Labovitz School
OF BUSINESS AND ECONOMICS

Bureau of Business and Economic Research

Research Report

The Economic Impact of Constructing and Operating Minnesota Steel Industries LLC in Itasca County, Minnesota

Including Additional Appendix Material on Itasca and St. Louis County Impacts

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April 2006

For

ITASCA DEVELOPMENT CORPORATION

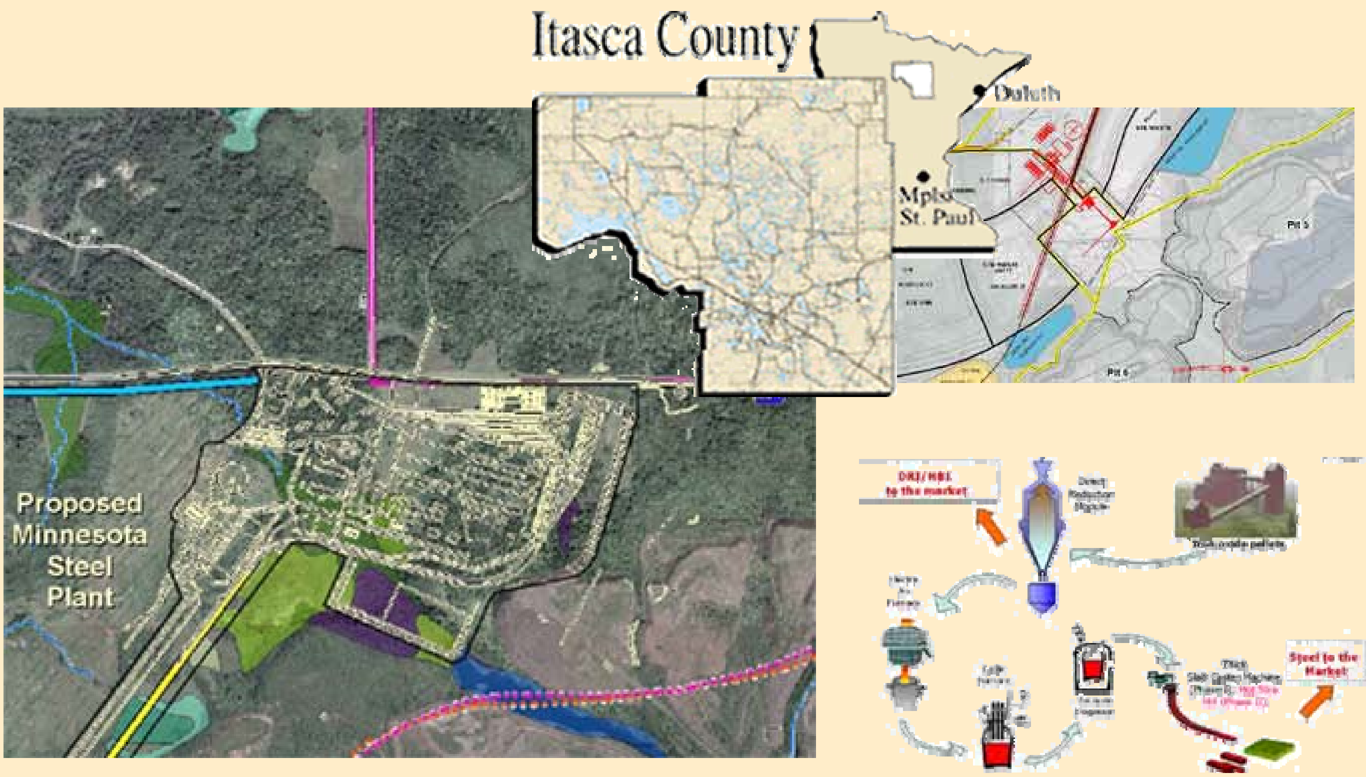

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Table of Contents

The Economic Impact of Constructing and Operating Minnesota Steel Industries LLC in Itasca County, Minnesota

Executive Summary

ABOUT THE PROJECT

The objective of this study is to assess the employment and economic impacts of Minnesota Steel Industries LCC integrated mine through steel mill project on Itasca County, and on Itasca and St. Louis Counties, both short term through construction and long term with employment growth for the region.

The University of Minnesota Duluth (UMD) Labovitz School of Business and Economics' Bureau of Business and Economic Research (BBER) was asked to estimate economic impacts from the proposed project.

This report is part of a group of larger and region-wide impact studies done by the UMD BBER for various proposed projects earlier in 2005 and 2006. IMPLAN modeling issues associated with small study areas and impact comparisons with previous studies are identified in the report.

Economic impacts: This study applies an economic multiplier analysis and input/output model that was created in Minnesota by the Minnesota IMPLAN Group, Inc., and is used by state governments and the USDA Forest Service, among others. Multiplier effects for construction and operations on this project range from 1.39 to 2.87. For the proposed Minnesota Steel Industries' facility, IMPLAN input-output models were constructed to estimate measures of Employment, Output, and Value Added impacts. Results from the project IMPLAN models for these measures are reported in terms of direct, indirect, and induced impacts. (*Indirect effects* here are changes in spending, income, or levels of employment by businesses that supply goods and services to the mining sector. *Induced effects* reflect the spending of income earned by employees who work for local businesses that directly or indirectly serve the mining sector.) Impacts are reported by showing economic activity for estimated year by year construction cost for the proposed project as well as start-up years and full operations (or typical) year projections.

IMPACTS ON ITASCA COUNTY

Impacts from Construction, Itasca County: With the completion of the construction phase for Minnesota Steel Industries LCC, it is estimated that the project will have generated $2.26 billion in output spending and $1.05 billion in value-added spending in Itasca County by directly expending approximately $1.60 billion in output spending and $651 million in value-added spending on construction. During each of two peak years of construction, Minnesota Steel Industries will also have created over three thousand full-time, part-time, and temporary jobs by directly employing approximately 2,000 people.

Impacts from Operations, Itasca County: When operations for the Minnesota Steel Industries' project reach full operations capacity (2012), it is estimated to generate $1.23 billion in output spending and $392 million in value-added spending in Itasca County by directly expending approximately $888 million in output and $187 million in value-added spending during operations. During a year of full operations, the project will create an estimated 2,010 fulltime, part-time, and temporary jobs by directly employing an estimated 700 people in operations at the Minnesota Steel Industries LCC plant.

IMPACTS ON ITASCA AND ST. LOUIS COUNTIES

Impacts from Construction, Itasca and St. Louis Counties: With the completion of the construction phase for Minnesota Steel Industries LCC, it is estimated that the project will have generated $2.63 billion in output and $1.30 billion in value-added spending in Itasca and St. Louis Counties by directly expending approximately $1.60 billion in output and $695 million in value-added spending on construction. During each of two peak years of construction, Minnesota Steel Industries will also have created over three-and-a-half thousand full-time, part-time, and temporary jobs in Itasca and St. Louis Counties by directly employing more than 2,000 people.

Impacts from Operations, Itasca and St. Louis Counties: When operations for the Minnesota Steel Industries' project reach full operations capacity (2012), it is estimated to generate $1.35 billion in output spending and $457 million in value-added spending in Itasca and St. Louis Counties by directly expending approximately $888 million in output and $187 million in value-added spending during operations. During a year of full operations, the project will create an estimated 2,249 fulltime, part-time, and temporary jobs by directly employing an estimated 700 people in operations at the Minnesota Steel Industries LCC plant.

For detailed information on the two-county study area of Itasca and St. Louis Counties, for construction and operations impacts, please see the appendix to this report.

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The Economic Impact of Constructing and Operating Minnesota Steel Industries LLC in Itasca County, Minnesota

Mesaba Energy Impact

I. Project Description

Minnesota Steel proposes to build an integrated mine through steel mill in the area of the former Butler Taconite mine and tailings basin near Nashwauk, Minnesota. The proposed project includes open pit taconite mining operations and steel making and shipping. The ore will be hauled to a crusheing facility, conveyed to the concentrator for beneficiating and then pumped as slurry to the pelletizer where direct reduced iron (DRI) grade taconite pellets will be produced. The DRI grade pellets will be then be delivered to the direct reduced iron plant for processing. The hot DRI product (still as pellets) will be delivered directly to the steel mill. The steel mill, at full production, will consist of two electric arc furnaces (EAF), two ladle metallurgy furnaces (LMF), a vacuum degasser (VD), two thick slab casters and a hot strip rolling mill for producing sheet steel. The steel slabs and finished steel will be transported by rail and vessels to destinations generally in the Great Lakes areas. The project represents an investment of approximately $1.6 billion, and will employ up to 700.

The UMD Labovitz School research bureau (Bureau of Business and Economic Research) worked closely with the Itasca Development Corporation and Minnesota Steel Industries LLC in determining key assumptions in the development of the economic impact model. County data for the impact model for Value Added, Employment, and Output is supplied by IMPLAN. From these data, Social Accounts, Production, Absorption, and Byproducts information are generated from the national level data and incorporated into the model.

The UMD Bureau of Business and Economic Research (BBER) was contracted to study and estimate the economic impacts of the taconite mine, concentrator, pellet plant, direct reduced iron plant, and steel mill project facility in Itasca County, Minnesota. The economic model used was IMPLAN.

II. Itasca County Study Area

This report focuses on the economic impact of the Minnesota Steel Industries' plant in Itasca County, Minnesota. This report is part of a group of larger and region-wide impact studies done for various proposed projects earlier in 2005 and 2006. As comparisons will inevitably be drawn between the studies, several cautions need to be enumerated and considered.

Modeling Issues: IMPLAN modeling issues associated with small study areas like that in this report of county-level impacts, as noted in the IMPLAN User's Guide,[1] include the following:

> A small area will have a high level of leakage. Leakages are any payments made to imports or value added sectors which do not in turn re-spend the dollars within the region.
>
> A study area that is actually part of a larger functional economic region will likely miss important backward linkages. For example, linkages with the labor force may be missing. Workers who live and spend outside the study area may actually hold local jobs.
>
> Study areas are typically a collection of counties. A county is the smallest standard area for IMPLAN data sets. A ZIP code based study area is possible to build but requires the creation of a custom data file. ZIP code-based databases are available from MIG.
>
> A zip code file is a proportional reduction of a larger county database. This assumes that employees live within the ZIP code area in the same proportions as in the larger database. The smaller the area, the less likely this is to be true. This can cause the induced effects to be overstated.
>
> If, for instance, a major retail entity is located within the region then the induced effects may be okay because workers will come back in to spend money. If you know something about the area and the proportions of workers living outside the study area, you can adjust the induced effects to reflect your knowledge.
>
> Also, it can be expected that input-output multipliers are larger when more economic activity is incorporated into the local transactions matrix. The more imports are internalized, the larger the calculated multipliers become. At the state level all counties are incorporated, and for the state, the greatest level of internalized economic activity is attained. Theoretically, therefore, the state IMPLAN multipliers will always be greater than multipliers for any individual or subset of counties. But, as with most theories, this one has exceptions. It is possible, for example, for the same impact run on both a state and county models to yield lower impact results in the state model compared to the county model. It does not happen that frequently, but it is possible.

This report measured the economic impact of Minnesota Steel on one level: the county surrounding the proposed plant, which is Itasca County.

Regional models can also show a significant impact on counties surrounding Itasca County, and on the State of Minnesota as a whole, from the construction and operations activities of the Minnesota Steel project.

1 Olson, Doug and Scott Lindall, "IMPLAN Professional Software, Analysis, and Data Guide"; Minnesota IMPLAN Group, Inc., 1725 Tower Drive West, Suite 140, Stillwater, MN 55082, www.implan.com

Study Area

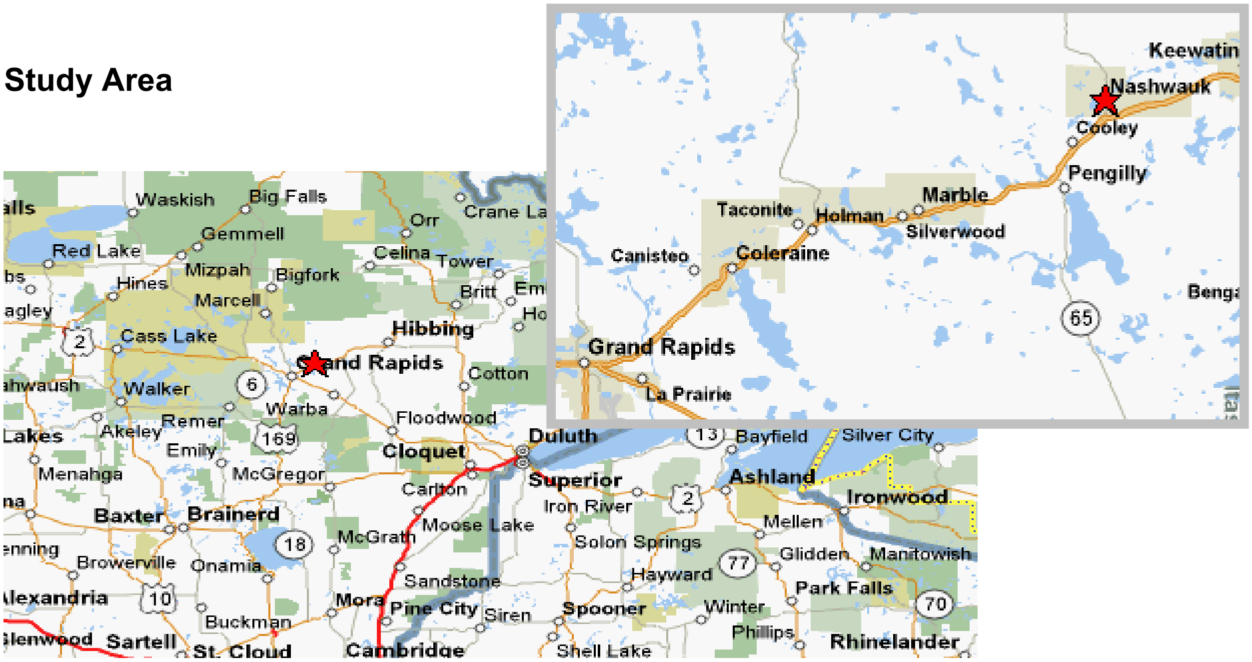

Figure 1. Itasca County and Nashwauk have been suggested as the prime location for the Minnesota Steel Industries plant. *Source: mapquest.com*

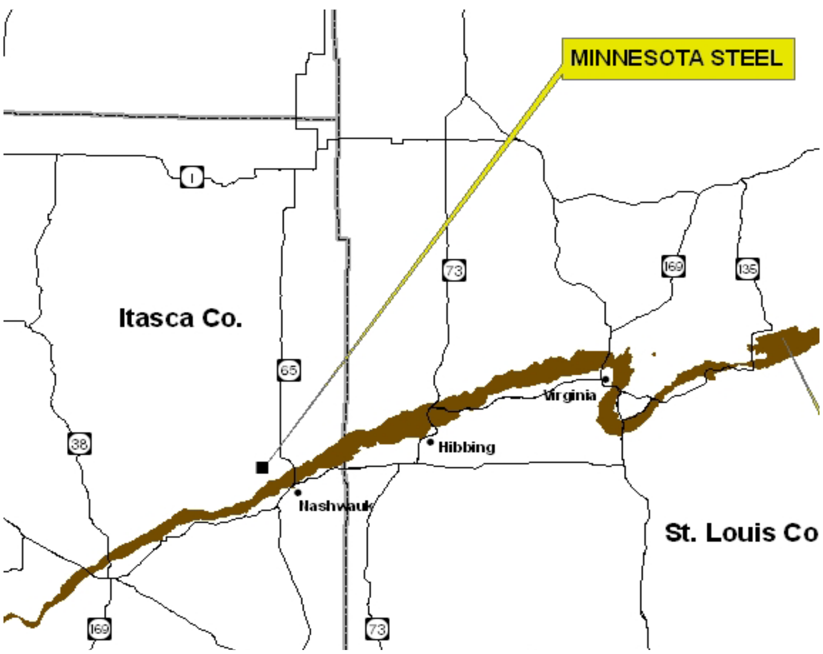

Figure 2. Study Area. *Source: Minnesota Steel*

III. Impact Procedures and Input Assumptions

IMPLAN Models

There are two components to the IMPLAN system, the software and databases. The databases provide all information to create regional IMPLAN models. The software performs the calculations and provides an interface for the user to make final demand changes.

Comprehensive and detailed data coverage of the IMPLAN study areas by county, and the ability to incorporate user-supplied data at each stage of the model building process, provides a high degree of flexibility both in terms of geographic coverage and model formulation, in this case definition of the Itasca County study area, and the definition of specific models for construction and operations, with adjusted production functions to reflect the proposed plant. Using the IMPLAN software and data, BBER identified Minnesota Steel Industries' expenditures in terms of the sectoring scheme for the model, in producer prices, in historical dollars based on the year of the model, and applied those dollars spent within the study area definition given for the impact analysis.

Data

IMPLAN data files use federal government data sources including:

- US Bureau of Economic Analysis Benchmark I/O Accounts of the US
- US Bureau of Economic Analysis Output Estimates
- US Bureau of Economic Analysis REIS Program
- US Bureau of Labor Statistics County Employment and Wages (CEW) Program
- US Bureau of Labor Statistics Consumer Expenditure Survey
- US Census Bureau County Business Patterns
- US Census Bureau Decennial Census and Population Surveys
- US Census Bureau Economic Censuses and Surveys
- US Department of Agriculture Crop and Livestock Statistics

IMPLAN data files consist of the following components: employment, industry output, value added, institutional demands, national structural matrices and inter-institutional transfers.

Impacts for this model use the most recent IMPLAN data available which is for the year 2003. The impact is reported in 2005 dollars (given the data year of inputs supplied to BBER) and calculated with the built-in deflators of the modeling software.

Economic impacts are made up of direct, indirect, and induced impacts. The following cautions are suggested assumptions for accepting the impact model:

- IMPLAN input-output is a production based model
- Local or export based purchases that represent transfers from other potential local purchases are not counted.
- The numbers (from U.S. Department of Commerce secondary data) treat both full and part time individuals as being employed.

- Assumptions need to be made concerning the nature of the local economy before impacts can be interpreted.
- The IMPLAN model was constructed for the year 2003 (most recent data available). 2005 dollars are estimated by the model.

Definitions used in this report:

Measures

- **Gross Output** represents the value of local production required to sustain activities.
- **Value Added** is a measure of the impacting industry's contribution to the local community; it includes wages, rents, interest and profits.
- **Employment** estimates are in terms of jobs, not in terms of full-time equivalent employees. Hence, these may be temporary, part time or short term jobs.

Effects

- **Direct** – Initial new spending in the study area resulting from the project
- **Indirect** – The additional inter-industry spending from the direct impact
- **Induced** – The impact of additional household expenditure resulting from the direct and indirect impact.

Inputs provided for modeling the impact of Minnesota Steel Industries LLC plant

Minnesota Steel Industries provided the BBER model estimated expenditures concerning specific processes for the proposed plant, including construction prestripping, prep infrastructure prep site, building construction and equipment; and operations slab steel production and roll steel production.

Construction

Materials: Minnesota Steel Industries provided estimates for dollars for products and services for the construction project.

Labor: Costs for 2007 - 2011, including direct cost and number of jobs were estimated.

Operations

For the operations impact, Minnesota Steel Industries provided estimates for such components as staffing and labor cost per year, for years 2009, 2010, 2011, and 2012, including all annual direct labor to support plant operations.

Industry sector adjustments

Production functions addressed in the gross absorption tables for the industrial sectors of the input-output modeling were adjusted to reflect estimates for the Minnesota Steel Industries plant construction and operations demand changes.

NAICS coded industry sectors supplying the proposed Minnesota Steel Industries plant were adjusted to the requirements of the sector modeling in the IMPLAN model. Because steel production will be a new industry for Itasca County, a new industry sector was introduced into the County data, creating this industry in the county economy based on output per worker and other production functions from the Minnesota State data tables. Other adjustments include industry specific sector changes such as reducing coal consumption and increasing natural gas consumption by this industry, among other adjustments.

Also useful as an input for modeling are data showing what percent of commodities supplying construction and operations is available at the local level, here defined as Itasca County. This information was not available for inclusion in this modeling.

Employment

Estimates for labor costs were provided by Minnesota Steel Industries. A cost estimate summary was reported to BBER, from estimated plant construction and operations, including labor cost for all requirements.

IMPLAN measures of direct, indirect, and induced employment follow from assumptions in the model concerning the estimation of the number of jobs created to deliver the plant production to the economy. Individual plant's efficiencies and individual plant's allocation of permanent, temporary, and part-time employment can alter the model's job estimation.

Inflation

The most recent IMPLAN data available for modeling these impacts are for industry sectors in the year 2003. To more accurately represent costs and impacts, input data was deflated from year 2005 to year 2003 dollars; these values were used to estimate impacts. These 2003 impacts were then re-inflated to show 2005 dollars in the tables of this report, using the industry specific deflators from the IMPLAN model.

IV. Findings: Construction Impacts and Operations Impacts

All of the following tables use the estimated values of Minnesota Steel Industries' direct expenditures on Itasca County as the original input for the model. Direct expenditures are listed in the column labeled, "Direct Effect." "Indirect Effect" measures the amount of increased spending between commercial, government and service industries, and "Induced Effect" measures the amount of increased spending by residential households. "Total Effect" is the sum of Direct, Indirect, and Induced Effects.

The "Value Added," "Employment," and "Output" totals in Tables 1a through 1c, and 2a through 2c show Minnesota Steel's economic impacts across the County. These totals incorporate the economic impacts that Minnesota Steel is likely to have on the County, which are shown in the corresponding "Value Added," "Employment," and "Output" columns in Tables 1a through 1c, and 2a through 2c. (For instance, Table 1b shows that Minnesota Steel's construction expenditures are expected to have a "Total Effect" of $2.26 billion in spending across the County. Employment detail is presented in Tables 1d and 2d.

None of the tables that show Minnesota Steel's yearly construction employment impacts add the total number of jobs-created across all months. Although IMPLAN required that each calendar year of construction be modeled as a separate event, each job created by construction activity may carry through all calendar years as the same job, and could thus be counted more than once. (For instance, the engineers, project managers, and installers that Minnesota Steel will employ for year 2007 might still be employed by Minnesota Steel in year 2011.)

Construction

Table 1 Summary: Minnesota Steel's Construction Impacts on Itasca County, MN 2007-2011 (2005 Dollars)			
Years	Value Added Totals $	Employment Totals	Output Totals $
2007	263,293,928	3,202	566,192,331
2008	263,293,928	3,202	566,192,331
2009	131,646,964	1,601	283,096,166
2010	197,470,448	1,921	424,644,251
2011	197,470,448	1,921	424,644,251
Total	1,053,175,716		2,264,769,330

Table 1 summarizes the total impact effects of Minnesota Steel's direct construction expenditures, as illustrated by the detail in Tables 1a through 1c. In the summary table, the column on the left (labeled "Value Added Totals") measures the economic impact of $651 million that Minnesota Steel is expected to use to pay for wages, rents, interest, and profits (total direct effect from table 1a), and is estimated to result in an additional $ 402 million in commercial, government, services and consumer spending (total indirect and induced from table 1a) for a total of $1.05 billion.

In the summary table, the column on the right (labeled "Output Totals") shows that Minnesota Steel's overall construction expenditure of approximately $1.60 billion (direct effect from table 1b) is calculated to create almost $665 million (indirect and induced effects from table 1b) in further spending—resulting in economic activity totaling $2.26 billion.

In the same way, in the summary table, the column in the center (labeled "Employment Totals") shows the total number of jobs that Minnesota Steel will create in the County. The column shows that in each of the two peak years of construction, Minnesota Steel Industries is expected to directly employ 2,000 workers for construction projects (from table 1c), which will result in the creation of 1,202 other jobs in the County (from table 1c), totaling 3,202 jobs.

The Construction impact findings for the three measures in Tables 1a through 1c are reported by year, and by effect. Table 1a shows the impact of Minnesota Steel's construction expenditures on Itasca county, over all months of construction required to build Minnesota Steel Industries' plant. "Value Added" measures the economic impact of capital that Minnesota Steel Industries specifically expects to spend on wages, rents, interest, and profits related to construction.

As Table 1a illustrates, the model estimates Minnesota Steel Industries will spend a total of $651 million on wages, rents, interest, and profits, which in turn will generate an additional $402 million in further spending, for a total impact of $1.05 billion. Dividing total value added impact ($1.05 billion) by direct expenditures ($651 million) results in a value added multiplier of 1.62. This means that for each dollar that Minnesota Steel expends on wages, rents, interest, and profits related to construction, the economy will spend another $0.62.

Table 1a: Minnesota Steel Industries LLC, Value Added Impacts from Construction, Itasca County, 2007-2011

Source: IMPLAN	Value Added in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	162,781,440	43,590,729	56,921,758	263,293,928
2008	162,781,440	43,590,729	56,921,758	263,293,928
2009	81,390,720	21,795,365	28,460,879	131,646,964
2010	122,086,080	32,693,049	42,691,320	197,470,448
2011	122,086,080	32,693,049	42,691,320	197,470,448
Total	651,125,760	174,362,921	227,687,035	1,053,175,716

Table 1b shows the economic impact of Minnesota Steel's total output expenditures over five years of construction. Based on direct-expenditures of approximately $1.6 billion, Minnesota Steel is expected to create $665 million in further spending activity in the County. The ratio of Total Effect to Direct Effect ($2.26 billion to $1.6 billion) results in an output multiplier of 1.42 for the County.

Table 1b: Minnesota Steel Industries LLC, Output Impacts from Construction, Itasca Region, 2007-2011

Source: IMPLAN	Output in 2005$			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	399,999,872	76,208,570	89,983,888	566,192,331
2008	399,999,872	76,208,570	89,983,888	566,192,331
2009	199,999,936	38,104,285	44,991,944	283,096,166
2010	299,999,904	57,156,430	67,487,917	424,644,251
2011	299,999,904	57,156,430	67,487,917	424,644,251
Total	1,599,999,488	304,834,285	359,935,554	2,264,769,330

Table 1c shows Minnesota Steel Industries' impact on employment in Itasca County, over the five years of plant construction. This table shows that every job that Minnesota Steel Industries creates during the construction period will result in the creation of 0.60 additional jobs. Table 1c shows that Minnesota Steel Industries will create 2,000 full-time, part-time, and temporary jobs during each of two peak construction years, which in turn will cause the creation of 1,202 jobs throughout other sectors.

Table 1c: Minnesota Steel Industries LLC, Employment Impacts from Construction, Itasca Region, 2007-2011

Source: IMPLAN	Employment			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	2,000	560	642	3,202
2008	2,000	560	642	3,202
2009	1,000	280	321	1,601
2010	1,200	336	385	1,921
2011	1,200	336	385	1,921

Note: Employment impacts from construction cannot be summed for a total over the five year construction period.

The IMPLAN model can report employment activity by industry sector. For each of the peak construction employment years of 2007 and 2008, the model shows the following employment activity detail.

Table 1d: Minnesota Steel Industries LLC, Employment Impacts from Construction, Itasca County, Peak Construction Year 2008, by Industry Sector

Source: IMPLAN	Projected Employment			
IMPLAN Sector	*Direct*	*Indirect*	*Induced*	*Total*
Construction	2,000	8	4	2,012
Retail Trade	0	87	158	245
Administrative & Waste Services	0	159	24	184
Health & Social Services	0	0	156	156
Other Services	0	58	65	123
Accommodation & Food Services	0	15	102	117
Professional- Scientific & Tech Services	0	94	14	108
Transportation & Warehousing	0	38	14	53
Wholesale Trade	0	32	17	50
Finance & Insurance	0	20	18	38
Manufacturing	0	23	5	29
Arts- Entertainment & Recreation	0	3	18	21
Agriculture, Forestry, Fish & Hunting	0	5	11	16
Real Estate & Rental	0	8	8	16
Educational Services	0	0	13	13
Information	0	5	5	10
Government	0	3	5	7
Utilities	0	2	3	5
Management of Companies	0	1	1	2
Total	2,000	560	642	3,202

Operations

Tables 2a through 2c show the economic effects that Minnesota Steel Industries is expected to have on Itasca County during the calendar-year of start-up, the first two years of operations, and a year of full operations. It is important to note that unlike the effects of Minnesota Steel Industries' construction expenditures, which are singular, Itasca County will reap the benefits of Minnesota Steel Industries' full operations-year expenditures annually for the life of the plant.

Table 2 Summary:
Minnesota Steel Industries LLC Operations Impacts 2009, 2010, 2011 and Full Operations Year
(2005 Dollars)

Years	Value Added Totals $	Employment Totals	Output Totals $
2009	71,754,045	1,206	225,159,533
2010	215,262,129	1,206	675,478,615
2011	259,418,471	1,206	814,038,432
Full Operations (2012)	391,887,452	2,010	1,229,717,463
Total	938,322,097		2,944,394,043

Table 2 summarizes Tables 2a through 2c, showing the total economic effects of Minnesota Steel Industries' direct expenditures for operations on Itasca County. The left-most column (labeled "Value Added Totals") shows the economic impact of the money that Minnesota Steel Industries expects to specifically use to pay for wages, rents, interest, and profits related to operations. During a full operations year, it is predicted that Minnesota Steel Industries will directly expend more than $ 448 million (from table 2a) in value added expenditure to meet these costs, which should result in total spending of $938 million.

The right-most column (labeled "Output Totals") displays the economic effects that Minnesota Steel Industries' total expenditures for operations are expected to have on the County. In a full operations year, Minnesota Steel Industries is expected to directly spend almost $888 million for operations, thereby generating a total of $ 1.23 billion in economic activity across the County.

The center column (labeled "Employment Totals") measures the number of jobs that Minnesota Steel Industries is likely to create directly and indirectly during a full operations year. Over a full operations year, Minnesota Steel Industries is likely to employ 700 workers in operations, which should result in the creation of 2,010 jobs in total across the County.

Table 2a shows the Value Added impacts that Minnesota Steel Industries' specific spending on wages, rents, interest, and profits is expected to have on Itasca County. The Table shows that in a full operations year, Minnesota Steel Industries is expected to directly spend more than $ 187 million to meet these expenditures, which should create a total of almost $392 million in other spending throughout the rest of the County. The value added multiplier is 2.09, or the ratio of "Total Effect" to "Direct Effect" ($392 million to $187 million).

Table 2a: Minnesota Steel Industries LLC, Value Added Impacts from Operations, Itasca County, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Value Added in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	$34,276,080	$24,746,066	$12,731,898	$71,754,045
2010	102,828,232	74,238,199	38,195,695	215,262,129
2011	123,921,208	89,466,555	46,030,710	259,418,471
Full Operations (2012)	187,200,112	135,151,589	69,535,749	391,887,452
Total	$448,225,632	$323,602,409	$166,494,052	$938,322,097

Table 2b shows the Output impacts on Itasca County of Minnesota Steel Industries' expenditures for operations. As illustrated by Table 2b, Minnesota Steel Industries is expected to spend almost $888 million for operations in a full operations year, which should result in a total of $1.23 billion in spending in the County. The economic multiplier is 1.39 ($1.23 billion to $887.5 million).

Table 2b: Minnesota Steel Industries LLC, Output Impacts from Operations, Itasca County, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Output in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	$162,500,064	$42,531,449	$20,128,029	$225,159,533
2010	487,500,192	127,594,347	60,384,086	675,478,615
2011	587,500,224	153,767,579	72,770,567	814,038,432
Full Operations (2012)	887,500,288	232,287,126	109,930,001	1,229,717,463
	$2,125,000,768	$556,180,501	$263,212,683	$2,944,394,043

Table 2c shows the impacts that Minnesota Steel Industries' creation of operations jobs is expected to have on the County. In a full operations year, Minnesota Steel Industries is expected to employ 700 people in operations, which should result in the creation of 2,010 jobs total across the County. The employment multiplier is 2.87.

Table 2c: Minnesota Steel Industries LLC, Employment Impacts from Operations, Itasca County, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Employment			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	420	454	332	1,206
2010	420	454	332	1,206
2011	420	454	332	1,206
Full Operations (2012)	700	757	553	2,010

Table 2d shows employment impact detail from operations for the County. Total jobs are 2,010, ranked by industry sector for the full operations year.

Table 2d: Minnesota Steel Industries LLC, Employment Impacts from Operations, Itasca County, Full Operations Year, by Industry Sector

Source: IMPLAN

IMPLAN Sector	Projected Employment			
	Direct	*Indirect*	*Induced*	*Total*
Manufacturing	700	26	5	731
Transportation & Warehousing	0	189	12	201
Wholesale Trade	0	161	15	176
Other Services	0	109	56	165
Retail Trade	0	12	136	149
Health & Social Services	0	0	135	135
Accommodation & Food Services	0	42	87	129
Administrative & Waste Services	0	71	21	92
Professional- Scientific & Tech Services	0	33	12	45
Finance & Insurance	0	25	16	41
Utilities	0	32	3	35
Construction	0	21	3	24
Arts- Entertainment & Recreation	0	6	16	22
Government	0	12	4	16
Real Estate & Rental	0	5	7	11
Agriculture, Forestry, Fish & Hunting	0	1	10	11
Educational Services	0	0	11	11
Information	0	5	4	9
Management of Companies	0	7	1	7
Total	700	757	553	2,010

V. Conclusions

This study applies an economic multiplier analysis and input/output modeling system that was created in Minnesota by the Minnesota IMPLAN Group, Inc., and is used by other state governments and the USDA Forest Service, among others.

This economic analysis from the UMD Labovitz School's research bureau reports the Minnesota Steel Industries project's direct effects, plus the additional spending effects that Minnesota Steel Industries is expected to cause only in the economy of Itasca County, Minnesota.

With the completion of the construction phase for Minnesota Steel Industries, it is estimated that the project will have generated $2.26 billion in spending across the County by directly expending approximately $1.6 billion on construction.

During each of the two peak years of construction, Minnesota Steel Industries will also have created over three thousand full-time, part-time, and temporary jobs in Itasca County by directly employing around 2,000 people in construction activities.

When operations for the project reach "full operations year" capacity, operations are estimated to generate $1.23 billion of output in spending and $392 million in value added spending in the County by directly expending approximately $888 million in output and $187 million in value added spending during operations.

During a full operations year, Minnesota Steel Industries will create an estimated 2010 full-time, part-time, and temporary jobs by directly employing an estimated 700 people in operations at the Minnesota Steel Industries plant.

Special considerations

Special considerations for interpreting these impact numbers: Regional indirect and induced effects are driven by assumptions in the model. With some models, one problem is that the assumptions can mask the true multiplier. This is especially true of the assumption of constant returns to scale: This assumption most affects induced effects and says that if I drink coffee, and my income increases, I will drink proportionally more than before. The amount of weight placed on the induced effects (the percentage of the total induced effect you would want to use) can be further analyzed with an in-depth impact study, involving much more specific data collection and more detailed analysis.

Construction costs may be larger due to commodity prices, banker's fees, and interest payments. Any differences would affect the estimates given here.

As noted in the "Itasca County Study Area" section at the beginning of this report, there are known IMPLAN modeling issues associated with small study areas like county-level impacts, including difficulty in measuring accurately the extent that payments made to imports or value added sectors are shown as re-spent within the study area. Itasca County's relationship to the Arrowhead Region suggests that this study area is actually part of a larger functional economic region, which means that the county model will likely miss important backward linkages. For example, linkages with the labor force may be missing workers who live and spend outside the County but who may actually hold local jobs.

Readers are also encouraged to remember the BBER was asked to supply an economic impact analysis only. Any subsequent policy recommendations should be based on the "big picture" of total impact. A cost-benefit analysis would be needed to assess the environmental, social, and governmental impacts.

References

The Economic Impact of Constructing and Operating an Integrated Gasification Combined-Cycle Power-Generation Facility on the Iron Range, Skurla, et al. http://www.d.umn.edu/sbe/departments/bber/projects/projects.htm, Bureau of Business and Economic Research, Labovitz School of Business and Economics, University of Minnesota Duluth.

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Minnesota IMPLAN Group, Inc., IMPLAN System (data and software), 1725 Tower Drive West, Suite 140, Stillwater, MN 55082, www.implan.com, 1997.

Input-output Analysis: Foundations and Extensions by Ronald E. Miller and Peter D Blair, Englewood Cliffs, N.J. Prentice-Hall, 1985 (out of print).

Elements of Input Output Analysis, Willam Miernyk, New York, Random House, 1966.

APPENDIX

The Economic Impact of Constructing and Operating Minnesota Steel Industries LLC in Itasca and St. Louis Counties, MN

After the impact on Itasca County was reported, Itasca Development Corporation asked BBER to estimate the same impact for a new study area: Itasca and St. Louis Counties, Minnesota. This addition to the initial impact report follows below.

This additional report includes:

- Itasca and St. Louis Counties Study Area
- Input Assumptions
- Findings: Construction Impacts and Operations Impacts
  - Construction
  - Operations
- Conclusions

Itasca and St. Louis Counties Study Area

This section of the report focuses on the economic impact of the Minnesota Steel Industries' plant in Itasca and St. Louis Counties, Minnesota. As comparisons between several impact studies for this industry and in this area will inevitably be drawn, some specific cautions need to be considered.

Modeling Issues: Many of the IMPLAN modeling issues associated with small study areas like the one-county model for Itasca County are also true of the two-county model.

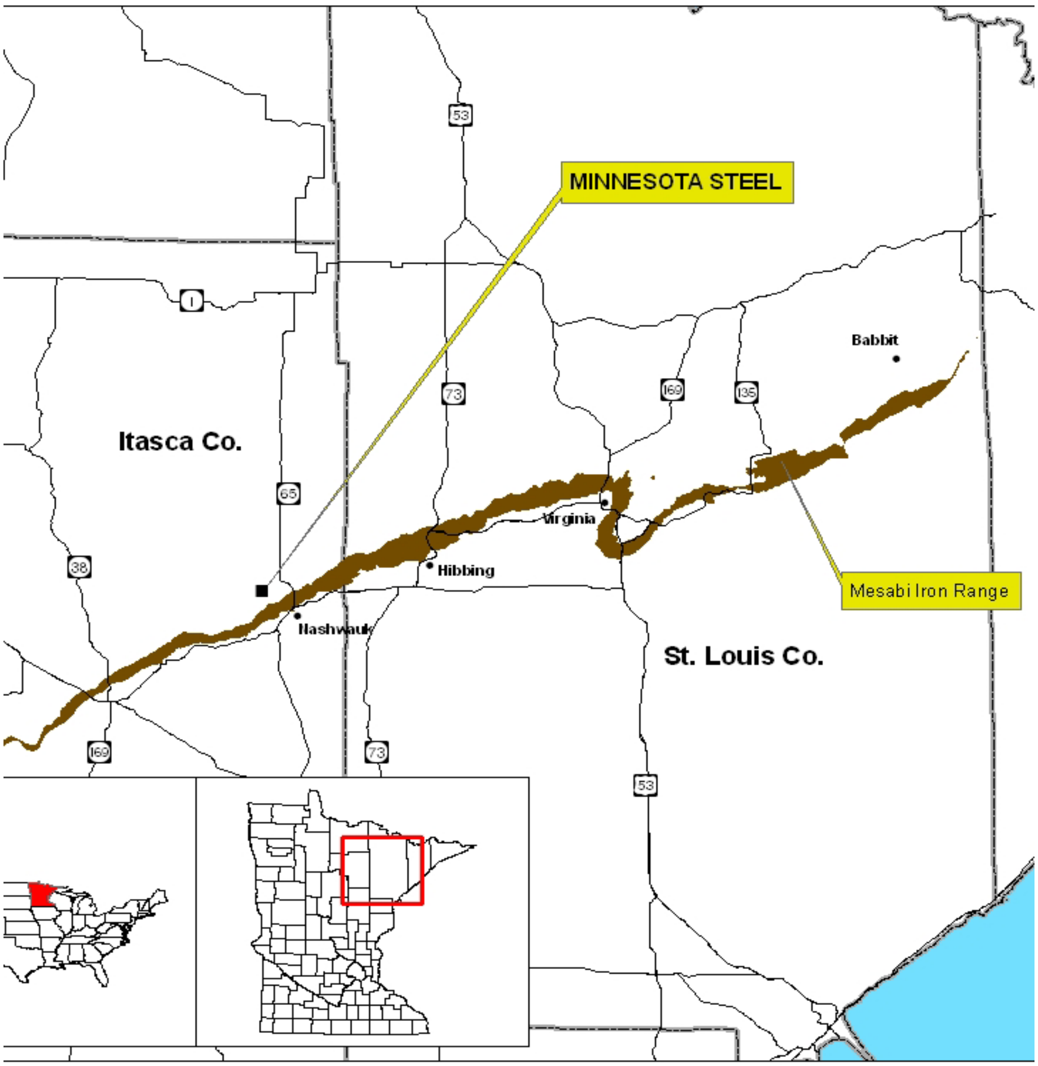
The two-county model will have some but less leakage than the one-county model. Leakages are any payments made to imports or value added sectors which do not in turn re-spend the dollars within the region.

The two-county model continues to be seen as a part of a larger functional economic region, and will likely miss important backward linkages.

As with the one-county model, for the two-county model, if a major retail entity is located within the region, the induced effects may be appropriate because workers will come back in to spend money.

Most interesting for comparisons between the one and two-county models, it can be expected that input-output multipliers are larger when more economic activity is incorporated into the local transactions matrix. The more imports are internalized, the larger the calculated multipliers become. At the state level all counties are incorporated, and for the state, the greatest level of internalized economic activity is attained. Theoretically, therefore, the state IMPLAN multipliers will always be greater than multipliers for any individual or subset of counties.

Study Area



Study Area, including Itasca and St. Louis Counties, MN. *Source: Minnesota Steel*

Input Assumptions

Minnesota Steel Industries provided the BBER model estimated expenditures concerning specific processes for the proposed plant, including construction prestripping, prep infrastructure prep site, building construction and equipment; and operations slab steel production and roll steel production.

Construction and Operations input assumptions: these labor and expenditure estimates provided by Minnesota Steel are the same for the Itasca-and-St-Louis Counties model as for the Itasca County model.

However, industry sector adjustments are somewhat different: When production functions addressed in the gross absorption tables for the industrial sectors of the input-output modeling were adjusted to reflect estimates for the Minnesota Steel Industries plant construction and operations demand changes, NAICS coded industry sectors supplying the proposed Minnesota Steel Industries plant were adjusted to the requirements of the sector modeling in the IMPLAN model. Although in the previous Itasca County model steel production will be a new industry for Itasca County, and a new industry sector was introduced into the county data, this industry was already present in the two-county economy. Other adjustments for the two-county model include industry specific sector changes such as reducing coal consumption and increasing natural gas consumption by this industry, among other adjustments, as with the one-county model.

Unchanged assumptions include:

> **Employment**. Estimates for labor costs were provided by Minnesota Steel Industries. A cost estimate summary was reported to BBER, from estimated plant construction and operations, including labor cost for all requirements.
>
> **Inflation**: The most recent IMPLAN data available for modeling these impacts are for industry sectors in the year 2003. To more accurately represent costs and impacts, input data was deflated from year 2005 to year 2003 dollars; these values were used to estimate impacts. These 2003 impacts were then re-inflated to show 2005 dollars in the tables of this report, using the industry specific deflators from the IMPLAN model.

Findings: Construction Impacts and Operations Impacts

All of the following tables use the estimated values of Minnesota Steel Industries' direct expenditures on Itasca and St. Louis Counties as the original input for the model.

None of the tables that show Minnesota Steel's yearly construction employment impacts add the total number of jobs-created across all months. Although IMPLAN required that each calendar year of construction be modeled as a separate event, each job created by construction activity may carry through all calendar years as the same job.

Construction

Table 1 Summary:
Minnesota Steel's Construction Impacts on Itasca and St. Louis Counties, MN 2007-2011 (2005 Dollars)

Years	Value Added Totals $	Employment Totals	Output Totals $
2007	$325,814,887	3,653	$658,355,024
2008	$325,814,887	3,653	$658,355,024
2009	$162,907,443	1,826	$329,177,512
2010	$244,361,181	2,192	$493,766,271
2011	$244,361,181	2,192	$493,766,271
Total	$1,303,259,579		$2,633,420,102

Table 1 summarizes the total impact effects of Minnesota Steel's direct construction expenditures, as illustrated by the detail in Tables 1a through 1c. In the summary table, the column on the left (labeled "Value Added Totals") measures the economic impact of $695 million that Minnesota Steel is expected to use to pay for wages, rents, interest, and profits (total direct effect from table 1a), and is estimated to result in an additional $609 million in commercial, government, services and consumer spending (total indirect and induced from table 1a) for a total of $1.30 billion.

In the summary table, the column on the right (labeled "Output Totals") shows that Minnesota Steel's overall construction expenditure of approximately $1.60 billion (direct effect from table 1b) is calculated to create almost $1.03 billion (indirect and induced effects from table 1b) in further spending—resulting in economic activity totaling $2.63 billion.

In the same way, in the summary table, the column in the center (labeled "Employment Totals") shows the total number of jobs that Minnesota Steel will create in the counties. The column shows that in each of the two peak years of construction, Minnesota Steel Industries is expected to directly employ 2,000 workers for construction projects (from table 1c), which will result in the creation of 1,653 other jobs in the counties (from table 1c), totaling 3,653 jobs.

The Construction impact findings for the three measures in Tables 1a through 1c are reported by year, and by effect. Table 1a shows the impact of Minnesota Steel's construction expenditures on Itasca and St. Louis Counties, over all months of construction required to build Minnesota Steel Industries' plant. "Value Added" measures the economic impact of capital that Minnesota Steel Industries specifically expects to spend on wages, rents, interest, and profits related to construction.

As Table 1a illustrates, the model estimates Minnesota Steel Industries will spend a total of $695 million on wages, rents, interest, and profits, which in turn will generate an additional $609 million in further spending, for a total impact of $1.30 billion. Dividing total value added impact ($1.30 billion) by direct expenditures ($695 million) results in a value added multiplier of 1.88. This means that for each dollar that Minnesota Steel expends on wages, rents, interest, and profits related to construction, the economy will spend another $0.88.

Table 1a: Minnesota Steel Industries LLC, Value Added Impacts from Construction, Itasca and St. Louis Counties, 2007-2011

Source: IMPLAN	Value Added in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	$173,625,328	$68,110,920	$84,078,640	$325,814,887
2008	$173,625,328	$68,110,920	$84,078,640	$325,814,887
2009	$86,812,664	$34,055,460	$42,039,320	$162,907,443
2010	$130,219,008	$51,083,192	$63,058,981	$244,361,181
2011	$130,219,008	$51,083,192	$63,058,981	$244,361,181
Total	$694,501,336	$272,443,684	$336,314,562	$1,303,259,579

Table 1b shows the economic impact of Minnesota Steel's total output expenditures over five years of construction. Based on direct expenditures of approximately $1.60 billion, Minnesota Steel is expected to create $1.03 billion in further spending activity in the two counties. The ratio of Total Effect to Direct Effect ($2.63 billion to $1.6 billion) results in an output multiplier of 1.65 for the counties.

Table 1b: Minnesota Steel Industries LLC, Output Impacts from Construction, Itasca and St. Louis Counties, 2007-2011

Source: IMPLAN	Output in 2005$			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	$399,999,872	$121,529,464	$136,825,688	$658,355,024
2008	$399,999,872	$121,529,464	$136,825,688	$658,355,024
2009	$199,999,936	$60,764,732	$68,412,844	$329,177,512
2010	$299,999,904	$91,147,099	$102,619,270	$493,766,271
2011	$299,999,904	$91,147,099	$102,619,270	$493,766,271
Total	$1,599,999,488	$486,117,858	$547,302,760	$2,633,420,102

Table 1c shows Minnesota Steel Industries' impact on employment in Itasca and St. Louis Counties, over the five years of plant construction. This table shows that every job that Minnesota Steel Industries creates during the construction period will result in the creation of 0.83 additional jobs. Table 1c shows that Minnesota Steel Industries will create 2,000 full-time, part-time, and temporary jobs during each of two peak construction years, which in turn will cause the creation of an additional 1,653 jobs throughout other sectors.

Table 1c: Minnesota Steel Industries LLC, Employment Impacts from Construction, Itasca and St. Louis Counties, 2007-2011

Source: IMPLAN	Employment			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2007	2,000	726	937	3,653
2008	2,000	726	937	3,653
2009	1,000	363	464	1,826
2010	1,200	436	556	2,192
2011	1,200	436	556	2,192

Note: Employment impacts from construction cannot be summed for a total over the five year construction period.

The IMPLAN model can report employment activity by industry sector. For each of the peak construction employment years of 2007 and 2008, the model shows the following employment activity detail.

Table 1d: Minnesota Steel Industries LLC, Employment Impacts from Construction, Itasca and St. Louis Counties, Peak Construction Year 2008, by Industry Sector

Source: IMPLAN	Projected Employment			
IMPLAN Sector	*Direct*	*Indirect*	*Induced*	*Total*
Construction	2,000	7	4	2,012
Retail Trade	0	101	234	334
Professional- Scientific & Tech Services	0	247	25	273
Health & Social Services	0	0	188	188
Accommodation & Food Services	0	21	143	164
Other Services	0	58	99	158
Administrative & Waste Services	0	95	24	119
Finance & Insurance	0	43	55	98
Wholesale Trade	0	38	26	64
Transportation & Warehousing	0	31	19	50
Manufacturing	0	37	12	50
Real Estate & Rental	0	15	13	29
Arts- Entertainment & Recreation	0	3	22	26
Information	0	12	13	26
Educational Services	0	1	24	24
Government	0	4	9	14
Agriculture, Forestry, Fish & Hunting	0	4	8	12
Management of Companies	0	5	4	9
Utilities	0	2	4	6
Mining	0	0	0	0
	2,000	726	927	3,653

Operations

Tables 2 through 2d show the economic effects that Minnesota Steel Industries is expected to have on Itasca and St. Louis Counties during the calendar-year of start-up, the first two years of operations, and a year of full operations. It is important to note that unlike the effects of Minnesota Steel Industries' construction expenditures, which are singular, Itasca and St. Louis Counties will reap the benefits of Minnesota Steel Industries' full operations-year expenditures annually for the life of the plant.

Table 2 Summary:
Minnesota Steel Industries LLC Operations Impacts 2009, 2010, 2011 and Full Operations Year, Itasca and St. Louis Counties (2005 Dollars)

Years	Value Added Totals $	Employment Totals	Output Totals $
2009	$83,629,388	1,349	$246,745,769
2010	$250,888,152	1,349	$740,237,277
2011	$302,352,406	1,349	$892,080,893
Full Operations (2012)	$456,745,084	2,249	$1,347,611,431

Table 2 summarizes Tables 2a through 2c, showing the total economic effects of Minnesota Steel Industries' direct expenditures for operations on Itasca and St. Louis Counties. The left-most column (labeled "Value Added Totals") shows the economic impact of the money that Minnesota Steel Industries expects to specifically use to pay for wages, rents, interest, and profits related to operations. During a full operations year, it is predicted that Minnesota Steel Industries will directly expend almost $187 million (from table 2a) in value added expenditure to meet these costs, which should result in additional spending of almost $270 million, and result in total spending of almost $457 million.

The right-most column (labeled "Output Totals") displays the economic effects that Minnesota Steel Industries' total expenditures for operations are expected to have on the counties. In a full operations year, Minnesota Steel Industries is expected to directly spend almost $888 million for operations, thereby generating an additional $460 million in output spending, resulting in a total of almost $ 1.35 billion in economic activity across the counties.

The center column (labeled "Employment Totals") measures the number of jobs that Minnesota Steel Industries is likely to create directly and indirectly during a full operations year. Over a full operations year, Minnesota Steel Industries is likely to employ 700 workers in operations, which should result in the creation of an additional 1,549 jobs across the counties, resulting in a total of 2,249 jobs.

Table 2a shows the Value Added impacts that Minnesota Steel Industries' specific spending on wages, rents, interest, and profits is expected to have on Itasca and St. Louis Counties. The Table shows that in a full operations year, Minnesota Steel Industries is expected to directly spend more than $187 million to meet these expenditures, which should create a total of almost $269 million in other spending throughout the rest of the two counties, and result in total spending of almost 457 million. The value added multiplier is 2.44, or the ratio of "Total Effect" to "Direct Effect" ($456 million to $187 million).

Table 2a: Minnesota Steel Industries LLC, Value Added Impacts from Operations, Itasca and St. Louis Counties, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Value Added in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	$34,275,852	$31,255,369	$18,098,164	$83,629,388
2010	$102,827,552	$93,766,108	$54,294,491	$250,888,152
2011	$123,920,392	$113,000,183	$65,431,823	$302,352,406
Full Operations (2012)	$187,198,880	$170,702,391	$98,843,812	$456,745,084

Table 2b shows the Output impacts on Itasca and St. Louis Counties of Minnesota Steel Industries' expenditures for operations. As illustrated by Table 2b, Minnesota Steel Industries is expected to spend almost $888 million for operations in a full operations year, which should result in $460 additional spending in the two counties, and result in a total of almost $1.35 billion in output spending. The economic multiplier is 1.52 ($1.35 billion to $888 million).

Table 2b: Minnesota Steel Industries LLC, Output Impacts from Operations, Itasca and St. Louis Counties, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Output in 2005 $			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	$162,500,064	$54,793,488	$29,452,218	$246,745,769
2010	$487,500,192	$164,380,463	$88,356,655	$740,237,277
2011	$587,500,224	$198,099,520	$106,481,099	$892,080,893
Full Operations (2012)	$887,500,288	$299,256,692	$160,854,418	$1,347,611,431

Table 2c shows the impacts that Minnesota Steel Industries' creation of operations jobs is expected to have on the counties. In a full operations year, Minnesota Steel Industries is expected to employ 700 people in operations, which should result in the creation of an additional 1,549 jobs total across the counties, and result in a total of 2,249 jobs. The employment multiplier is 3.21.

Table 2c: Minnesota Steel Industries LLC, Employment Impacts from Operations, Itasca and St. Louis Counties, 2009, 2010, 2011, and Full Operations Year

Source: IMPLAN	Employment			
Years	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total Effect*
2009	420	495	435	1,349
2010	420	495	435	1,349
2011	420	495	435	1,349
Full Operations (2012)	700	824	725	2,249

Table 2d shows employment impact detail from operations for the counties. Total jobs are 2,249, ranked by industry sector for the full operations year.

Table 2d: Minnesota Steel Industries LLC, Employment Impacts from Operations, Itasca and St. Louis Counties, Full Operations Year, by Industry Sector

Source: IMPLAN	Projected Employment			
IMPLAN Sector	*Direct*	*Indirect*	*Induced*	*Total*
Manufacturing	700	46	10	756
Wholesale Trade	0	182	20	202
Retail Trade	0	14	183	196
Other Services	0	108	78	186
Transportation & Warehousing	0	160	15	174
Accommodation & Food Services	0	47	112	158
Health & Social Services	0	0	147	147

Finance & Insurance	0	44	43	87
Administrative & Waste Services	0	58	18	77
Professional- Scientific & Tech Services	0	47	20	67
Utilities	0	28	3	31
Government	0	20	7	28
Management of Companies	0	24	3	27
Arts- Entertainment & Recreation	0	5	17	23
Information	0	12	10	22
Construction	0	18	4	22
Real Estate & Rental	0	10	10	20
Educational Services	0	1	18	19
Agriculture, Forestry, Fish & Hunting	0	1	7	7
Mining	0	0	0	0
	700	824	725	2,249

Conclusions

This study applies an economic multiplier analysis and input/output modeling system that was created in Minnesota by the Minnesota IMPLAN Group, Inc., and is used by other state governments and the USDA Forest Service, among others.

With the completion of the construction phase for Minnesota Steel Industries, it is estimated that the project will have generated $2.63 billion in total output spending across Itasca and St. Louis Counties by directly expending approximately $1.60 billion on construction.

During each of the two peak years of construction, Minnesota Steel Industries will also have created over three and a half thousand full-time, part-time, and temporary jobs in Itasca and St. Louis Counties by directly employing around two thousand people in construction activities.

When operations for the project reach "full operations year" capacity, operations are estimated to generate $1.35 billion of output in spending and $456 million in value added spending in the two counties by directly expending approximately $888 million in output and $187 million in value added spending during operations.

During a full operations year, Minnesota Steel Industries will create an estimated total of 2,249 full-time, part-time, and temporary jobs by directly employing an estimated 700 people in operations at the Minnesota Steel Industries plant.

Timeline for Minnesota Steel Industries LCC Construction and Operations Impacts, 2007 - 2012