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# Employment and Economic Benefits of Ethanol Production in Missouri

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## Executive Summary

Missouri's ethanol processing facilities have quickly become a major contributor to the state's economy. As of January 2006, the three existing plants at Macon, Malta Bend, and Craig, plus the additional plant under construction at Laddonia will bring Missouri's ethanol production capacity to 156 million gallons per year (MGY). Additional plants and further increases in production capacity are in the planning stages.

Multipliers are used in this study to estimate the ripple effects throughout the economy of the impact of existing plants and their potential expansion along with additional ethanol plants. Direct effects are changes in the economy that come immediately from money spent for constructing and running the ethanol plants. Indirect effects are changes that occur to industries that supply the ethanol plants or otherwise benefit from the initial added economic activity. Induced effects reflect changes in household spending from the additional income received in a specified region resulting from changes in the production capacity and business activities.

Terminology used in this report to categorize impacts include total output, value-added, labor income and employment. Total output refers to the value of an industry's total production. Value-added refers to payments made by industry to workers, interest, profits and indirect business taxes. Labor income refers to all forms of employment income. Employment refers to the single number of jobs for each industry.

### **Construction Impacts of the Four Ethanol Plants Existing and under Construction**

The construction of facilities of this size involves purchasing inputs and materials and drawing expertise in construction and manufacturing which reach far beyond the borders of the city in which it is located, indeed beyond the borders of even the state of Missouri and resultantly, provides fuel for the engines of the economy nationwide. **The construction of these four facilities has one-time impact on the U.S. economy; directly creating 1,801 U.S. jobs, increasing U.S. labor income by \$80 million, increasing value added to the U.S. economy by \$89 million and directly adding \$201 million to total U.S. output.**

When the direct expenditures of construction are ripened economically to include the multiplier effect of indirect and induced economic impacts, **the total impact of construction is estimated to create 5,374 U.S. jobs, a \$229 million increase in U.S. labor income, a \$328 million increase in value-added to the U.S. economy and a \$637 million increase in total output across the entire U.S. economy.**

### **Operational Impacts of the Four Ethanol Plants Existing and under Construction**

In estimating the recurring annual economic impacts from operations of these plants, we are able to more narrowly focus the expected benefits on the state. This results from the comfort that the purchase of corn, energy and other inputs as well as salaries from operations largely impact the economies of Missouri. The benefit to Missouri of operating these four ethanol plants includes:

- Maintaining 154 full time equivalent jobs, increasing labor income by \$14 million, increasing the value added to the economy by \$31 million and **creating a net increase in total output to Missouri's economy by \$205 million.**
- When the direct operational expenditures are coupled with the multiplier effect to create indirect and induced economic impacts, **the total annual impact to Missouri** of these four facilities is estimated to **create 2,784 jobs statewide** resulting in an **\$92 million annual increase in labor income**, create **\$178 million increase in value-added income** to the economy and create a net increase in **total output to Missouri's economy of \$390 million.**
- In addition to the value added by processing the corn, purchasing 54.8 million bushels of corn for production, the four ethanol plants raise the **value of Missouri's corn crop by \$41 million at the farm level.**
- **Tax revenues are increased at the federal, state, and local level by \$31 million each year.**

### **Construction Impact when Missouri's production capacity reaches 350 MGY**

The construction of two additional ethanol plants and expansion of some existing plants is under consideration. Completing this construction would raise Missouri's ethanol capacity to 350 MGY. Continuing the analysis discussed above, **existing and new construction is estimated to directly create 4,361 U.S. jobs, increase U.S. labor income by \$194 million, increase value added to the U.S. economy by \$216 million and increase total U.S. economic output by \$488 million.**

Direct expenditures of construction including the multiplier effect creates the following indirect and induced economic impacts: **the total impact of construction is estimated to create 13,015 U.S. jobs, a \$555 million increase in U.S. labor income, a \$794 million increase in value-added to the U.S. economy and a \$1.5 billion increase in total output across the entire U.S. economy.**

### **Operational Impact when Missouri's production capacity reaches 350 MGY**

The estimated recurring annual economic impact to Missouri of operating this ethanol capacity would include:

- Maintaining **257 full time equivalent jobs, increasing labor income by \$25 million, increasing the value added in the economy by \$57 million and creating a net increase in total output to Missouri's economy by \$373 million.**
- When the direct expenditures include the multiplier effect capturing the indirect and induced economic impacts, **the total annual impact to Missouri is estimated to create 5,613 jobs statewide, create a \$182 million annual increase in labor income, create \$348 million increase in value-added to the economy and create a net increase in total output to Missouri's economy of \$726 million.**
- In addition to the value added by processing the corn, purchasing 124 million bushels of corn to feed the ethanol production is estimated to **raise the value of Missouri's corn crop by \$73 million at the farm level.**
- **Tax revenues collected at the federal, state, and local level with this level of production will be \$63 million each year.**