



CONTRIBUTION OF THE ETHANOL INDUSTRY TO THE ECONOMY OF THE UNITED STATES

Prepared for the Renewable Fuels Association by

John M. Urbanchuk

Director, LECG LLC

The ethanol industry is one of the most significant success stories in American manufacturing over the past quarter-century. From a cottage industry that produced 175 million gallons in 1980, the American ethanol industry has grown to include 81 manufacturing facilities with an annual capacity of almost 3.6 billion gallons. According to the Renewable Fuels Association 16 new plants and two major plant expansions representing an additional 754 million gallons of capacity currently are under construction and more are planned. Total ethanol production for 2005 is estimated at more than 3.9 billion gallons on a year-end capacity base of 4.3 billion gallons. An estimated 30 percent of all gasoline used in the United States was blended with ethanol in 2004.

The ethanol industry provides a significant contribution to the American economy. The industry spent more than \$5.1 billion on raw materials, other inputs, goods and services to produce an estimated 3.41 billion gallons of ethanol during 2004. The largest share of this spending was for corn and other grains used as the raw material to make ethanol. The ethanol industry used more than 1.25 billion bushels of corn in 2004, valued at nearly \$3.1 billion. Ethanol production represents the third largest component of corn demand after feed use and exports and will account for 13 percent of total corn utilization this marketing season. In addition to providing a growing and reliable domestic market for American farmers, the ethanol industry also provides the opportunity for farmers to enjoy some of the value added to their commodity by further processing. Farmer-owned ethanol plants account for half of U.S. fuel ethanol plants and almost 40 percent of industry capacity.

The remainder of the spending by the ethanol industry is for a wide range of inputs such as industrial chemicals; electricity, natural gas, and water; labor; and services such as

maintenance, insurance, and general overhead. Spending for these goods and services represents the purchase of output of other industries. In addition, the construction of new ethanol plants results in spending for a wide range of goods and services. At an estimated construction cost of \$1.40/gallon for a new dry mill ethanol plant, the 754 million gallons of capacity currently under construction represents the expenditure of an additional \$1.1 billion by the ethanol industry.

The spending associated with current ethanol production and investment spending on new plant capacity will circulate throughout the entire economy several fold. Consequently this spending will stimulate aggregate demand, support the creation of new jobs, generate additional household income, and provide tax revenue for government at all levels. The impact of the ethanol industry on the American economy was estimated by applying the appropriate final demand multipliers for output, earnings, and employment for the relevant supplying industry calculated by the U.S. Bureau of Economic Analysis (BEA) to the estimates of spending described above.¹ The final demand multipliers for output, earnings, and employment for the selected industries are shown in Appendix Table 1.

The following summarizes the economic contribution of the American ethanol industry. These impacts are detailed by industry segment in Appendix Table 2.

- The combination of spending for annual operations and capital spending for new plants under construction added \$25.1 billion to gross output in the American economy in 2004. Gross output represents the market value of an industry's production, including commodity taxes, and it differs from GDP.² Generally speaking, Gross Output is larger than GDP since it includes the value of intermediate goods and services, which are "netted out" of GDP. Reflecting this difference, the ethanol industry added \$14 billion to the nation's Gross Domestic Product in 2004.

¹ The multipliers used in this analysis are the detailed industry RIMS II multipliers for the United States estimated by the Bureau of Economic Analysis, U.S. Department of Commerce.

² BEA description of Gross Output taken from www.bea.doc.gov/bea/dn2/readgo.htm. According to BEA accounts GDP was 55.8% of the value total gross output in 2003.



- New jobs are created as a consequence of increased economic activity caused by ethanol production. The increase in gross output (final demand) resulting from ongoing production and construction of new capacity supports the creation of 147,206 jobs in all sectors of the economy this year. These include more than 13,000 jobs in America's manufacturing sector -- American jobs making ethanol from grain produced by American farmers.
- Increased economic activity and new jobs result in higher levels of income for American households. The production of ethanol will put an additional \$4.4 billion into the pockets of American consumers this year.
- The combination of increased output and GDP and higher income generates tax revenue for government at all levels. The full impact of the annual operations of the ethanol industry and spending for new construction will add more than \$1.3 billion of tax revenue for the Federal government and \$1.2 billion for State and Local governments.
- Ethanol reduces our dependence on imported oil and reduces the U.S. trade deficit. The ethanol industry. The production and use of ethanol displaces crude oil needed to manufacture gasoline. According to the Energy Information Administration imports account for 63 percent of our crude oil supplies and oil imports are the largest component of the expanding U.S. trade deficit. The production of 3.41 billion gallons of ethanol means that the U.S. needs to import 143.3 million fewer barrels of oil to meet the same demand levels. Without the ethanol industry, the U.S. dependence on oil imports would be nearly 66 percent and the U.S. trade deficit would be \$5.1 billion higher.

Appendix Table 1
BEA RIMS II Final Demand Multipliers, U.S.

Industry	Output	Earnings	Employment (Jobs)
Construction	3.3585	1.0174	34.8
Annual Operations			
Feed Grains (Corn)	2.7581	0.6469	31.4
Ind inorganic/organic chemicals	3.0196	0.7189	19.8
Electric	2.3356	0.5165	14.3
Natural gas	3.3205	0.5774	16.5
Water and water treatment	2.9605	0.7892	25.5
Maintenance and repair	3.1717	1.0017	35.2
Business Services	1.9136	0.6324	13.6
Earnings paid to households	2.1688	0.6110	23.8

Appendix Table 2
Economic Contribution of the Ethanol Industry

Industry	Purchases (Mil 2004\$)		Impact	
		Output (Mil 2004\$)	Earnings (Mil 2004\$)	Employment (Jobs)
Construction	\$1,055.6	\$3,545.2	\$1,074.0	32,363
Plus initial changes		\$1,055.6		
Total		\$4,600.8	\$1,074.0	32,363
Annual Operations				
Feed Grains (Corn)	\$3,087.0	\$8,514.3	\$1,997.0	85,311
Industrial chemicals	\$406.7	\$1,228.1	\$292.4	7,106
Electric	\$133.0	\$310.6	\$68.7	1,677
Natural gas	\$907.1	\$3,011.9	\$523.7	13,192
Water and water treatment	\$34.7	\$102.8	\$27.4	779
Maintenance and repair	\$80.0	\$253.7	\$80.1	2,483
Business Services	\$56.0	\$107.2	\$35.4	670
Earnings paid to households	\$173.0	\$375.2	\$105.7	3,626
Subtotal	\$4,877.5	\$13,903.7	\$3,130.4	114,844
Plus initial changes:				
Value of ethanol production		\$5,456.0	\$173.0	
Value of co-products		\$1,143.9		
Total Annual Operations		\$20,503.6	\$3,303.4	114,844
Grand Total		\$25,104.4	\$4,377.4	147,206