

# **Economic Impact Assessment For Proposed Bion Inc Investments in St. Lawrence County, New York**

## **Executive Summary**

This report describes the estimated economic impact on the Northern New York region of the establishment of the proposed Bion, Inc manufacturing/beef cattle operations in St. Lawrence County. The report was produced by Bridge Associates, using direct economic impact data provided by Bion, Inc management.

The Bion operations as proposed will employ 198 employees when in full operation. The economic activity associated with the operations are expected to produce an additional 285 indirect/induced jobs, resulting in a total ongoing job creation in the region of 483 net new jobs. The initial construction of the proposed facilities is projected to create an additional 1749 jobs in the construction and related industries, during the construction period.

The proposed Bion operations will spend an estimated \$32.3 million annually in the local economy, primarily in payroll and the purchase of corn/hay and trucking services/fuel. This new spending in the local/regional economy is expected to result in a total of \$64.5 million in net new economic activity in the region. In addition to this ongoing impact, Bion, Inc proposes to spend \$85.6 million on initial land and equipment purchase and facilities' construction. This one-time spending has an estimated total economic impact on the region of \$140.3 million.

The proposed direct job creation and payroll spending by Bion, Inc will increase local/regional household earnings by an estimated \$18.9 million. This additional household income has the potential to generate up to \$1.4 million in additional annual sales tax revenues within the NNY (Jefferson, Lewis, and St. Lawrence Counties).

There is some possibility that the long term increase in demand for corn and hay triggered by the arrival of Bion could cause shifts in local agricultural production to increase productivity and allow the entire corn demand for Bion's operations to be met locally. If this were to occur, it could generate as much as \$123.4 million in additional economic impact and 1058 new jobs, primarily in the agricultural sector. This economic impact is highly speculative, however, and the real likelihood of its occurring or its true magnitude is unquantifiable at this time.

The establishment of the proposed Bion operations in St. Lawrence County, New York can be expected to have a significant positive economic impact on the region, with most of the benefits concentrated in St. Lawrence County. The positive impact will be felt to a lesser degree across the entire region, however, as induced effects ripple outward in the regional economy.

## **Economic Impact Assessment**

The concept of economic impact assessment involves the comparison of the economic aspects of two alternative states. In this case, the report compares the economic base of the Northern New York (NNY) region (Jefferson, Lewis, and St. Lawrence Counties) with and without the proposed Bion operations. The difference between these two states is the economic impact under study.

The primary elements of economic impact are described using economic multipliers. These are produced using input-output modeling and attempt to describe the effects of direct spending by the Bion operation and its employees, as well as the indirect and induced effects caused by that spending “rippling” through the regional and state economy. This approach is common among economic impact analysts in the United States. It produces essentially a near-term “snapshot” of economic impact and does not attempt to forecast the longer-term future of the region’s economy with or without Bion.

NOTE: The proposed Bion operation is a complex of interconnected activities centered around creating economic value by converting agricultural products into energy/fuel sources. This proposed operation is unusual in the level of its interaction with the local/regional economy. The multipliers used reflect the deep importance of agriculture to the regional economy but do not offer details of the potential long term interaction of Bion operations and the farming communities in St. Lawrence and surrounding Counties.

## **Bion Proposed Operations**

Bion, Inc proposes to establish an interconnected set of business operations in St. Lawrence County, New York. These operations will include an ethanol production operation, a beef cattle feeding operation, a plant to convert cattle wastes to energy supplies (Bion Technical Platform), and the necessary trucking operations to support these endeavors. The goal is to establish a set of operations that gain maximum synergy and take advantage of the inputs/outputs of the regional agricultural industries.

The ethanol plant would convert corn into ethanol, while providing the spent brewer’s grain (residue of corn after fermentation into ethanol) as feedstock for a beef cattle feeding operation. The wastes from the cattle operation would, in turn, become input into the Bion Technical Platform which would use proprietary technology to generate input energy to help fuel the ethanol production operation. The beef cattle would be sold, along with the ethanol, as primary production output for the operation.

This proposed operation would affect the surrounding economy in two ways;

1. The operation's payroll and other spending would represent a net new cash flow into the St. Lawrence County economy, resulting in an economic "ripple" effect as payroll dollars are re-spent by local workers, creating additional economic activity.
2. The purchase of corn/hay locally would represent increased demand from regional grain farms, triggering additional farm investment and employment/earnings.

It is worth noting that, while the proposed Bion ethanol facility would use an estimated 18 – 20 million bushels of corn annually, at roughly \$4 per bushel, only 20% of this demand is predicted to be met through local sources. Local corn is used primarily as cattle feed and the Bion facility must compete with this demand in purchasing corn locally. The ability of the Bion plant to return most of the nutritional value of the corn to produce beef cattle (Fermentation only consumes the sugars in the corn, leaving the more valuable proteins.) will offset the affects of this competition.

Long term, this arrangement is likely to encourage the expansion of local corn/hay production through investments in increased productivity as well as the conversion of fallow lands into active agricultural production. This report does not attempt to estimate the economic value or impacts of this possible long term trend.

## Initial Impact

The initial construction of Bion facilities in St. Lawrence County, as well as land purchase and the purchase of trucks regionally is expected to produce a one-time economic impact of \$140.3 million and create 1749 jobs in the NNY region during the construction phase. Table 1 shows the breakdown of these impacts. Table 2 shows the estimated employment impact of this spending.

**Table 1**  
**Estimated Direct, Indirect, and Induced Economic Impact of Initial Bion Spending**

	Direct Spending	Economic Multiplier	Indirect/Induced Effects	Total Economic Impact
<b>Construction:</b>				
Ethanol Plant	\$20 million	1.6401	\$12.8 million	\$32.8 Million
Bion Tech Facility	\$10 million	1.6401	\$6.4 million	\$16.4 million
Beef Cattle Facility	\$54 million (Including land)	1.6401	\$34.6 Million	\$88.6 million
<b>Const. Total</b>	<b>\$84 Million</b>		<b>\$53.8 million</b>	<b>\$137.8 million</b>
Truck Purchase	\$1.6 million	1.5905	\$945,000	\$2.5 Million
<b>Total Initial Spending</b>	<b>\$85.6 million</b>		<b>\$54.5 million</b>	<b>\$140.3 million</b>

**Table 2**  
**Estimated Direct, Indirect, and Induced Employment Impact of Initial Bion Spending**

	Total economic Impact (2003 dollars)*	Economic Multiplier	Direct/Indirect And Induced Jobs Created
Construction	\$124.2 million	13.8727	1720
Truck Purchase	\$2.25 million	12.79	29
<b>Total</b>	<b>\$126.5 million</b>		<b>1749</b>

*\*Note: The employment multipliers used were developed using 2003 economic data and require input spending to be converted to 2003 dollars before application. A conversion factor of .9 was obtained from the U.S. federal Reserve and applied to the total impacts estimated in Table 1. The multipliers used in Table 2 estimate the total change in jobs in the region for all industries, per \$ million of total economic output.*

The construction of Bion facilities and the purchase of trucks and other capital equipment is expected to generate \$140.3 million in total economic impact in the NNY region, creating and estimated 1749 new jobs during the construction period. Once construction is completed, these jobs will cease to exist in the regional economy.

### **Impact from Continuing Operations**

The ongoing operation of Bion facilities and activities is expected to generate a total annual economic impact of \$64.5 million and create a total of 483 new jobs in the NNY region. Table 3 shows the breakdown of these impacts. Table 4 shows the estimated employment impact of this spending.

**Table 3  
Estimated Direct, Indirect, and Induced Economic Impact of Annual Bion Spending**

	<b>Direct Spending</b>	<b>Economic Multiplier</b>	<b>Indirect/Induced Spending</b>	<b>Total Economic Impact</b>
Ethanol Payroll/Expenses	\$1.5 Million	2.3855 <sup>2</sup>	\$2.08 million	\$3.6 million
Bion Tech Payroll/Expenses	\$1.8 Million	1.4772	\$859,000	\$2.7 million
Beef Cattle Payroll/Expenses	\$3.5 Million	2.0572	\$3.7 million	\$7.2 million
Trucking Payroll/Expenses	\$1 million	1.5905	\$591,000	\$1.6 million
Truck Operating Costs	\$2.7 million	1.5905	\$1.6 million	\$4.3 million
Corn Purchases	\$15 million <sup>1</sup>	2.0572	\$15.9 million	\$30.9 million
Hay Purchases	\$6.9 million	2.0572	\$7.3 million	\$14.2 million
<b>Total</b>	<b>\$32.4 million</b>		<b>\$32.03 million</b>	<b>\$64.5 million</b>

<sup>1</sup> This is 20% of the operation's total projected purchases of \$70 - \$80 million in corn annually.

<sup>2</sup> Bridge Associates has elected to use the multiplier associated with the production of food and beverage products, rather than the lower general multiplier for chemical production for the ethanol operations. This reflects the fact that ethanol production uses local corn and other inputs to a degree much higher than in general chemical mfg.

**Table 4**  
**Estimated Direct, Indirect, and Induced Employment Impact of Annual Bion Spending**

	<b>Direct Employment (FTE)</b>	<b>Economic Multiplier</b>	<b>Indirect and Induced Employment</b>	<b>Total Employment Impact</b>
Ethanol Production	33	5.5462 <sup>1</sup>	150	183
Bion Tech Platform	45	1.6577	30	75
Beef Cattle Operations	100	1.9056	91	191
Trucking	20	1.6979	14	34
<b>Total</b>	<b>198</b>		<b>285</b>	<b>483</b>

<sup>1</sup> Bridge Associates has elected to use the multiplier associated with the production of food and beverage products, rather than the lower general multiplier for chemical production for the ethanol operations. This reflects the fact that ethanol production uses local corn and other inputs to a degree much higher than in general chemical mfg.

The on-going operation of Bion facilities and the purchase of local agricultural products including corn is expected to generate \$64.5 million in total annual economic impact in the NNY region, creating an estimated 483 new jobs. These jobs are expected to continue in the region as long as Bion operates in the matter described.

### **Regional Tax Impact**

Ongoing payroll expenditures by Bion will result in an overall increase in regional household income. Some or all of this additional income will be spent regionally, resulting in increased collections of sales tax in the tri-county area. If all or nearly all the additional income is spent in the region, the NNY region will see an additional \$1.4 million in sales tax revenues per year at the current annual rate of 7.5%. This figure does not include any tax revenues that may result from initial construction. Table 5 shows the details of household income impact.

NOTE: The bulk of this additional tax revenue is likely to occur in St. Lawrence County but some of the positive impact will be felt in the surrounding counties as the induced economic activity ripples outward.

**Table 5**  
**Estimated Household Income and Sales Tax Revenue Impact from Annual Bion Payroll**

	<b>Direct Payroll</b>	<b>Economic Multiplier</b>	<b>Total Increase in Household Income</b>	<b>Tax Revenues at 7.5%</b>
Ethanol Production	\$1.5 million	3.3596	\$5 million	\$375,000
Bion Tech Platform	\$1.8 million	1.5899	\$2.9 million	\$217,500
Beef Cattle Operations	\$3.5 million	2.6486	\$9.3 million	\$697,500
Trucking	\$1 million	1.6712	\$1.7 million	\$127,500
<b>Total</b>	<b>\$7.8 million</b>		<b>\$18.9 million</b>	<b>\$1,417,500</b>

### **Long Term Impact Prospects**

Multiplier-based economic impacts are by their nature, short-term. They demonstrate the economic impact of a change in spending or investment in the region, given the current nature of the regional economy. This offers a relatively static picture of impact and does not attempt to describe possible changes to an economy that may occur as a result of that spending/investment over a period of some years.

Economies are dynamic in nature and it is reasonable to expect that, given the presence of demand from the Bion operations over a number of years, the local farm production base will expand to meet this demand. This would involve bringing additional farm acreage into production in response to the increased crop prices triggered by the Bion demand. Some of this increased production is likely to happen in any event, as nationwide corn prices rise in response to the demand from ethanol producers.

The mechanics of this shift in production patterns would involve additional investment in returning currently fallow land to production, as well as encouraging capital investment in the farming process as the additional acreage allows for greater economies of scale and encourages a shift to fixed versus variable costs in local farming. This could result in lower overall production costs in the region and increase overall agricultural competitiveness and profit margins for sales internally as well as outside the tri-county area. This expansion of regional agricultural production would also encourage the arrival of industries/firms supporting farming operations, with a resulting increase in regional economic activity and employment.

The latest U.S. Census Bureau Census of Agriculture in 2002 showed 102,052 acres of non-producing farmland in the NNY region. Table 6 shows the breakout of this acreage

by county. In addition, The Agricultural and Rural Economic Vitality Specialist at the Cornell Cooperative Extension of St. Lawrence County estimates that a total of 250,000 acres of potential farm land in the NNY region is currently underutilized, with at least some capacity to increase total production. The region clearly has the capacity to expand production of grain/hay under the right market conditions.

**Table 6  
Producing and Non-producing Farmland in NNY in 2002**

	<b>Total Farm Acres</b>	<b>In Production</b>	<b>Non-Producing</b>
Jefferson County	218,727	181,484	37,243
Lewis County	114,242	97,402	16,840
St. Lawrence County	221,002	173,033	47,969
<b>Totals</b>	<b>553,971</b>	<b>451,919</b>	<b>102,052</b>

*Source: 2002 US Census Bureau Census of Agriculture*

The current estimates used in this report have Bion purchasing \$6.9 million in hay (assumes the entire demand is filled through local production) and \$15 million in corn from local sources (assumes 20% of demand is met locally). If Bion’s entire corn demand could be met locally by expanding regional production of corn, this would represent an additional \$60 million in direct spending. This would result in a total additional economic impact of \$123.4 million beyond the figures included in this report, as well as creating an estimated 1058 jobs in the local agricultural sector and related industries. Table 7 shows the details of these estimates.

**Table 7  
Economic/Employment Impact of Local Corn Purchases**

<b>Direct Spending</b>	<b>Economic Multiplier</b>	<b>Total Estimated Impact</b>
\$60 million	2.0572	\$123.4 million
\$60 million	17.631 jobs per \$1 million spent	1058 jobs

These estimates are highly speculative and would be affected by a large variety of dynamic economic factors including such things as national hay/corn prices, energy and other production costs, available labor supplies, and the demand for competing grain uses including the regional dairy industry. It is certainly possible that, over time, the regional NNY economy could adjust to meet all Bion corn needs through local production. The actual degree to which this is likely to occur and the real economic impacts would require very dynamic modeling approaches well beyond the scope of this report.

### **The Use of Direct Spending Estimates in This Report**

All initial estimates of direct spending on employment, corn/hay purchases, truck operations, payroll, construction, and equipment purchase were provided by Bion, Inc. Where ranges for employment or spending were offered, Bridge Associates has elected to use the midpoint for the estimated range in developing direct spending figures.

Corn purchases were valued at an average market price of \$4/bushel while hay was valued at \$90/ton, based on figures provided by the Cornell Cooperative Extension office in St. Lawrence County.

Bridge Associates has chosen to assume that all truck purchases will be made locally, although Bion, Inc has not specifically committed to this choice. Bridge Associates has also assumed that all purchases of industrial equipment in support of Bion operations will not be made locally. This assumption is based on the very limited ability of the local economy to produce and deliver specialized manufacturing equipment. The errors in these two assumptions are likely to be generally offsetting.

### **The Use of Economic Multipliers in This Report**

The use of economic multipliers to estimate the indirect effects of an economic change on earnings, output, and employment is a standard approach for economic impact estimating in the United States. In spite of its popularity, however, there is still some disagreement among economists as to the limitations and proper use of different multipliers.

The multipliers used in this report were generated by the US Bureau of Economic Analysis (BEA), using the RIMS II Input-Output model. This model is widely used among researchers and economic estimators in the US and is considered by Bridge Associates to be credible for these purposes. The data to support these estimates were provided by the BEA using 2003 data on Northern New York from the US Census Bureau. This data is the most current available at this time and is considered by Bridge Associates to be a credible source of information for this report.

The multipliers used for direct earnings for payroll and local purchases were earnings multipliers for construction, crop and animal production, food and beverage manufacturing, and truck transportation industries in the region. The Bion Technical Platform was treated as miscellaneous manufacturing. These are all Type II multipliers which include indirect and induced effects on the region's economy. The employment multiplier was the direct effect employment multiplier for the primary industries named. The employment multipliers for the initial construction/purchase phase and possible full demand corn purchase were final demand multipliers for the construction, trucking, and crop and animal production industries.

This approach captures only the NNY economic impacts of Bion's proposed operations and does not attempt to describe any long-term dynamic effects or outcomes in the regional or state economy. The Northern New York economy is not large and experiences considerable leakage as dollars spent in the region quickly flow outward. This results in lower overall economic multipliers than would be appropriate for larger urban areas or for the entire state of New York.

This report was produced by Bridge Associates, using information provided by Bion, Inc as well as other sources as noted. For questions regarding this report or its conclusions, please contact:

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