1,052 gallons. Using the range of estimates on savings per gallon resulting from ethanol, total savings per household is calculated at \$210.40 to \$526 (Table 1).

TABLE 1. Ethanol Impact on U.S. Household Gasoline Spending		
	<i>Variable</i>	<i>Source</i>
A.	Miles Driven per Household per Yr. (miles)	21,252 Fed. Highway Administration
B.	Average Vehicle Fuel Economy (mpg)	20.2 Environmental Protection Agency
C.	Gasoline Use per Household per Year (gals.)	1,052 (A÷B)
D.	Ethanol Savings per Gallon of Gasoline	\$0.20-0.50 Lower: DOE/USDA Upper: Merrill Lynch
E.	GASOLINE SAVINGS PER HOUSEHOLD	\$210.40 – \$526 (C x D)

Estimating the Impact of Ethanol on Household Food Spending

In recent months, the notion that ethanol is a significant contributor to higher food prices has been widely perpetuated in media reports and public discourse. However, there is very little objective economic analysis available on the subject of ethanol's direct impact on consumer food prices. This analysis uses variables from government sources to impute the impact of ethanol on average U.S. household spending on food.

According to the Department of Labor's Bureau of Labor Statistics (BLS), the average U.S. household (consisting of 2.5 persons) spent \$6,111 on food in 2006.⁸ BLS estimates the food price index advanced at a rate of 4.0 percent in 2007. In May 2008, the White House Council of Economic Advisors stated that food price inflation for the past 12 months (March 2007 to March 2008) was 4.5 percent.⁹ Therefore, it can be assumed that total U.S. household spending on food for this period was \$6,386, an increase of \$275 over 2006 calendar year spending.

³ Barta, Patrick. "As Biofuels Catch On, Next Task Is to Deal With Environmental, Economic Impact." *Wall Street Journal*. March 24, 2008.

⁴ Energy Information Administration. Gasoline price average is for regular unleaded, Jan. 1 – May 30, 2008.

⁵ Merrill Lynch. "Biofuels driving global oil supply growth." *Global Energy Weekly*. June 6, 2008.

⁶ FHWA National Household Travel Survey. <http://nhts.oml.gov/publications>

⁷ "Fuel Economy Trends: 1975 Through 2007." <http://www.epa.gov/oms/fetrends.htm>

⁸ Consumer Expenditures in 2006. www.bls.gov/news.release/cesan.nr0.htm

⁹ White House Fact Sheet: Leading the Fight Against Hunger. www.whitehouse.gov/news/releases/2008/05/print/20080501-22.html

The White House Council of Economic Advisors further determined that, “Without increased ethanol production, food price inflation in the United States would have been 4.25 percent over the past 12 months...”¹⁰ The June 11, 2008, USDA/DOE analysis revealed that the impact of expanded ethanol production on food prices may be even less by stating, “In 2007, the expansion in ethanol and biodiesel consumption is estimated to have increased the Consumer Price Index for all food by 0.10-0.15 percentage points.” For estimating the impact of ethanol on the food price index, this analysis uses 0.10 percent as the lower bound and 0.25 percent as the upper bound.

Viewed another way, the increase in household spending on food would have been \$259.72 to \$268.88 without increased ethanol production as opposed to \$275 with ethanol expansion. Therefore, we calculate the average U.S. household spent an additional \$6.11 to \$15.28 on food during this period as a result of increased ethanol production (Table 2). This amount equates to one- to two-tenths of 1 percent of annual household spending on food.

TABLE 2. Ethanol Impact on U.S. Household Food Spending		
	<i>Variable</i>	<i>Source</i>
A.	Average Household Food Spending (2006)	\$6,111 Bureau of Labor Statistics
B.	Added Cost to Food due to Food Price Inflation with Ethanol Impact (4.5%)	\$274.99 White House Council of Economic Advisors (WHCEA)
C.	Added Cost to Food due to Food Price Inflation without Ethanol Impact (4.25%-4.40%)	\$259.72-\$268.88 Upper: WHCEA Lower: USDA/DOE
D.	ADDED COST TO FOOD DUE TO IMPACT OF ETHANOL ON FOOD INFLATION (.10%-.25%)	\$6.11-\$15.27 (B x C)

The Net Impacts of Ethanol on U.S. Household Spending

Given the estimates discussed in this paper, increased ethanol production had a net positive impact on U.S. household spending from March 2007 to March 2008. When the slight increase in food spending attributable to ethanol is balanced against the gasoline savings resulting from ethanol, the net impact to the average U.S. household was a savings of \$204.29 to \$510.72.

TABLE 3. Net Impact of Ethanol on Total Household Spending		
	<i>Variable</i>	<i>Source</i>
A.	Ethanol Savings per Household	\$210.40-\$526 Table 1, Row E
B.	Added Cost to Food per Household due to Impact of Ethanol on Food Inflation	\$6.11-\$15.27 Table 2, Row D
C.	NET IMPACT OF ETHANOL ON HOUSEHOLD SPENDING	\$204.29 - \$510.72 (A - B)

¹⁰ Ibid.