

Estimating the Importance of the Ethanol Industry to the Iowa Economy in 2011

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Introduction

At ISU we produce estimates of the total value of certain industries to the state's economy using modeling systems that contain up-to-date secondary data on the major components of industrial production in the state. We, for example, periodically describe the importance of agriculture and ag-related manufacturing to jobs and incomes in Iowa for the College of Agriculture and Life Sciences as it promotes its education and outreach services to its many and diverse stakeholders. Similar studies have been done for manufacturing clusters, like the Cedar Rapids area food and kindred products manufacturing sector, or whole industries, like the state's vaunted insurance sector.

This report summarizes the ethanol industry's value to the state of Iowa using the same methods ISU employs with other industries it periodically evaluates as well as the same methods it has deployed in previous studies of Iowa's ethanol sector.¹

The Industry's Direct Values

Iowa's ethanol industry has 43 establishments and 1,650 persons employed at those plants according to payroll employment data compiled by the Bureau of Labor Statistics (BLS). Those data are for 2010, but there were no plants added in 2011, so the employment number is steady. Average total earnings at those facilities are an estimated \$56,000 per year per worker after adjusting BLS values for likely employer-paid benefits, so total worker earnings at Iowa's ethanol refineries are \$92.4 million. Total value added in the industry, which would include all payments to labor, all payments to investors, and

¹ See for example, Swenson, Dave in Determining the Regional Economic Values of Ethanol Production in Iowa Considering Different Levels of Local Investment, Bioeconomy Working Group, College of Agriculture, Iowa State University, September 2006, and _____ in Understanding Biofuels Economic Impact Claims, Department of Economics Staff Report, Iowa State University, April, 2007. For an earlier survey and critique of the practice of impact analysis of biofuels see also _____, Input-Outrageous: The Economic Impacts of Modern Biofuels Production. Paper presented at the biennial IMPLAN Users Conference, Indianapolis, Indiana, June, 2006.

Iowa State University research on the economic impacts of ethanol plants was extensively investigated and replicated by Low, Sarah A., and Andrew M. Isserman in Ethanol and the Local Economy: Industry Trends, Location Factors, Economic Impacts and Risks, Economic Development Quarterly 23 (Feb. 2009): 71-87. Finally, this topic was broadly addressed in Swenson, David, A Review of the Economic Rewards and Risks of Ethanol Production, Chapter 3 in David Pimentel (ed), Biofuels, Solar and Wind as Renewable Energy Systems. Springer Science+Business Media B.V. 2008.

all indirect taxes on production activity would be approximately 750 million.² Value added is the same as Gross Domestic Product (GDP), so it is a useful measure of the potential worth of the industry to Iowa's overall economy and allows for a standardized comparison to other industries.

The Industry's Total Iowa Impacts

When we measure the contribution of an industry to the state's economy, especially one that boomed as the ethanol industry did over the past five years, we are careful to segregate net new productivity from productivity that already existed in the Iowa economy. That means we carefully scrutinize the schedule of inputs the industry requires. We discount the corn inputs from the modeling structure because the corn was already here,³ and because what we are interested in documenting are the net additions to Iowa productivity associated with ethanol production. The ethanol industry does not create more farm production jobs, but the modeling structure does not know that unless an analyst switches off that relationship. The industry has, however, very strong input requirements for skilled maintenance and facilities management, chemicals, fuels, utilities, and transportation. Once the modeling structure has been re-calibrated to emphasize those value inputs, the results for Iowa yield these outcomes:

Estimated Economic Impacts of Iowa's Ethanol Industry in 2011

➤ Total Iowa Jobs	5,995
➤ Total Value Added (or GDP)	\$1.06 billion
➤ Total Labor Income (a subset of GDP)	\$280.14 million

² This estimate assumes that \$.20 in net profit will have been generated on 3.2 billion gallons of ethanol production in 2011, which includes profits on co-product, plus all labor income of \$92.4 million, plus estimated taxes on production of \$11.25 million equals \$748.5 million in value added. The Iowa Ag Marketing Resource Center shows a monthly average net return per gallon of \$.153 for the past year. Rounding to \$.20 per gallon to include co-products is therefore a conservative, but reasonable, assumption on plant profits.

³ Iowa's ethanol producers buy upwards of 1.15 billion bushels of Iowa corn, but the corn was already here, so they do not incite more land based agricultural activity, per se; instead, they opportunistically co-locate in order to maximize their access to the state's plentiful corn supply. While plants may up the bid locally for corn, in and of themselves they do not create more crop production in Iowa. If there are price and profit conclusions to be drawn from higher corn prices, those prices and profits have also been influenced by federal policies, blenders' credits that have helped provide a floor for those prices, and production mandates. While the subsidies expired at the end of 2011, the imputed Iowa production value of those subsidies was perhaps as high as \$1.2 billion in 2011. Readers will note, therefore, that the imputed blender credit subsidies exceed the estimated total GDP or value added impact estimate produced in this report.

On the other side of the economic impact ledger, a thorough analysis of the consequences of robust corn prices on all other Iowa users of corn would note that feeders of pork, beef, and poultry have had to absorb those robust prices. Rolling overall farm-level profits into a conclusion about the impact of the ethanol industry on Iowa's economy is, therefore, a dicey process fraught with offsets, adjustments, caveats, and significant debate among agricultural economists.

Given these results, the ethanol industry in adding value to Iowa corn produced the following net additions to the state's economy per 100 million bushels of corn processed in 2011:

➤ Total Iowa Jobs	525
➤ Total Value Added (or GDP)	\$92.8 million
➤ Total Labor Income (a subset of GDP)	\$24.5 million

Conclusion

Iowa's ethanol industry has emerged as an important component of the state's economy. Given current federal laws and the evolution of the industry, the industry is not expected to grow through mid-decade. There are two cellulosic ethanol plants scheduled to begin production in 2013; however, as there has yet to be a successful commercial-scale advanced ethanol production facility in the U.S., one must cautiously monitor the industry's potential growth and the value of that growth to the state of Iowa. If that industry does take off, it will involve a completely different analysis than the one just completed as cellulosic ethanol will require a substantial amount of net-new economic activity up the feedstock supply chain. If the industry is able to grow, it will have a very robust impact in the immediate feedstock supplying area.⁴

Nonetheless, the corn ethanol industry, as it exists now, accounts for nearly 6,000 Iowa jobs, \$1.06 billion in GDP and \$280.14 million in incomes to all workers whose jobs directly or indirectly depend on this industry. Had this industry not grown at the time it did, Iowa's total employment would have been lower, and its rate of unemployment would surely have been higher.

⁴ The potential economic impacts of cellulosic ethanol production have been systematically estimated for the state of New York considering the use of woody biomass, corn stover, and grasses as feedstock sources. See Swenson, Dave, Appendix I: Biofuel Industry Industrial Impacts and Analysis, in Renewable Fuels Roadmap and Sustainable Biomass Feedstock Supply For New York, Final Report 10-05. New York State Energy Research and Development Authority (NYSERDA). When production characteristics for Iowa cellulosic production become established, the NYSERDA methodologies will be applied to the Iowa experience to properly project job, income, and GDP impacts for the state and its subregions.

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