



UNIVERSITY OF MINNESOTA EXTENSION

COMMUNITY VITALITY

Economic Contribution of the Brainerd Industrial Center

A REPORT OF THE ECONOMIC IMPACT ANALYSIS PROGRAM

Authored by Brigid Tuck and John Bennett



PROGRAM SPONSOR: BRAINERD INDUSTRIAL CENTER

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EXECUTIVE SUMMARY: ECONOMIC CONTRIBUTION OF BRAINERD INDUSTRIAL CENTER

The mission of the Brainerd Industrial Center is to “provide opportunities for the great Brainerd Lakes Area.” As part of this mission, the Center, which is located in Central Minnesota, has redeveloped a 600,000 square foot former paper mill in Brainerd. The paper mill is a historic building located along the Mississippi River. The space is being redesigned to support industrial, commercial, and small businesses. Since redevelopment began in 2014, the site has created 87 jobs.

The redeveloped Brainerd Industrial Center has created economic activity in Brainerd, and the Center was interested in understanding the economic contribution of the redeveloped paper mill in Crow Wing County. Thus, they hired University of Minnesota Extension to measure its economic contribution. Major findings of the study include:

Direct Effects of Capital Investments: The Brainerd Industrial Center invested \$15.8 million in capital improvements between 2014 and 2018. This investment helped fund renovated tenant space and the installation of essential equipment.

Total Effects of Capital Investments: In total, the capital investments by Brainerd Industrial Center generated an estimated \$23.8 million in economic activity between 2014 and 2018. This included an estimated \$8.7 million in labor income. The investments supported employment for 180 people. The top industries impacted by the investments included food services and drinking places, real estate, and administrative and support services.

Direct Effects of Current Operations: Currently, the Center is home to five businesses. These businesses employed 87 workers as of the end of 2018. Of these jobs, waste management and remediation services comprised the largest share (63 percent).

Total Effects of Current Operations: The Brainerd Industrial Center’s operations generated a total estimated \$26.0 million in economic activity in 2018. This included \$6.8 million in labor income. The Center also supported an estimated 157 jobs in Crow Wing County. The top industries benefiting from the Center included administrative and support services, food services and drinking places, and professional, scientific, and technical services.

Direct Effects of Potential Expansion: Extension developed two potential scenarios for expansion. These scenarios should be considered as examples, however, and will change based on actual growth. In the first scenario, Extension assumed employment at the Brainerd Industrial Center would increase to 127 jobs. The second scenario assumes employment would grow to 175 jobs.

Total Effects of Potential Expansion: Under Extension’s first scenario, the Center would generate \$38.4 million in economic activity in Crow Wing County. This includes \$9.5 million in labor income and support for 227 jobs across all industries in the county. Under the second scenario, the total economic contribution of the Brainerd Industrial Center would increase to an estimated \$60.9 million. This includes \$13.3 million in labor income and support for 335 jobs across all industries.

Notes on the Analysis: This is an economic contribution study. It differs from economic impact. In an economic impact study, if a business were to move from one location in Crow Wing County to the Brainerd Industrial Center, the business would not create any economic impact. Overall, the economy would not gain any new activity. Extension did not trace the history of the businesses in the Center.



INTRODUCTION

The mission of the Brainerd Industrial Center is to “provide opportunities for the great Brainerd Lakes Area.” As part of this mission, the Center, which is located in Central Minnesota, has redeveloped a 600,000 square foot former paper mill in Brainerd. The paper mill is a historic building located along the Mississippi River. The space is being redesigned to support industrial, commercial, and small businesses. Since redevelopment began in 2014, the site has created 87 jobs.



The redevelopment of the Brainerd Industrial Center has created economic activity in Brainerd. Businesses located in the Center bring jobs, sales, labor income, and tax value to the city.

The Center was interested in understanding the economic contribution of the redeveloped paper mill in both Crow Wing County and the state of Minnesota. Thus, they hired University of Minnesota Extension to conduct an economic contribution study. This report presents the results of the analysis.

ECONOMIC CONTRIBUTION OF BRAINERD INDUSTRIAL CENTER IN CROW WING COUNTY

Total economic contribution is composed of direct, indirect, and induced effects. Calculating the total economic contribution of a business or activity begins with determining its direct effects. Indirect and induced effects are then calculated using input-output models.

Redevelopment of the Brainerd Industrial Center affects the economy as previously underutilized building space returns to economically productive use. Once developed, businesses in the Center will generate sales and employ workers.

The Center has two sources of direct effects. The first source is from construction and capital investments in the facility. These effects are short term and will dissipate once investments are completed. The second source is from the operations, employment, and output of businesses located in the Center. These effects are longer term, lasting as long as the businesses operate at projected levels.

Input-output models trace the flow of dollars throughout a local economy and capture the indirect and induced, or secondary, effects of an economic activity. To quantify the indirect and induced effects of the Brainerd Industrial Center, the direct effects were entered into the input-output model IMPLAN. This analysis uses IMPLAN version 3.0 with SAM multipliers and 2016 data.¹

Indirect effects are those associated with a change in economic activity due to spending for goods and services directly tied to the business or activity. In this case, these are changes in the local economy occurring because businesses in the Brainerd Industrial Center purchase goods and related services. As businesses make purchases for things like electricity and water, this creates an increase in purchases across the supply chain. Indirect effects also include changes due to purchases for investments and construction activity.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. These are economic changes related to spending by people directly employed by businesses in the Brainerd Industrial Center. They create effects as they make purchases for things like health care, housing, and food. Induced effects also include spending by construction workers during the capital investment phase and household spending related to indirect effects.

Economic contribution is measured in terms of output (sales), labor income, and employment. Output is typically the most common result of an economic contribution study. Labor income is also recommended as a measure, because it shows the economic benefits that accrue for study area residents. Employment includes full-time, part-time, and seasonal employment, not full-time equivalents. A more detailed explanation of terms can be found in the appendix.

Crow Wing County is the primary study area for this analysis. The final section of the report explores the contribution of the Center within the state of Minnesota.

Capital Investments

The Brainerd Industrial Center has invested in capital improvements at the site. These improvements generated economic activity as building renovations were made and equipment was installed. These effects are short term in nature, ending when investments were completed. Operational effects, on other hand, are ongoing. This report looks at the two impacts separately, starting with capital investments.

Direct Effects

To redevelop the Brainerd paper mill site, the Brainerd Industrial Center invested \$15.8 million between 2014 and 2018. The investments were to improve the property and prepare the site for the businesses' requirements. According to the IMPLAN model, the investment of \$15.8 million created an estimated 110 construction-related jobs at the site and paid \$6.1 million in labor income (Table 1).

Total Effects and Top Industries Affected

In total, the capital investments made by the Brainerd Industrial Center generated an estimated \$23.8 million in economic activity between 2014 and 2018. This included an estimated \$8.7 million in labor income. The investments supported employment for 180 people.

¹ www.implan.com

Table 1: Economic Contribution of Capital Investments at the Brainerd Industrial Center, Crow Wing County, 2014-2018

	Output (millions)	Employment	Labor Income (millions)
Direct	\$15.8	110	\$6.1
Indirect	\$3.5	30	\$1.2
Induced	\$4.5	40	\$1.4
Total	\$23.8	180	\$8.7

University of Minnesota Extension Estimates, 2018 dollars

The IMPLAN model estimates that capital investments made by the Brainerd Industrial Center generated 180 jobs. Of these, 110 were direct jobs, created on-site to complete the improvements. Seventy jobs, however, were at industries across the county. (Chart1). The top industries experiencing effects from these capital investments included food services and drinking places, real estate, and administrative and support services.

Chart 1: Top Indirect and Induced Effects, Capital Investments at the Brainerd Industrial Center, Crow Wing County, 2014-2018, Sorted by Employment



Operations

Since 2014, five businesses have moved into the Brainerd Industrial Center. Their operations create ongoing economic activity in Crow Wing County.

Direct Effects

To quantify direct effects, Brainerd Industrial Center staff provided Extension with a list of businesses currently operating in the Center and their total employment. The five businesses employed 87 workers as of the end of 2018 (Table 1). Of these jobs, waste management and remediation services comprised the largest share (63 percent).

Table 2: Brainerd Industrial Center Employment by Industry, Current

	Current 2018
Waste management and remediation services	55
Manufacturing	22
Wholesale trade	10
Total	87

Source: Brainerd Industrial Center

The Brainerd Industrial Center also has additional space for business development. While firm plans do not yet exist, the Brainerd Industrial Center has identified potential opportunities for growth. These opportunities include 1) development of commercial office space, 2) development of warehouse space, and 3) growth in the current tenant businesses.

Extension developed two scenarios based on the above opportunities for expansion. These scenarios illustrate how expansion could affect the Crow Wing County economy. Results should be considered as examples, however, and will change based on actual growth.

In the first scenario, Extension assumed 10 new manufacturing jobs (from the current businesses), 10 wholesale trade jobs (from a potential new company), and 20 professional services jobs (from a potential four businesses). If these jobs were added, employment at the Brainerd Industrial Center would increase to 127 jobs (Table 2).

The second scenario assumes 28 new manufacturing jobs, 20 new wholesale trade jobs, and 40 professional services jobs. If these jobs were created at the Center, employment would grow to 175 jobs at the facility.

Again, these are Extension assumptions designed to show potential.

Table 3: Brainerd Industrial Center Employment by Industry, Potential, Scenarios Created by University of Minnesota Extension

	Scenario 1	Scenario 2
Waste management and remediation services	55	55
Manufacturing	32	50
Wholesale trade	20	30
Professional services	20	40
Total	127	175

Source: Brainerd Industrial Center and University of Minnesota Extension

Total Effects and Top Industries Affected, Current

Directly, businesses in the Brainerd Industrial Center employed 87 workers in 2018. The IMPLAN model estimated the workers generated \$18.0 million in economic activity and were paid \$4.3 million in labor income (Table 4).²

In total, Brainerd Industrial Center operations generated an estimated \$26.0 million in economic activity in 2018. This included \$6.8 million in labor income. The Center supported an estimated 157 jobs in Crow Wing County.

² Output and labor income are from the IMPLAN model and based on industry averages for businesses in the Center. The businesses themselves did not report data on output or labor income.

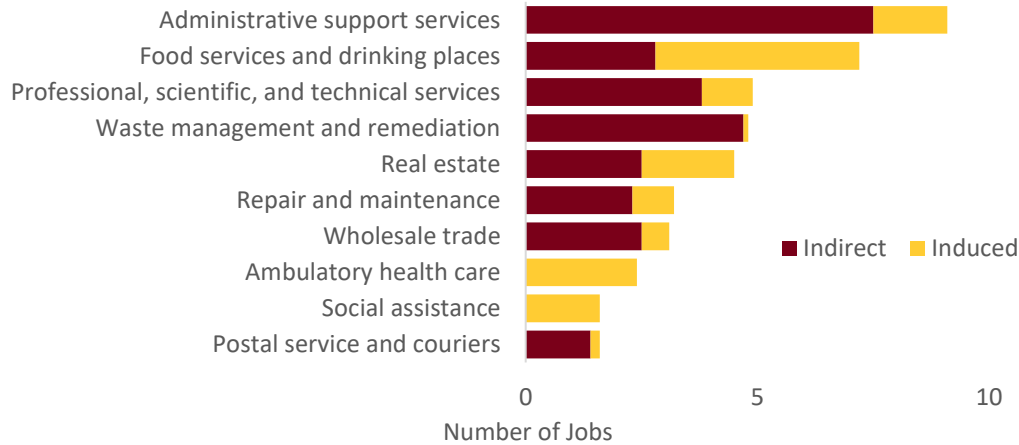
Table 4: Economic Contribution of Operations of the Brainerd Industrial Center, Crow Wing County, 2018

	Output (millions)	Employment	Labor Income (millions)
Direct	\$18.0	87	\$4.3
Indirect	\$4.5	40	\$1.4
Induced	\$3.5	30	\$1.1
Total	\$26.0	157	\$6.8

University of Minnesota Extension Estimates, 2018 dollars

Of the 157 jobs supported by the Brainerd Industrial Center, 70 were in industries across the county. The top industries benefiting from the Center’s operations included administrative and support services, food services and drinking places, and professional, scientific and technical services (Chart 2).

Chart 2: Top Indirect and Induced Effects, Operations of the Brainerd Industrial Center, Crow Wing County, 2018, Sorted by Employment



Total Effects and Top Industries Affected, Future Potential

In Extension’s first scenario, employment at the Brainerd Industrial Center would grow to 127 workers. If this happened, the model estimates the Center would generate \$38.4 million in economic activity in Crow Wing County (Table 5). This includes \$9.5 million in labor income. The Brainerd Industrial Center would support 227 jobs across all industries in the county.

Under the second scenario, employment at the Center would grow to 175 workers. In this instance, the model estimates the total economic contribution of the Brainerd Industrial Center would increase to an estimated \$60.9 million. This includes \$13.3 million in labor income. The Center would support 335 jobs across all industries in the county.

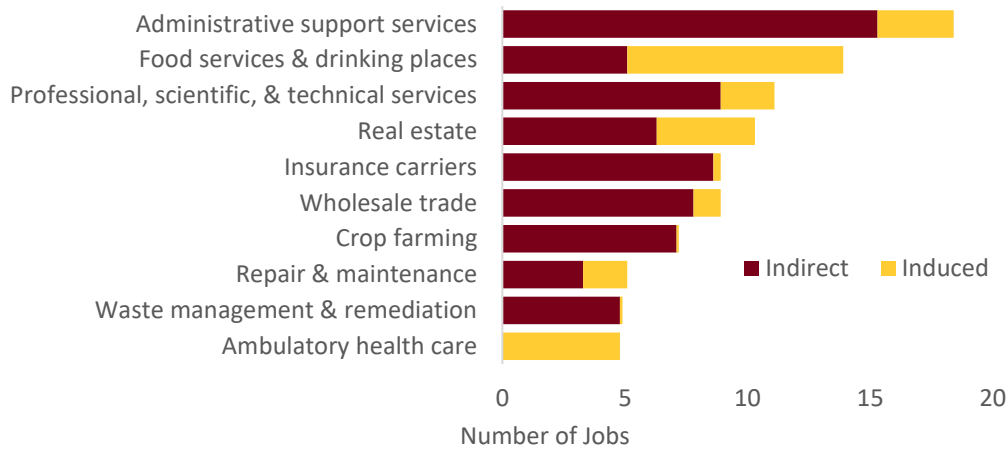
Table 5: Potential Economic Contribution of Operations of the Brainerd Industrial Center, Crow Wing County, Scenarios Created by University of Minnesota Extension

	Scenario 1			Scenario 2		
	Output (millions)	Employment	Labor Income (millions)	Output (millions)	Employment	Labor Income (millions)
Direct	\$26.0	127	\$5.8	\$41.8	175	\$7.7
Indirect	\$7.4	60	\$2.2	\$12.0	100	\$3.5
Induced	\$5.0	40	\$1.5	\$7.1	60	\$2.1
Total	\$38.4	227	\$9.5	\$60.9	335	\$13.3

University of Minnesota Extension estimates, 2018 dollars; based on assumptions for growth by Extension

In the second scenario, the Brainerd Industrial Center would support 335 jobs across all industries. Of those, 175 would be located at the Center itself. The other 160 jobs would be in businesses across the county. The industries with the most potential to be affected by expansion at the Center include administrative support services, food services and drinking places, and professional, scientific, and technical services (Chart 3).

Chart 3: Top Indirect and Induced Effects, Operations of the Brainerd Industrial Center, Crow Wing County, Potential Scenario by Extension, Sorted by Employment

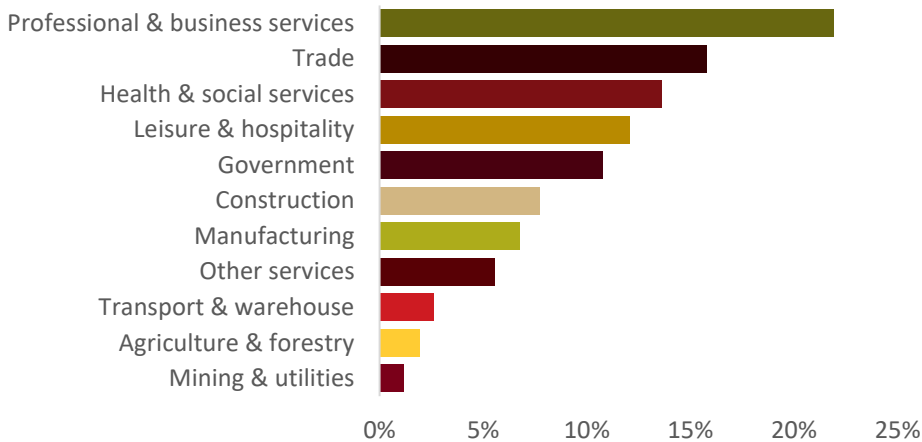


BRAINERD INDUSTRIAL CENTER IN CONTEXT OF CROW WING COUNTY’S ECONOMY

In 2016, there were 40,660 jobs in Crow Wing County. Of these, nearly a quarter were in the professional and business services industry (Chart 4). Other major industries, in terms of employment, included trade, health and social services, and leisure and hospitality.

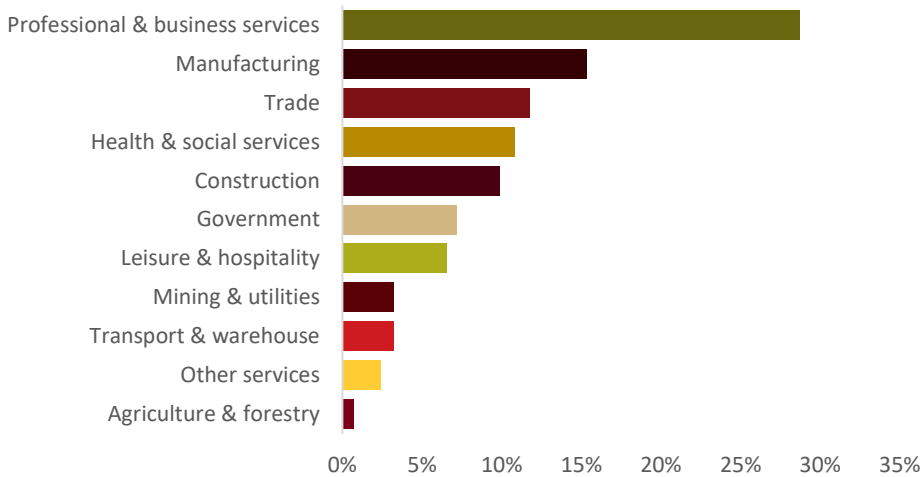
Directly, the Brainerd Industrial Center created jobs in the trade (wholesale trade), manufacturing, and professional and business services (including waste management and remediation services) industries. Indirectly, the Center generated jobs in similar industries. This variety helps support the diversity of Crow Wing County’s economy. For example, creating professional and business services jobs helps continue activity in the county’s largest industry. At the same time, creating manufacturing jobs helps grow a relatively smaller industry in the county.

Chart 4: Percent of Employment by Industry, Crow Wing County, 2016



In 2016, Crow Wing County businesses created \$5.0 billion in output. Of this, nearly 30 percent was generated by professional and business services businesses (Chart 5). Other major contributors to output in the county included manufacturing, trade, and health and social services.

Chart 5: Percent of Output by Industry, Crow Wing County, 2016



ECONOMIC CONTRIBUTION OF BRAINERD INDUSTRIAL CENTER IN MINNESOTA

The Brainerd Industrial Center also contributes to the state of Minnesota’s economy. Crow Wing County is part of the state, so its contribution to the county is part of Minnesota’s results. However, the larger the study area, the higher the indirect and induced effects tend to be, as there is more opportunity for the additional effects from the Center’s operations to accumulate in the region.

Estimates show the Brainerd Industrial Center contributed \$36.0 million of output to Minnesota’s economy in 2018 (Table 6). This included \$10.5 million of labor income and 197 jobs.

Table 6: Economic Contribution of Operations of the Brainerd Industrial Center, Minnesota, 2018

	Output (millions)	Employment	Labor Income (millions)
Direct	\$18.0	87	\$4.3
Indirect	\$9.5	50	\$3.3
Induced	\$8.5	60	\$2.9
Total	\$36.0	197	\$10.5

University of Minnesota Extension Estimates

Under Extension’s first scenario, the IMPLAN model estimates the Center would generate \$53.2 million in economic activity in Minnesota (Table 7). This includes \$15.0 million in labor income. The Brainerd Industrial Center would support 297 jobs across all industries in Minnesota.

Under the second scenario, the model estimates the total economic contribution of the Brainerd Industrial Center would increase to an estimated \$86.7 million. This includes \$22.3 million in labor income. The Center would also support 435 jobs across all industries in Minnesota.

Table 7: Potential Economic Contribution of Operations of the Brainerd Industrial Center, Minnesota, Scenarios Created by University of Minnesota Extension

	Scenario 1			Scenario 2		
	Output (millions)	Employment	Labor Income (millions)	Output (millions)	Employment	Labor Income (millions)
Direct	\$26.0	127	\$5.8	\$41.8	175	\$7.7
Indirect	\$14.8	80	\$5.0	\$26.7	130	\$8.4
Induced	\$12.4	90	\$4.2	\$18.2	130	\$6.2
Total	\$53.2	297	\$15.0	\$86.7	435	\$22.3

University of Minnesota Extension estimates, 2018 dollars; based on assumptions for growth by Extension

NOTES ON THE ANALYSIS

This is an economic contribution study. Economic contribution studies examine the current size and scope of an industry or activity. They measure and quantify the *total* role of an industry or activity. This differs from economic impact. Economic impact examines the *net* role. In an economic impact study, if a business were to move from its current location in Crow Wing County to the Brainerd Industrial Center, the business would not create any economic impact. Overall, the economy would not gain any new activity. This is because the business was already part of Crow Wing County’s economy. Extension did not trace the history of businesses in the Center. The goal of this study was to quantify the current contribution of the Brainerd Industrial Center.

Further, Extension created scenarios for future growth and designed them as illustrations. Extension has not done any research to determine the feasibility of these businesses in the county.

APPENDIX: METHODS AND TERMS

Special models, called input-output models, exist to conduct economic contribution analysis. There are several input-output models available. IMPLAN (Impact Analysis for PLANning) is one such model. Many economists use IMPLAN for economic contribution analysis because it can measure output and employment impacts, is available on a county-by-county basis, and is flexible for the user. IMPLAN has some limitations and qualifications, but it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool, its capabilities, and its limitations helps ensure the best results from the model.

One of the most critical aspects of understanding economic contribution analysis is the distinction between the “local” and “non-local” economy. The local economy is identified as part of the model-building process. Either the group requesting the study or the analyst defines the local area. Typically, the study area (the local economy) is a county or a group of counties that share economic linkages. In this study, the primary study area is Crow Wing County with a secondary analysis for the state of Minnesota.

A few definitions are essential to properly read the results of an IMPLAN analysis. These terms and their definitions are provided below.

Output

Output is measured in dollars and is equivalent to total sales and includes significant double counting. Think of corn, for example. The value of the corn is counted when it is sold to the mill and then again when it is sold to the dairy producers as a feed supplement. It is then counted again when the dairy producer sells the milk to the cheese manufacturer. And it is counted yet again when the cheese is sold. The value of the corn is built into the price of each of these items and then the sale of each of these items are added up to get total sales (or output). Output is not equivalent to GDP.

Employment

Employment includes full- and part-time workers, as well as seasonal workers. Employment is measured in annual average jobs, not full-time equivalents (FTEs). IMPLAN includes total wage and salaried employees, as well as the self-employed, in employment estimates. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

Labor Income

Labor income includes all forms of employment income, including employee compensation (wages, salaries, and benefits), and proprietor income. Labor income measures the value added to the product by the labor component.

Direct Impact

Direct impact is equivalent to the initial activity in the economy. In this study, it is the employment, output, and labor income of the businesses occupying the industrial center.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occur due to spending for inputs (goods and services) by the industry or industries directly impacted. For instance, if

employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in output by the plant. As the plant increases output, it must also purchase more inputs, such as electricity, steel, and equipment. As the plant increases purchases of these items, its suppliers must also increase production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts. In this study, indirect impacts are those associated with spending by businesses in the Brainerd Industrial Center to purchase inputs.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to spending by labor; that is, spending by employees in the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, the new employees will have more money to purchase housing, buy groceries, and go out to dinner. As they spend their new income, more activity occurs in the local economy. This can be quantified and is called the induced impact. Primarily, in this study, the induced impacts are those economic changes related to spending by employees of the Brainerd Industrial Center businesses.

Total Impact

The total impact is the summation of the direct, indirect, and induced impacts.

Input-Output, Supply and Demand, and Size of Market

Care must be taken when using regional input-output models to ensure they are being used in the appropriate type of analysis. If input-output models are used to examine the impact of an industry so large that its expansion or contraction results in major supply and demand shifts, causing the prices of inputs and labor change, input-output can overstate the impacts or impacts. It is not likely businesses in the Brainerd Industrial Center have an impact on national input prices. Hence, the model should reliably estimate the impacts.

