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Economic Impacts of Increasing the Ethanol Blend Limit

Prepared for Growth Energy

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Objectives

Study objectives were to determine nationwide economic impacts of an increase in the ethanol blend limit to 15 percent. One time capital investment impacts and annual impacts from operations were estimated as well as the impact on final demand for output, earning and employment (direct and secondary impacts).

Methods

Expenditure data for both construction and operations of a 100 mgy corn ethanol plant were obtained from the client. Current ethanol production, plants under construction, offline capacity, and expansion capacity were obtained from the Renewable Fuels Association (RFA 2009). Estimates of projected liquid transportation fuel consumption were obtained from the U.S. Department of Energy (DOE 2009, DOEa 2009). Input-output analysis using U.S. Department of Commerce RIMS II (Regional Industrial Multiplier System) multipliers was used to estimate national economic impacts associated with an increased ethanol blend limit. Economic impact analysis is an estimate of changes in economic activity resulting from some initial economic stimulus, in this case the economic effects of the expansion of the ethanol industry as a result of an increase in the ethanol blend limit.

Two types of impacts are reported, direct impacts and direct and secondary impacts. Direct economic impacts are the total expenditures spent in the impact area. All expenditures, for construction and operations except for purchases of corn were considered to be direct economic impacts as all of the expenditures were domestic expenditures and with the exception of corn represented new expenditures that would not have taken place in the absence of ethanol production. Secondary impacts were estimated using final demand multipliers for output, earnings, and employment. The multipliers reflect the linkages among the various sectors of the national economy.

Background

Liquid petroleum fuels consumption starting in 2010 and continuing through 2020 was estimated to be 136 billion gallons per year (DOE 2009, DOEa 2009). Based on that level of consumption a 15 percent ethanol blend would require ethanol production of 20.4 billion gallons per year. Current ethanol production capacity is 10.3 bgy with 1.9 bgy of production capacity currently offline, another 1.5 bgy under construction, and .6 bgy in expansion capacity. An addition 6 bgy of production capacity would be required to produce 20.4 bgy of ethanol. This level of expansion could be met by the construction and operations of 60 100 bgy corn ethanol plants.

Results

Economic Impacts of a Single 100 mgy Corn Ethanol Plant

National direct and direct and secondary economic impacts from the construction of a single 100 mgy corn ethanol plant are detailed in Table 1. Direct impacts (total expenditures for construction) were estimated to be \$214.5 million with construction employment of 200 workers. Expenditures were allocated to the appropriate RIMS II multipliers to estimate the change in output, earnings and employment. Direct and secondary impacts for output totaled \$594 million dollars and direct and secondary impacts on earnings totaled nearly \$175 million. That level of economic activity would support 4,234 secondary jobs nationally.

Operations for a single 100 mgy ethanol plant would employ 45 workers with \$100 million in direct economic impacts. Direct and secondary impacts for output were estimated to be \$253.8 million and for earnings were estimated to be \$65 million. This level of business activity would support 1,418 secondary jobs nationwide. Direct and secondary impacts associated with construction are one time only impacts, while impacts associated with operations represent annual impacts (Table 1).

Table 1. Direct and Secondary Economic Impacts, Single 100 mgy Corn Ethanol Plant, Construction and Operations, National Impact				
	DIRECT IMPACTS	DIRECT AND SECONDARY IMPACTS		
	Expenditures	Final Demand Output	Final Demand Earnings	Final Demand Employment
	1,000 dollars			— FTEs —
Construction Impacts¹				
Total Construction Costs	214,500	593,968	174,906	4,234
Construction Employment: 200				
Operations Impacts²				
Total Operations Expenditures	254,025	716,763	163,817	5,151
Total Operations Expenditures with out Corn	100,025	253,870	65,211	1,418
Operations Employment: 45 Workers				
¹ One-time only impacts.				
² Annual Impacts.				

Economic Impact of an Increase in the Ethanol Blend Limit to 15 Percent

A previously detailed, increasing the ethanol blend limit to 15 percent would require additional production capacity of 6 bgy or 60 100 mgy corn ethanol plants. This is in addition to available plant expansion capacity, plants currently under construction, and offline production capacity. Capital expenditures for plants currently under construction or currently offline are not included in the estimate of economic impacts of new plants to meet a 15 percent blend limit. Plants with expansion capacity (2.25 mgy plant equivalents) were included in the estimate of construction impacts on a 100 mgy plant equivalent basis.

Production from plants under construction, currently offline, and expansion capacity were included in the assessment of economic impacts from annual operations. Plants were included on a 100 mgy equivalent basis. The assessment of annual operations was for 60 new 100 mgy plants and 36 100 mgy plant equivalents that are currently under construction, offline or represent expansion capacity.

National direct and secondary impacts from construction of 60 100 mgy corn ethanol plants and 2.25 mgy plant equivalents are detailed in Table 2. Direct economic impacts nationally from construction would be \$13.3 billion with direct construction employment of over 12,000 workers. Expenditures were allocated to the appropriate RIMS II multipliers to estimate the change in output, earnings and employment. Direct and secondary impacts for output were estimated to be \$36.8 billion and direct and secondary impacts for earnings were estimated to total \$10.8 billion. This level of economic activity would support over 260,000 FTE secondary jobs. Construction impacts are one-time only impacts.

Direct and secondary impacts from operations of 96 100 mgy equivalent corn ethanol plants are detailed in Table 2 (60 new plants and 36 100 mgy plant equivalent). Annual operations expenditures (direct impacts) would total \$9.6 billion dollars and employ 4,320 workers. Expenditures were allocated to the appropriate RIMS II multipliers to estimate the change in final demand for output, earnings and employment. Total direct and secondary impacts for output would total \$24.3 billion and total direct and secondary impacts for earnings would total \$6.2 billion. This level of economic activity would support over 136,000 secondary jobs. Economic impacts from operations are annual impacts.

Further expansion of the ethanol blend limit to 20 percent would naturally result in additional economic impacts though construction and operations of ethanol production facilities.

Table 2. Direct and Secondary Economic Impacts, 15 Percent Ethanol Blend, Construction¹ and Operations², National Impact

Region/ # Plants ³	DIRECT IMPACTS		DIRECT AND SECONDARY IMPACTS		
	Employment	Expenditures	Final Demand Output	Final Demand Earnings	Final Demand Employment
	— FTEs —	— 1,000,000 dollars —			— FTEs —
Construction Impacts					
Nationwide (62.25) ³	12,400	13,299	36,826	10,844	262,523
Operations Impacts					
Nationwide (96) ⁴	4,320	9,602	24,371	6,260	136,101

¹One time impacts.

²Annual impacts.

³Number of plants expressed in million gallon per year equivalents. Only new plants (60) and plant expansions (2.25 100 mg equivalents) included in construction impacts. Plants under construction or offline not included.

⁴Includes new plants, offline plants, plants under construction and expansion potential.

References

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