

# **Estimated Economic Effects for The Husker Ag Ethanol Plant at Plainview, Nebraska**

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*Prepared by:*

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## Executive Summary

This report presents an analysis of the positive employment, income and other economic effects associated with the Husker Ag ethanol processing facility located near Plainview, Nebraska (Pierce County). The methodology used to estimate the economic impacts associated with this facility utilized a Micro IMPLAN input/output model constructed for a seven-county area in Northeast Nebraska, including Pierce County along with the contiguous counties (Antelope, Cedar, Knox, Madison, Stanton, and Wayne Counties).

The major positive employment and other economic effects associated with the facility are summarized in this continuing portion of this Summary.

- **Employment Effects:** The annual employment directly related to the operation of the Husker Ag ethanol production facility is reported to be 31 employees (FTEs). When the secondary employment effects are added, the total employment effects for the Husker Ag multi-county impact area are estimated to be 104.4 jobs, including the 31 direct jobs and 73.4 secondary (53.6 indirect and 19.8 induced) jobs.
- **Labor Income and Other Income Effects:** The employment in the Husker Ag ethanol facility results in the direct addition of \$1,426,000 in labor income (including benefits and other adders) to the economy of the project impact study area, along with an estimated \$1,035,300 in other property-type income. Property-type income consists of payments for rents, royalties, and dividends. The total income effects are derived using the multiplier values from the IMPLAN input-output model, and are estimated to be \$4,423,800. This represents the estimate of total annual income effects in the study area, including the direct and secondary labor income plus other property-type income, stated in constant dollars.
- **Indirect Business Taxes:** The Husker Ag ethanol facility is expected to pay an estimated \$384,000 in direct property taxes on its plant and equipment. There is an additional \$193,200 of indirect business taxes that are estimated for this facility. The indirect business taxes, in addition to the property taxes on the facility, include taxes on other property, excise taxes, fees, licenses, sales tax, and other taxes that occur during the normal operation of the business, but do not include taxes on profits or income. When the secondary (indirect and induced) effects are considered, the total indirect business taxes related to the operation of the Husker Ag facility are estimated to be \$811,200 (\$577,200 direct and \$234,000 secondary, or indirect and induced).
- **Total Output Effects:** The total value of output directly associated with the Husker Ag facility is reported to be \$34,510,000 annually. When the secondary output effects are added to this direct output component, the total output effects associated with the facility are estimated to be \$46,196,400.

- **Retail Sales Effects:** The increased employment and income associated with the Husker Ag facility results in additional personal income and consumer purchasing power which positively impacts retail sales in the study area. Given the estimated increase in personal income, the expected increase in area retail sales associated with the Husker Ag ethanol facility is estimated to be \$1,144,480 annually.
- **Corn Price/Income Effects:** Ethanol production facilities have significant and positive effects on corn prices in the areas where they are located. The analysis provided in this report indicates the Husker Ag ethanol processing facility will have a positive effect on area corn prices averaging 4.83 cents per bushel over the multi-county corn price impact area. The facility-related increase in area corn prices will result in increased cash receipts from corn marketings in the price impact area of \$5,398,900 annually. The total corn price/income effect is comprised of the direct price/income effect associated with the direct purchases of corn by the Husker Ag facility of \$408,900 and the indirect price/income effect of \$4,990,000. The indirect price/income effect quantifies the positive effects of presence of the Husker Ag facility on area corn markets and measures the increase in cash receipts from corn marketing resulting from the higher average corn prices for area corn production not directly utilized by the Husker Ag ethanol production facility.

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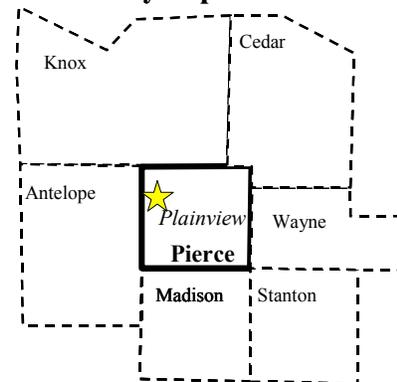
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## Estimated Economic Effects for the Husker Ag Ethanol Plant at Plainview, Nebraska

### Introduction

This report presents an analysis of the estimated employment and economic impacts that are estimated to be associated with operation of the Husker Ag ethanol processing facility located in Pierce County, near Plainview, Nebraska. The methodology used to estimate the economic effects of this facility utilizes a computerized input/output model constructed for a seven-county area in Northeast Nebraska, including Pierce County and the contiguous counties (Antelope, Cedar, Knox, Madison, Stanton, and Wayne Counties - see Figure One). This model was developed with the 2000 Micro IMPLAN database and input-output modeling software. The IMPLAN database consists of 21 economic and demographic variables for 528 industrial sectors for each of the 3,000 counties in the United States. Some of these variables include employment, payments to labor (labor income), payments to other factors of production, and output by industry sector, as well as government and household purchases.

**Figure One**  
**The Husker Ag Ethanol Project**  
**Primary Impact Area**



The IMPLAN modeling software and database was utilized to construct an input/output model for the Husker Ag facility impact area that identifies inter-industry linkages within the area economy. From this model, multipliers are developed (employment, labor income, other property income, indirect business taxes, and output) which are then utilized to assess the estimated economic and employment effects associated with the operation of the Husker Ag ethanol production facility.

Although the ethanol production facility for which this impact analysis has been undertaken is located in Pierce County, near Plainview, Nebraska, it is expected that the primary inputs (corn, labor and other inputs) for the project will be obtained from a larger area surrounding the facility (See Figure One).

### Direct Economic Effects

The Husker Ag management provided information relating to the operation of the ethanol production facility. The analysis provided in this report utilizes that information, which indicated the plant has the capacity to produce 24 million gallons of ethanol annually along with distiller's grains. The plant is expected to provide 31 jobs (FTEs), and the payroll is estimated to \$1,426,000 annually, including benefits and other adders.

The ethanol production facility utilizes a dry milling process to prepare the feedstock for conversion to ethanol and distillers grains. The distillers grains are sold in the surrounding area as a livestock feed. Estimates of the direct economic effects associated with the operation of the Husker Ag ethanol facility are presented in Table One. As the data in the table indicate, the total value of production for the facility is expected to be \$34,510,000 annually, including \$28,800,000 for the ethanol and \$5,710,000 for the distiller grains. The estimated direct addition to “Other Property Income,” as presented in Table One, is estimated to be \$1,035,300. Other Property Income is defined as payments for rents, royalties, and dividends. Payments to individuals in the form of rents received on property, royalties from contracts, and dividends paid by business organizations are included here as well as undistributed profits earned by businesses. The estimate for Other Property Income used in this analysis was derived from the IMPLAN input/output model and database for the Husker Ag project study area.

Employees (F.T.E. Number)	31
Employee Payroll with Benefits and Adders	\$1,426,000
Other Property Income <sup>(a)</sup>	\$1,035,300
Total Labor & Other Property Income	\$2,461,300
Value of Plant Output	
Ethanol (24,000,000 Gal. @ \$1.20)	\$28,800,000
DDGS (158,600 Tons @ \$36.00)	\$5,710,000
Total Value of Output	\$34,510,000
Indirect Business Taxes <sup>(b)</sup>	\$577,200

<sup>(a)</sup> Other Property Income consists of payments for rents, royalties, and dividends. Estimated from the IMPLAN Model and Database.

<sup>(b)</sup> Indirect Business Taxes include property and other taxes and fees, except taxes on profits or income. Estimated from data provided and from the IMPLAN Model and Database (see text).

Source: Basic data on the operation of the facility provided by Husker Ag management. Other data derived from the IMPLAN model and database, where noted.

Annual property taxes for the Husker Ag ethanol facility are were reported to be \$384,000, which are included in the category, indirect business taxes. The estimated indirect business taxes (\$577,200) shown in Table One include the estimate of the \$384,000 for property taxes, along with an estimate of \$93,200 for additional indirect business taxes, including additional excise, property taxes, fees, licenses and sales and other taxes paid during the course of the normal operation of a business. It is important to recognize, however, these indirect business taxes do not include taxes on profits or income.

### **Economic Impact Analysis**

In analyzing the potential economic effects associated with the operation of the Husker Ag ethanol facility, it is noted the study area defined for the analysis (Pierce County and the contiguous counties) did not include any facilities producing a similar product before the Husker Ag facility was constructed and started production. Therefore, the economic (input/output) model constructed for the study area did not include an ethanol production sector.

To overcome this deficiency, an IMPLAN input/output model was constructed for the non-metropolitan area of Nebraska (Nebraska except, Cass, Douglas, Lancaster, Sarpy and Washington Counties). Utilizing this model, an economic sector combining the wet milling production sector (Implan Sector 76, “Wet Milling,”) and the dry-mill ethanol production sector (Sector 190, “Cyclic Crudes, Intermediate & Industrial Organic Chemicals) was constructed and imported into the IMPLAN Model for the Husker Ag study area. This import function essentially constructs a final demand vector by adjusting the direct requirements vector for the created ethanol sector by the level of output anticipated for the ethanol processing facility (\$34,510,000). This adjustment results in an estimate of the increase in the demand for goods and services in the study area economy resulting from the operation of the Husker Ag ethanol plant.

An estimate of the indirect economic effects results from an assessment of the capacity of the study area economy to supply the increased demand for goods and services resulting from the operation of the subject ethanol facility. In the case of the study area economy, much of the project-dependent local demand for corn and other raw material inputs will be provided from the study area and will have positive effects on the study area that are not explicitly addressed in the input-output analysis. For example, the increased demand for corn (and other feedstock inputs) will have a positive effect on prices paid to producers. These effects are not captured in the input-output model but are addressed independently in a subsequent section of this document. In the case of the increased demand for other goods and services, a portion will be provided by the local economy and a portion will need to be imported from outside of the study area. The indirect effects result from the increased demand for inputs, other than labor, that are provided by suppliers located within the study area economy.

The analysis of the indirect economic effects associated with the operation of the Husker Ag ethanol production facility, utilizing the newly defined ethanol production sector that was imported into the study area input/output model, does not include the positive economic effects associated with the direct payments to employees at the plant. As previously noted, it has been reported that the payroll, including benefits and other adders, for the 31 workers at the facility will be \$1,426,000 annually. The workers and their families will use the disposable income component of this payroll to purchase goods and services. These expenditures will result in further positive economic effects in the study area. The economic effects resulting from the increased demand for goods and services created by the household income associated with the plant payroll are referred to as the “induced by” effects.

To estimate the “induced by” economic effects, the expected increase in the demand for goods and services resulting from the plant payroll is estimated by creating another final demand vector reflecting the expected increase in household income and expenditure patterns of, in this case, households with incomes in the \$35,000 to \$50,000 range. This final demand vector reflects the increased household demand for goods and services resulting from the plant payroll. For the purposes of this analysis, the disposable income component of the payments to labor is assumed to be 70 percent of the \$1,426,000 payroll (including benefits and other adders) or \$998,200. Similar to the process of estimating the indirect economic effects, the estimation of the induced economic effects results from an evaluation of the capacity of the study area economy to supply the increased demand for goods and services by area households. The increased demand for goods and services will be supplied by establishments within the study area and by imports from establishments outside of the area. The ultimate size of the induced effects is determined, in part, by how much of the increased household demand is supplied locally.

### **Estimated Economic Effects Associated with the Husker Ag Ethanol Facility**

As the data provided in Table One indicated, the analysis of the economic effects associated with the operation of the Husker Ag ethanol production facility begins with the direct employment, output, and labor income and other payments to the factors of production that this facility is estimated to generate. The data presented in Table One provided basic data on the direct employment, labor and other property income, the value of output, and indirect business taxes associated with the operation of the subject ethanol facility. Using these estimates, in conjunction with the multiplier values derived from the IMPLAN input/output model, estimates of the indirect and total employment and economic effects associated with the operation of the ethanol production facility have been derived. The estimates of the secondary (indirect and induced) and total economic and employment effects associated with the ethanol facility are presented in Table Two.

#### **- Employment Effects**

As indicated by the data presented in Table Two, the annual employment directly related to the operation of the Husker Ag ethanol production facility near Plainview (Pierce County) is reported to be 31 employees (FTEs). The direct, secondary (indirect and induced), and total employment effects resulting from the increase in economic activity associated with the operation of the facility are presented in Table Two. As these data show, the total employment effects for the Husker Ag multi-county impact area are estimated to be 104.4 jobs (31 direct F.T.E.s and 73.4 secondary, or 53.6 indirect and 19.8 induced jobs).

**Table Two**  
**Estimated Employment, Personal Income and Output and Related Tax Effects**  
**Associated with the Husker Ag Ethanol Facility Near Plainview, Nebraska,**  
**(Annual Estimates)**

<b>Employment Effects</b>	<b>Ethanol Project</b>	<b>Households</b>	<b>Total</b>
Direct Employment (FTE)	31.0	0.0	31.0
Indirect (1.7278 of Direct)	53.6	0.0	53.6
Induced (0.6401 of Direct)	0.0	19.8	19.8
<b>Total Employment (FTE)</b>	<b>84.6</b>	<b>19.8</b>	<b>104.4</b>
<b>Personal &amp; Other Property Income Effects</b>			
Direct Personal & Property Income	\$1,035,300	\$1,426,000	\$2,461,300
Indir. Pers. & Prop. Inc. (0.6261 of Direct)	\$1,541,139	\$0	\$1,541,139
Induced Pers. & Prop. Inc. (0.1712 of Direct)	\$0	\$421,343	\$421,343
<b>Total Personal &amp; Other Property Income</b>	<b>\$2,576,439</b>	<b>\$1,847,343</b>	<b>\$4,423,782</b>
<b>Indirect Business Taxes Effects</b>			
[Direct] Indirect Business Taxes	\$577,200	\$0	\$577,200
[Indirect] Indirect Bus. Taxes (0.2883 of Dir.)	\$166,407	\$0	\$166,407
[Induced] Indirect Bus. Taxes (0.1171 of Dir.)	\$0	\$67,590	\$67,590
<b>Total Indirect Business Taxes</b>	<b>\$743,607</b>	<b>\$67,590</b>	<b>\$811,197</b>
<b>Output Effects</b>			
Direct Output	\$34,510,000	\$0	\$34,510,000
Indirect Output (0.2811 of Direct)	\$9,699,933	\$0	\$9,699,933
Induced Output (0.0576 of Direct)	\$0	\$1,986,499	\$1,986,499
<b>Total Output</b>	<b>\$44,209,933</b>	<b>\$1,986,499</b>	<b>\$46,196,432</b>

Source: Computed from the data presented in Table One and from the IMPLAN Input/Output Model constructed for the Husker Ag Study Area economy (see text).

**- Labor Income and Other Income Effects**

The employment and economic activity generated by the operation of the Husker Ag ethanol facility adds a significant amount of labor and other property type income to the economy of the project impact study area. The estimate of the direct effects on total employment and labor income were obtained from Husker Ag management and, in the case of the other property-type income, estimated from the Micro IMPLAN database (See Table One). As the data presented in Table One indicated, the direct employment for the Husker Ag ethanol production facility will result an estimated direct addition of \$1,426,000 in labor income (including benefits and other adders) to the economy of the project impact study area, along with an estimated \$1,035,300 in other property-type income. In the case of the other property-type income, this consists of payments for rents, royalties, and dividends. Utilizing the multiplier values from the IMPLAN input/output model constructed for the Husker Ag ethanol project study area (Pierce County and the contiguous counties), the total income effects (labor income plus other property-type income) for the subject ethanol production facility are estimated to be \$4,423,782. This represents the estimate of the annual labor and other personal income effects in the study area associated with the facility, stated in constant dollars.

- **Total Output Effects**

Total output (value of output) directly associated with the operation of the Husker Ag ethanol production facility was reported to be \$34,510,000 annually (See Table One). Using this as the direct output component, the total output effects associated with the Husker Ag ethanol production facility, including the direct and secondary effects, are estimated to be \$46,196,432 (See Table Two).

- **Indirect Business Taxes Effects**

Indirect business taxes (IBT) expected to be paid by the Husker Ag ethanol facility are estimated to be \$577,200 (see Table One), and include an estimated \$384,000 of direct property taxes on the plant and equipment. The indirect business taxes, in addition to the property taxes on the plant itself, include taxes on other property, excise taxes, fees, licenses, sales tax, and other taxes that occur during the normal operation of businesses, but do not include taxes on profits or income. As the data presented in Table Two indicate, the total indirect taxes for the Husker Ag project are estimated at \$811,197 annually, including the direct and secondary indirect business taxes effects.

**Retail Sales Effects**

Among the significant economic impacts that the operation of the Husker Ag ethanol facility will have on the local economy are positive effects on assessed property valuation, growth in property tax revenues, and an increase area retail sales and sales tax revenues. While this analysis has captured a portion of these positive tax effects, in terms of the indirect business taxes, this section explicitly addresses the probable positive effects of the facility on retail sales in the project impact area.

Table Three presents data on total personal income and retail sales for the Husker Ag impact area (Pierce County and the contiguous counties) for the period, 1990-2001. As these data indicate, retail sales in the area have averaged 36.5 percent of total personal income during this period.

Given these data, the derivation of an estimate of the retail sales impact associated with the operation of the Husker Ag ethanol production facility is made by assuming that retail sales generated by the economic activity associated with the facility would equal 36.5 percent of the increase in personal income associated with the Husker Ag ethanol production facility. For the purposes of this analysis, we assume that the personal income associated with the operation of the ethanol facility will equal the total labor income of \$1,847,340 and 50 percent of the total other property-type income (.5 x \$2,576,440 = \$1,288,220) for a total of \$3,135,560. Given the estimated addition to personal income in the study area, the expected increase in retail sales associated with the Husker Ag ethanol facility is estimated to be \$1,144,480 annually (36.5% x \$3,135,560).

**Table Three**  
**Total Personal Income and Retail Sales,**  
**Husker Ag Ethanol Facility Impact Area<sup>(a)</sup>, 1990-2001**

Year	Total Personal Income	Total Retail Sales	Retail Sales as % of T.P.I.
	(\$1,000)	(\$1,000)	(%)
1990	1,319,721	513,280	38.9
1991	1,358,892	509,516	37.5
1992	1,462,882	519,292	35.5
1993	1,511,515	541,173	35.8
1994	1,575,586	568,150	36.1
1995	1,589,046	585,648	36.9
1996	1,843,070	626,832	34.0
1997	1,814,407	666,101	36.7
1998	1,865,046	669,059	35.9
1999	1,878,594	688,875	36.7
2000	1,932,955	708,093	36.6
2001	2,000,405	740,882	37.0
<b>Average, 1990-2000</b>			<b>36.5</b>

<sup>(a)</sup> Project Primary Impact Area includes Pierce County and the contiguous counties (Antelope, Cedar, Know, Madison, Stanton, and Wayne Counties).

Sources: Total personal income: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Retail sales data: Nebraska Dept. of Revenue.

### **Corn Price/Income Effects**

Ethanol production facilities have significant and positive effects on corn prices in the areas where they are located and from which they purchase corn inputs. These price effects are important as they provide benefits to all corn producers in the area, whether or not their corn is sold directly to the local ethanol plant. Moreover, the increase in area corn prices attributable to the operation of the ethanol production facility also provides positive benefits for the Federal government's budget and financial situation. An increase in local corn prices has the potential to reduce the demand for government payments associated with USDA's program providing LDP (Loan Deficiency Payments) expenditures to local farmers.

Appendix A to this paper includes an analysis evaluating the potential impact of the Husker Ag ethanol processing facility on area corn prices. The analysis utilizes the Ethanol Plant Location Analyzer, an analytical tool developed at Montana State University, to estimate the probable corn price and income effects associated with the Husker Ag ethanol production facility.

Data presented in Table Four summarizes the corn price/income effects associated with the Husker Ag ethanol production facility. As these data show, the total corn price/income effect for the Husker Ag ethanol processing facility is estimated to be \$5,398,919 annually. This total effect is comprised of the direct price/income effect associated with the direct purchases of corn by the Husker Ag facility of \$408,908

(8,472,090 bushels x \$0.0483/bu.) and the indirect price/income effect of \$4,990,010 (103,365,710 bushels x \$0.0483/bu). The indirect price/income effect quantifies the positive effects of the presence of the Husker Ag facility on area corn markets. This indirect effect results from the higher average corn prices for all corn and, in particular, area corn production not directly utilized in the Husker Ag processing facility.

	<b>Price Impact (Cents/Bushel)</b>	<b>Production (Bushels)</b>	<b>Share of Area Prod.</b>	<b>Corn Price / Income Impact</b>
<b>Plant Site/Direct Impact</b>	<b>4.83</b>	<b>8,472,090</b>	N/A	<b>\$408,908</b>
<b>Pierce Co.</b>	6.33	17,187,000	0.9323	1,087,937
<b>Antelope Co.</b>	2.62	21,555,000	0.4840	564,741
<b>Cedar Co.</b>	7.88	18,953,200	1.2065	1,493,512
<b>Knox Co.</b>	7.88	13,880,000	0.9373	1,093,744
<b>Madison Co.</b>	1.77	15,400,600	0.2336	272,591
<b>Stanton Co.</b>	0.89	10,022,000	0.2560	89,587
<b>Wayne Co.</b>	5.37	14,840,000	1.0479	796,807
<b>Total Area</b>		<b>111,837,800</b>	<b>1.0000</b>	<b>\$5,398,919</b>
<b>Indirect Impact</b>		<b>103,365,710</b>		<b>\$4,990,010</b>
<b>Average Price Impact (cents/bu.)</b>	<b>4.83</b>			

Source: See Table A-3 of Appendix A for sources and definitions-footnotes.

A more complete discussion of the corn price/income effects and the methodology utilized to compute those effects is provided in Appendix A to this report.

**If further information about this analysis is desired or if the reader has questions  
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## **Appendix A**

### **Impacts on Local/Area Corn Prices**

Ethanol plants located in rural areas have significant and positive effects on local and regional corn prices. These effects are important as they provide benefits to all corn producers in the region, whether or not their corn is sold to the local ethanol plant. Moreover, the increase in area corn prices attributable to the operation of the ethanol production facility also provides positive benefits for the Federal government's budget picture. An increase in local corn prices reduces the demand for government payments associated with USDA's LDP (Loan Deficiency Payments) program.

While there has been much written about the positive effect of ethanol production on corn prices, there have been few definitive research projects focusing on this important relationship. Moreover, it is not the intent to address this topic in any comprehensive manner in this document. Rather, the Ethanol Plant Location Analyzer<sup>(1)</sup>, an analytical tool developed at Montana State University, is utilized to estimate the probable corn price effects associated with the Husker Ag ethanol production facility.

As the developers of this analytical tool indicate, the Ethanol Plant Location Analyzer is a useful tool for gauging the potential price impact of a new ethanol plant. The "Analyzer" utilizes research conducted by one of the developers, Kevin McNew, on how big a price impact a new ethanol plant has, and how close to a plant a producer must be to see a positive impact from it. Some of the results from McNew's research, which was based on data from 316 grain markets around 12 ethanol plants that opened in 2001 and 2002 are as follows:

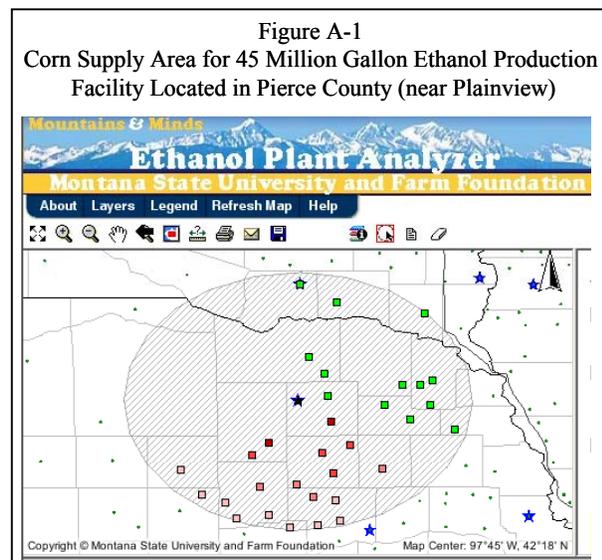
- Ethanol plants increase local corn prices. The opening of all 12 ethanol plants in the study had a positive impact on corn prices, averaging 12 cents per bushel and ranging from 5 cents to 19 cents per bushel.
- The price impact is highest at the plant site. On average, some price impact was felt 30 to 100 miles from the 12 plant sites. Markets "downstream" from a plant that are closer to terminal markets tend to have high prices and therefore experienced a smaller price impact from the new plant. More impacts was seen in "upstream" markets that are far-removed from terminal markets and generally have lower prices.
- Size and structure matter. Plant size relative to local corn supplies had some effect on the price impact. If local corn supplies were low, a large-capacity plant caused the price impact to be larger. Grain procurement policies also had an impact. The two plants in the study that were owned by closed cooperatives, with all corn supplied by the farmer-owners, had the lowest impact on prices. The farmer-owners are required to deliver grain to the plant so it does not have to attract grain by offering higher prices, limiting the price impact (It should be noted, however, that such an arrangement would presumably result in higher profits for the ethanol plant and

<sup>(1)</sup> Montana State University, Ethanol Plant Location Analyzer. See WEB site, (<http://extensionecon.msu.montana.edu/imf/imf.jsp?site=ethanol>).

presumably, higher returns to the farmer-owners of the plant in the form of dividends or increased value of equity).

To provide an estimate of the likely corn price effects associated with the Husker Ag ethanol production facility, an ethanol plant was assumed to be located in Pierce County, near Plainview Nebraska. Because the Ethanol Plant Location Analyzer limits the plant size to be evaluated to 15 million, 45 million, or 100 million gallon capacities, the Husker Ag processing facility could not be analyzed directly utilizing the model. To provide an estimate of the impacts of the Husker Ag processing facility on area corn prices, two analyses were undertaken – one for a 15 million gallon facility and one for a 45 million gallon facility. The output from these models was then used to estimate the corn price effects for a 24 million gallon facility in Pierce County (the Husker Ag Facility).

Figure A-1 shows the area that the Ethanol Plant Location Analyzer predicts would supply the corn for a 45 million gallon ethanol production facility located in Pierce County, near Plainview Nebraska. The maximum distance from the plant site to the extreme corn market is 58.7 miles. As the map in Figure A-1 indicates, the area that would be expected to supply corn for the plant is quite large and covers all or parts of more than twenty counties in northeast Nebraska and southeast South Dakota. The data showing the corn price effects for corn markets within this area is presented in Table A-1.



As the data presented in Table A-1 show, the output from the Ethanol Plant Location Analyzer provides a prediction of the price effects of the prospective (45 million gallon) ethanol facility being analyzed on all of the grain markets included within the price impact area. The area included in the price impact area extends to a distance of 58.7 miles from the plant site. The data provided in the table indicate the price impact on the Norfolk, Nebraska grain market, for example, is estimated to be 5.24 cents per bushel. Similarly, the price impact is shown for each grain market contained within the price impact area for this prospective 45 million gallon ethanol facility.

As previously noted, the Ethanol Plant Location Analyzer does not provide the capability to directly analyze the price impacts associated with an ethanol facility with a capacity of 24 million gallons. To overcome this limitation, the analysis of the 45 million gallon production facility was used, along with a similar analysis for a 15 million gallon ethanol production facility. The results of the two facilities were then utilized to derive an estimate of the probable price impacts associated with a 24 million gallon facility.

**Table A-1**  
**Results from the Ethanol Plant Location Analyzer for 45 Million Gallon Plant in Pierce County**

Query Parameters		Analysis Results - Continued		Analysis Results - Continued	
Location X:	-97.76048				
Location Y:	42.31392	City:	Primrose	City:	Oakdale
Plant size:	45	State:	NE	State:	NE
Calculated Values		Distance:	52.2	Distance:	21.3
County:	Pierce	Price Impact:	1.05643	Price Impact:	6.07823
State:	Nebraska	City:	St Edward	City:	Osmond
Miles of Price Impact:	58.70034	State:	NE	State:	NE
Maximum Price Impact:	9.5411	Distance:	53	Distance:	10.3
Analysis Results		Price Impact:	0.93355	Price Impact:	9.5411
City:	Scotland	City:	Spalding	City:	Pierce
State:	SD	State:	NE	State:	NE
Distance:	53.3	Distance:	53.8	Distance:	14.6
Price Impact:	9.5411	Price Impact:	0.79273	Price Impact:	7.16909
City:	Utica	City:	Norfolk	City:	Wakefield
State:	SD	State:	NE	State:	NE
Distance:	46.4	Distance:	26.5	Distance:	44.6
Price Impact:	9.5411	Price Impact:	5.23947	Price Impact:	9.5411
City:	Albion	City:	Allen	City:	Wausa
State:	NE	State:	NE	State:	NE
Distance:	41.3	Distance:	46.1	Distance:	15.2
Price Impact:	2.83379	Price Impact:	9.5411	Price Impact:	9.5411
City:	Cedar Rapids	City:	Battle Creek	City:	Wayne
State:	NE	State:	NE	State:	NE
Distance:	57.1	Distance:	24.7	Distance:	38.5
Price Impact:	0.25741	Price Impact:	5.52171	Price Impact:	9.5411
City:	Elgin	City:	Bloomfield	City:	Vermillion
State:	NE	State:	NE	State:	SD
Distance:	29.1	Distance:	20.4	Distance:	58.3
Price Impact:	4.81802	Price Impact:	9.5411	Price Impact:	9.5411
City:	Genoa	City:	Carroll	City:	Stanton
State:	NE	State:	NE	State:	NE
Distance:	57.2	Distance:	29.1	Distance:	42.1
Price Impact:	0.24173	Price Impact:	9.5411	Price Impact:	2.69111
City:	Tarnov	City:	Dixon	City:	Pender
State:	NE	State:	NE	State:	NE
Distance:	47.1	Distance:	41.8	Distance:	54.2
Price Impact:	1.88583	Price Impact:	9.5411	Price Impact:	9.5411
City:	Lindsay	City:	Laurel	City:	Bartlett
State:	NE	State:	NE	State:	NE
Distance:	44.2	Distance:	35.9	Distance:	50.9
Price Impact:	2.35356	Price Impact:	9.5411	Price Impact:	1.26533
City:	Monroe	City:	Madison		
State:	NE	State:	NE		
Distance:	56.5	Distance:	35		
Price Impact:	0.35156	Price Impact:	3.84667		
City:	Platte Center	City:	Newman Grove		
State:	NE	State:	NE		
Distance:	56.2	Distance:	38.2		
Price Impact:	0.41359	Price Impact:	3.33719		

Source: Montana State University, Ethanol Plant Location Analyzer. See text and WEB site, (<http://extensionecon.msu.montana.edu/imf/imf.jsp?site=ethanol>).

The results of the analysis undertaken to derive the estimates for a 24 million gallon ethanol production facility (the Husker Ag ethanol plant) are presented in Table A-2. Basically, these estimates were derived through interpolation of the results for the two ethanol production facilities (15 million and 45 million gallon plant capacities) analyzed utilizing the Ethanol Plant Location Analyzer.

As the data in Table A-2 show, the predicted price impact area for the 24 million gallon production facility is predicted to have a maximum distance from the Husker Ag ethanol plant site of 39.0 miles. This distance measure was derived through interpolation, using the 58.7 mile distance for the 45 million gallon plant and the 30.6 mile distance for the 15 million gallon plant. In addition to showing the predicted price impact data for the Husker Ag ethanol facility, the price impact data in Table A-2 are also shown as averages for the counties containing grain markets where the corn prices are expected to be impacted by the Husker Ag ethanol production facility

County/City	45 Million Gallon Plant		15 Million Gallon Plant		Husker Ag <sup>(a)</sup> Est. Impact
	Distance	Price Impact	County/City	Price Impact	
<b>Impact Area Miles</b>	<b>58.7<sup>(b)</sup></b>		<b>30.6<sup>(b)</sup></b>		<b>39.0<sup>(c)</sup></b>
<b>Plant Site</b>	<b>9.54</b>		<b>Plant Site</b>	<b>7.16</b>	<b>7.88</b>
<b>Pierce Co.</b>	<b>8.36</b>		<b>Pierce Co.</b>	<b>5.46</b>	<b>6.33</b>
Osmond	10.3	9.54	Osmond	7.16	7.88
Pierce	14.6	7.17	Pierce	3.75	4.78
<b>Antelope Co.</b>	<b>5.45</b>		<b>Antelope Co.</b>	<b>1.41</b>	<b>2.62</b>
Elgin	29.1	4.82	Elgin	0.50	1.80
Oakdale	21.3	6.08	Oakdale	2.32	3.45
<b>Cedar Co.</b>	<b>9.54</b>		<b>Cedar Co.</b>	<b>7.16</b>	<b>7.88</b>
Laurel	35.9	9.54	Laurel	7.16	7.88
<b>Knox Co.</b>	<b>9.54</b>		<b>Knox Co.</b>	<b>7.16</b>	<b>7.88</b>
Bloomfield	20.4	9.54	Bloomfield	7.16	7.88
Wausa	15.2	9.54	Wausa	7.16	7.88
<b>Madison Co.</b>	<b>4.49</b>		<b>Madison Co.</b>	<b>0.61</b>	<b>1.77</b>
Battle Creek	24.7	5.52	Battle Creek	1.45	2.67
Madison	35.0	3.85	Madison	0.00	1.15
Newman Grove	38.2	3.34	Newman Grove	0.00	1.00
Norfolk	26.5	5.24	Norfolk	0.99	2.27
<b>Stanton Co.</b>	<b>2.98</b>		<b>Stanton Co.</b>	<b>0.00</b>	<b>0.89</b>
Stanton	39.0	2.98	Stanton	0.00	0.89
<b>Wayne Co.</b>	<b>9.54</b>		<b>Wayne Co.</b>	<b>3.58</b>	<b>5.37</b>
Carroll	29.1	9.54	Carroll	7.16	7.88
Wayne	38.5	9.54	Wayne	0.00	2.86

(a) Estimates for Husker Ag Ethanol Plant (24 million gallons).

(b) Maximum impact distances for 45 million and 15 million gallon ethanol plants. (See text).

(c) Estimated impact distance for Husker Ag (24 million gallon) ethanol plant. (See text).

Source: Corn price impacts per bushel, computed/estimated from data obtained from Montana State University, Ethanol Plant Location Analyzer. See text and WEB site, (<http://extensionecon.msu.montana.edu/imf/imf.jsp?site=ethanol>).

The final step in computing the estimated corn price/income impacts associated with the Husker Ag ethanol production facility involves combining the data derived for the corn price impacts with additional data on corn production for the counties in the price impact area. Table A-3 provides the data used in these computations. As indicated in Table A-3, the corn price/income impacts are shown by county and for the price impact area as a whole. The average corn price effect resulting from the Husker Ag ethanol production facility for the price impact area as a whole is predicted to be +4.83 cents per bushel. This average is derived by computing a weighted average of the county price effects, weighted by each county's share of corn production.

	Price Impact <sup>(a)</sup> (Cents/Bushel)	Production (Bushels)	Share of Area Prod.	Corn Price / Income Impact <sup>(c)</sup>
<b>Plant Site/Direct Impact</b>	<b>4.83</b>	<b>8,472,090<sup>(b)</sup></b>	N/A	<b>\$408,908</b>
<b>Pierce Co.</b>	6.33	17,187,000	0.1537	1,087,937
<b>Antelope Co.</b>	2.62	21,555,000	0.1927	564,741
<b>Cedar Co.</b>	7.88	18,953,200	0.1695	1,493,512
<b>Knox Co.</b>	7.88	13,880,000	0.1241	1,093,744
<b>Madison Co.</b>	1.77	15,400,600	0.1377	272,591
<b>Stanton Co.</b>	0.89	10,022,000	0.0896	89,587
<b>Wayne Co.</b>	5.37	14,840,000	0.1327	796,807
<b>Total Area</b>		<b>111,837,800</b>	<b>1.0000</b>	<b>\$5,398,919</b>
<b>Indirect Impact<sup>(d)</sup></b>		<b>103,365,710</b>		<b>\$4,990,010</b>
<b>Average Price Impact (cents/bu.)<sup>(e)</sup></b>	<b>4.83</b>			

<sup>(a)</sup> Data from Table A-2.  
<sup>(b)</sup> Husker Ag ethanol production facility uses 8,472,090 bushels of corn annually  
<sup>(c)</sup> Income impacts are computed by multiplying the price impact for each county by the corn production.  
<sup>(d)</sup> Indirect price/income impact is total impact minus direct impact (price/revenue impact associated with plant purchases of corn).  
<sup>(e)</sup> Average price impact per bushel computed as a production weighted average of county price impacts.  
Source: Corn production - Nebraska Agricultural Statistics Service, 2002 Nebraska Agricultural Statistics.

The total corn price/income effect for the Husker Ag ethanol processing facility is estimated to be \$5,398,919 annually. This total effect is comprised of the direct price/income effect associated with the direct purchases of corn by the Husker Ag facility of \$408,908 and the indirect price/income effect of \$4,990,010. The indirect price/income effect quantifies the positive effects of the presence of the Husker Ag facility on area corn markets. This indirect effect results from the higher average corn prices for all corn and, in particular, for area corn production not directly utilized in the Husker Ag processing facility.