November 18, 2015

Research Report

Modeled Prospective Regional Socio-Economic Impacts of the Back Forty Project Menominee County, Michigan

Bureau of Business and Economic Research

Labovitz School of Business and Economics

University of Minnesota Duluth

Driven to Discover

Research Team

UMD Labovitz School of Business and Economics

Bureau of Business and Economic Research

Monica Haynes, Director
Gina Chiodi Grensing, Editor/Writer
Michelle Scott, Undergraduate Research Assistant
Austin Kuhn, Undergraduate Research Assistant
Travis Eisenbacher, Undergraduate Research Assistant
Karen Haedtke, Executive Administrative Specialist
Bureau of Business and Economic Research
11 East Superior Street, Suite 210
Duluth, MN 55802
(218) 726-7895
www.d.umn.edu/lsbe/bber.php

Project Contact
Robin Quigley
Manager, Communications
Aquila Resources, Inc.
414 10th Avenue
Menominee, MI 49858
O: 906.352.4024
C: 218.349.2913
rquigley@aquilaresources.com

Table of Contents

Table of Figures

Table of Tables

Executive Summary

ABOUT THE PROJECT

Aquila Resources, Inc. commissioned the Bureau of Business and Economic Research (BBER), an entity of the University of Minnesota Duluth's Labovitz School of Business and Economics, to update the results of its 2010 study, *Modeled Prospective Regional Socio-Economic Impacts of the Back Forty Project, Menominee County, Michigan* with current data using updated assumptions and modeling methods. Like the previous study, the new report assessed the economic impact of the mining industry in the Upper Peninsula of Michigan and Northeast Wisconsin. The BBER studied and estimated the economic impacts of construction and operations activity in the non-ferrous mining industry for Delta, Dickinson, and Menominee counties in the Upper Peninsula of Michigan and Marinette County in Wisconsin.

<u>Construction Impacts:</u> The IMPLAN model used in this study estimated that, in total, the two-year construction project is estimated to add just over $81 million in output to the four-county region in the first year (2018) and more than $160 million in additional output in the second year (2019). For every direct construction job created as a result of the mining construction project in 2018, another 0.7 jobs will be created in the larger economy.

Non-Ferrous Mining <u>Construction</u> Impacts, Back Forty Project, 2018 and 2019[1]

		Direct Effect	*Indirect Effect*	*Induced Effect*	*Total*
Year 2018					
	Value Added	$19,829,887	$5,310,027	$5,324,950	$30,464,864
	Output	$61,124,773	$10,176,572	$9,567,869	$81,322,981
	Employment	254	96	81	431
Year 2019					
	Value Added	$21,213,138	$10,685,216	$5,602,997	$37,501,351
	Output	$128,660,000	$21,504,732	$10,088,419	$160,253,151
	Employment	210	191	84	484

SOURCE: IMPLAN, 2015

<u>Operations Impacts:</u> Both Pre-Production level operations and typical year operations impact models were created. During the Pre-Production phase, an estimated 150 people will be directly employed, though no measureable output results from this phase. Because of their income and their spending, those employees were estimated to result in an additional 40 jobs being supported and increase regional output through induced effects by over $4.9 million in 2020.

[1] Employment impacts from construction cannot be summed for a total over the two year construction period as this employment may be from recurring jobs

Non-Ferrous Mining Pre-Production Operations Impacts, Back Forty Project, 2020 dollars

		Direct Effect	Indirect Effect	Induced Effect	Total
2020					
	Value Added	$9,487,531	$0	$2,717,425	$12,204,956
	Output	$0	$0	$4,903,120	$4,903,120
	Employment	150	0	40	190

SOURCE: IMPLAN, 2015

For a typical year (after the Pre-production phase), the model also estimated that for every job created as a result of non-ferrous mining operations, 0.72 jobs are likely to be created in other sectors of the four counties' economy. Mining operations in the region are predicted to add almost 260 new jobs to the region and increase output by nearly $160 million annually.

The indirect and induced jobs created will be in sectors closely related to the mining industry, such as Wholesale Trade, Maintenance and Repair of Nonresidential Structures, Truck Transportation, Limited-service Restaurants, Full-service Restaurants, and Accounting Services. Other induced or indirect employment will be created in sectors, such as Offices of Health Practitioners and Retail Stores as well.

Non-Ferrous Mining Operations Impacts, Back Forty Project, Typical Year, 2021 dollars

		Direct Effect	Indirect Effect	Induced Effect	Total
Typical Year					
	Value Added	$78,179,861	$6,917,532	$3,324,697	$80,024,372
	Output	$140,000,000	$13,250,900	$6,735,504	$159,986,404
	Employment	150	55	54	259

SOURCE: IMPLAN, 2015

Tax Impacts: Tax impacts tables in this report show that in a typical year of operation, the federal taxes from non-ferrous mining activity are estimated to total about $9 million, and state and local taxes are estimated to total more than $11.6 million. In total, in a typical year (2021), non-ferrous mining is estimated to pay over $20 million in taxes to federal, state, and local government.

Population Projections, Housing, and Tourism Trends: This report also presents secondary data on the economic base, population, housing, and tourism of the four-county region as well as the tourism and hospitality sectors of the four-county economic base, ranked by output in millions of dollars, for year 2013. This report also shows detail for sectors driving the impact on Tourism and Hospitality sectors from mining employment.

★ ★ ★

Bureau of Business and Economic Research
Labovitz School of Business and Economics
University of Minnesota Duluth

Modeled Prospective Regional Socio-Economic Impacts of the Back Forty Project, Menominee County, Michigan

2010 Report Update

I. Project Description

Aquila Resources, Inc. commissioned the University of Minnesota Duluth Labovitz School's Bureau of Business and Economic Research (BBER) to update the results of its 2010 study, *Modeled Prospective Regional Socio-Economic Impacts of the Back Forty Project, Menominee County, Michigan* with current data, using updated assumptions and modeling methods. Like the previous study, the new report assessed the economic impact of the mining industry in the Upper Peninsula of Michigan and Northeast Wisconsin.

The BBER studied and estimated the economic impacts of construction and operations activity for Delta, Dickinson, and Menominee counties in the Upper Peninsula of Michigan and Marinette County in Wisconsin. The economic modeling data and software used was IMPLAN.[2] The study used IMPLAN's economic multiplier analysis and input/output modeling, Version 3.1. Data was the most recent IMPLAN data, which is for year 2013.

The research objectives of the study included the following:

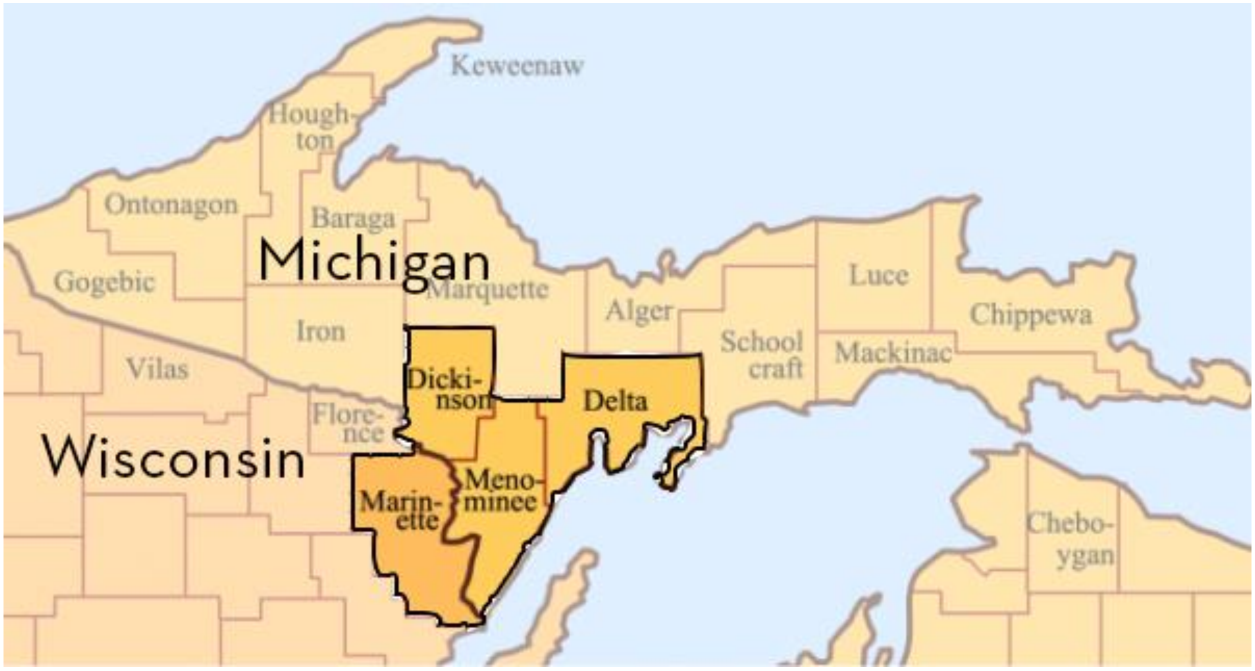
- To study the economic impact of construction and operations activity of the mining industry in Delta, Dickinson, Menominee, and Marinette counties, including jobs, payroll, and production.
- To model industry impacts using three measures and three effects of mining construction and operations activity. This will include the measures of employment, output, and value added and will model direct, indirect, and induced economic effects in the economies of the study area.
- To provide background information on population projections, housing, and tourism trends from secondary data.
- To describe possible tax impacts for the study area.
- To draft the findings of the impact analysis into a report and slide presentation of results.

Study Area

The geographic scope for this economic impact analysis was Delta, Dickinson and Menominee counties in the Upper Peninsula of Michigan and Marinette County in Wisconsin.

[2] IMPLAN is used by other state governments and the USDA Forest Service, among others. See Minnesota IMPLAN Group, Inc., IMPLAN System (data and software), 16905 NorthCross Drive, Suite 120, Huntersville, NC 28078

Figure 1. Michigan's Upper Peninsula Counties of Delta, Dickinson and Menominee and Marinette County in Northeast Wisconsin



Definitions used in this report

- **Backward Linkages**: The interconnection of an industry to other industries from which it purchases its inputs in order to produce its output. It is measured as the proportion of intermediate consumption to the total output of the sector (direct backward linkage) or to the total output multiplier (total backward linkage). An industry has significant backward linkages when its production of output requires substantial intermediate inputs from many other industries[3].
- **Direct Effect**: Initial new spending in the study area resulting from the project.
- **Employment**: Estimates (from U.S. Department of Commerce secondary data) are in terms of jobs, not in terms of full-time equivalent employees. Therefore, these jobs may be temporary, part-time, or short-term jobs.
- **Gross Output**: The value of local production required to sustain activities.
- **Indirect Effect**: The additional inter-industry spending from the direct impact.
- **Induced Effect**: The impact of additional household expenditures resulting from the direct and indirect impact.

[3] IMPLAN, 2015

- **Labor Income**: All forms of employment income, including employee compensation (wages and benefits) and proprietor income.
- **Leakages**: Any payments made to imports or value added sectors that do not in turn re-spend the dollars within the region.
- **Multipliers:** Total production requirements within the Study Area for every unit of production sold to Final Demand. Total production will vary depending on whether Induced Effects are included and the method of inclusion. Multipliers may be constructed for output, employment, and every component of Value Added.
- **Value Added**: A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest, and profits.

II. Impact Procedures and Input Assumptions

Input/Output Analysis

Input/Output analysis is a type of applied economic analysis that tracks the interdependence among various producing and consuming sectors of an economy[4]. Specifically, it depicts inter-industry relations and shows how each industry is dependent on all the others in the economy, both as a consumer of outputs and as a supplier of inputs. Input/Output analysis has been used to study regional economies within a nation and as a tool for national and regional economic planning. It predicts the effect of changes in one industry on the others and on consumers, government, and suppliers. In addition, a common use of input/output analysis is to estimate the economic impacts of company spending on the surrounding region. It is this technique that is implemented in this study.

This study uses the IMPLAN Group's input/output modeling data and software (IMPLAN version 3.1). The IMPLAN database contains county, state, zip code, and federal economic statistics, which are specialized by region, not estimated from national averages. Using classic input/output analysis in combination with regional-specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users.

IMPLAN Data and Assumptions

IMPLAN data files use the following federal government data sources.

- US Bureau of Economic Analysis Benchmark Input/Output Accounts of the US
- US Bureau of Economic Analysis Output Estimates
- US Bureau of Economic Analysis Regional Economic Information Systems (REIS) Program
- US Bureau of Labor Statistics Covered 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

[4] Bureau of Economic Analysis (www.bea.gov/glossary/glossary)

- US Department of Agriculture Census

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

The data used was the most recent IMPLAN data available, which is for the year 2013. Data are reported in 2018, 2019, and 2020 dollars as indicated.

Economic impacts are made up of direct, indirect, and induced impacts. The following are suggested assumptions for accepting the impact model: IMPLAN input/output is a production-based model, and employment numbers (from U.S. Department of Commerce secondary data) treat both full- and part-time individuals as being employed.

Regional data for the impact models for value added, employment, and output are supplied by IMPLAN for this impact. Employment assumptions were provided to the model to enable construction of the impact model. From these data, Social Accounts, Production, Absorption, and Byproducts information were generated from the national level data and was incorporated into the model. All region study definitions and impact model assumptions were agreed on before work with the models began.

Model Assumptions

- Construction years are assumed to include activity between 2018 and 2019.
- Pre-production operational impacts are provided for 2020, during which time the mine will employ 150 individuals but will not produce any output.
- Operational impacts for a "typical year" (2021 was used as the full capacity year) are provided.
- Operational direct expenditures are distributed between the four mining sectors in the model - Gold, silver, zinc, and copper ore mining – based on anticipated production ratios.
- Impacts are reported in 2018, 2019, 2020, and 2021 dollars.
- All dollar values provided by Aquila Resources, Inc. for future years were assumed to reflect that year's spending and were not to be discounted.
- Detailed model assumptions can be found in Appendix A

Special considerations for interpreting these impact numbers include the following cautions:

First, a small area, like the one included in this analysis, can have a high level of "leakage." Leakages are any payments made to imports or value added sectors that do not in turn re-spend the dollars within the region. Additionally, a study area that is actually part of a larger functional economic region will likely miss some 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.

Regional indirect and induced effects are driven by assumptions in the model. 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) could be further analyzed with an in-depth impact study, involving much more specific data collection and more detailed analysis.

BBER suggests caution in regard to the interpretation of the tax impacts from this project: Tax law changes frequently and can be difficult to forecast.

Readers should also note that estimated changes in production technology and employee productivity for industry sectors can differ.

Finally, and most importantly, the relationship of Output to Employment has been set for the model by data provided by our clients to the BBER. It can be noted that, for purposes of research and with more resources, the modeling methodology can be driven by data collected from surveys and post-construction values. This survey data can provide greater accuracy in regional impact assessments for the linkage between core and peripheral labor market areas and deliver better estimates of local vs. regional purchases.

III. Findings

In this section, BBER reports the direct, indirect, and induced economic impacts of construction and operations activities of non-ferrous mining in Delta, Dickinson, Menominee, and Marinette Counties, measured in employment, output, and value added. A special sub-section of the findings covers the results from modeling non-ferrous mining tax impacts.

Construction Impacts, 2018

Table 1 summarizes the total economic effects from the first year of non-ferrous mining construction on the four-county region. These results use the direct expenditures provided by Aquila Resources, Inc. as the original input for the model. The construction of the mine will generate a temporary increase in economic activity during the course of the construction project. Throughout the project, increased demand for equipment, labor, and transportation will lead to increased economic activity in the affected counties. After the completion of the project, this additional activity will cease, and the economic impacts will no longer be felt in the region.

Construction expenditures have been estimated by Aquila project personnel to be $261.4 million in total, with 30% in the first year (2018) and 70% in the second year (2019)[5]. The total value of construction includes hard as well as soft costs, such as engineering, equipment, and architectural professionals. These soft costs were modeled in Year 1, as Aquila representatives expect them to take place primarily during that time. The BBER adjusted the model inputs to reflect local purchase percentages for these expenditures when available. Employment estimates were supplied by the company. Aquila estimated that 210 construction workers would be required for both years of the project[6]. An additional 44 employees are expected to be directly supported by the project in its first year, as a result of spending on soft costs.

[5] Direct effect typically matches the total spent. In this case, it is slightly reduced due to non-local spending on items such as equipment and other "soft" costs.
[6] In addition to the 210 employees estimated by Aquila, 44 employees in the indirect construction sectors (engineering, management, equipment) were added by IMPLAN as a result of direct spending in those areas.

Table 1. Non-Ferrous Mining Construction Impacts, Back Forty Project, 2018, in 2018 Dollars

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	254	$16,918,677	$19,829,887	$61,124,773
Indirect Effect	96	$2,899,598	$5,310,027	$10,630,339
Induced Effect	81	$2,576,490	$5,324,950	$9,567,869
Total Effect	431	$22,394,765	$30,464,864	$81,322,981

Source: IMPLAN, 2015

The left-most column of Table 1, labeled Employment, estimates the number of jobs that the mining construction will support directly and indirectly. Employment estimates are in terms of jobs, not in terms of full-time equivalent employees. In the case of construction projects, the jobs are almost always short-term temporary positions. According to the results of this analysis, it is estimated that the first year of the Aquila construction project would support 431 jobs in the four-county region. The second column, Labor Income, is an estimate of all employee compensation, including wages, benefits, and proprietor income. It is estimated that the first year of construction for the Aquila mine would contribute more than $22 million in employee wages and benefits in the four-county region.

Column three, labeled Value Added, represents the contribution to the GDP made by an individual producer, industry, or sector. In 2018, Aquila is estimated to have a total value added impact of just over $30 million in the four-county region as a result of the first year of its construction project. The last column, Output, is the value of all local production required to sustain activities. In 2018, it is estimated that Aquila will spend approximately $61 million (see Table 1) leading to a total output impact of over $81 million regionally.

Construction Impacts, 2019

Table 2. Non-Ferrous Mining Construction Impacts, Back Forty Project, 2019, in 2019 dollars

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	210	$16,587,538	$21,213,138	$128,660,000
Indirect Effect	191	$5,847,800	$10,685,216	$21,504,732
Induced Effect	84	$2,711,014	$5,602,997	$10,088,419
Total Effect	484	$25,146,352	$37,501,351	$160,253,151

Source: IMPLAN, 2015

Table 3. Top 25 Sectors Impacted by Non-Ferrous Mining Construction by Employment, Back Forty Project, 2019

Description	*Direct*	*Indirect*	*Induced*	*Total*
Construction of other new nonresidential structures	210	0	0	210
Retail – Non-store retailers	0	33.2	1.5	34.6
Retail - Miscellaneous store retailers	0	17.6	1.4	19
Truck transportation	0	15.2	1	16.2
Retail - General merchandise stores	0	9.5	3.2	12.7
Retail - Clothing and clothing accessories stores	0	11.2	0.4	11.6
Retail - Gasoline stores	0	8.9	0.9	9.8
Retail - Health and personal care stores	0	8.7	0.9	9.6
Real estate	0	5.6	3.1	8.7
Retail - Building material and garden equipment and supplies stores	0	5.9	1.6	7.5
Full-service restaurants	0	2	5.1	7.1
Limited-service restaurants	0	0.8	5.9	6.7
Monetary authorities and depository credit intermediation	0	4.2	2.2	6.4
Retail - Food and beverage stores	0	2.1	3.7	5.8
Retail - Sporting goods, hobby, musical instrument and book stores	0	4.9	0.7	5.6
Automotive repair and maintenance, except car washes	0	2.4	2.2	4.6
Retail - Motor vehicle and parts dealers	0	3	1.2	4.2
Hospitals	0	0	4	4
Nursing and community care facilities	0	0	3.7	3.7
Employment services	0	2.9	0.7	3.6
Accounting, tax preparation, bookkeeping, and payroll services	0	2.9	0.6	3.5
Offices of physicians	0	0	3.2	3.2
Prefabricated wood building manufacturing	0	3	0	3
Wholesale trade	0	1.2	1.6	2.8
Services to buildings	0	2.3	0.5	2.8
All other food and drinking places	0	0.3	2.5	2.8
As well as additional full and part-time jobs in another 115 sectors of the economy…				77.0
			Total	**484**

Source: IMPLAN, 2015

Operations Impacts, Pre-Production

It has been estimated by project personnel that in 2020, pre-production operations will directly employ approximately 150 workers, although output at this stage of operations will not yet produce a dollar amount. Therefore, BBER modeled no direct effect for output in the operations model of the pre-production period in the year 2020. However, note that the 150 employees create an induced effect in the economy of the four counties, as shown in table 4.

Table 4. Non-Ferrous Mining Operations Impacts, Back Forty Project, Pre-production, in 2020 Dollars

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	150	$9,487,531	$9,487,531	$0
Indirect Effect	0	$0	$0	$0
Induced Effect	40	$1,314,855	$2,717,425	$4,903,120
Total Effect	190	$10,802,386	$12,204,956	$4,903,120

Source: IMPLAN, 2015

Table 5. Top 25 Sectors Impacted by Non-Ferrous Mining Operations by Employment, Back Forty Project Pre-Production, 2020

Description	*Direct*	*Indirect*	*Induced*	*Total*
Lead and zinc ore mining	61.5	0	0	61.5
Gold ore mining	60.0	0	0	60.0
Copper ore mining	21.0	0	0	21.0
Silver ore mining	7.5	0	0	7.5
Limited-service restaurants	0	0	2.8	2.8
Full-service restaurants	0	0	2.4	2.4
Hospitals	0	0	1.9	1.9
Retail - Food and beverage stores	0	0	1.8	1.8
Nursing and community care facilities	0	0	1.7	1.7
Retail - General merchandise stores	0	0	1.5	1.5
Real estate	0	0	1.5	1.5
Offices of physicians	0	0	1.5	1.5
All other food and drinking places	0	0	1.2	1.2
Labor and civic organizations	0	0	1.2	1.2
Monetary authorities and depository credit intermediation	0	0	1.1	1.1
Individual and family services	0	0	1.1	1.1
Automotive repair and maintenance, except car washes	0	0	1.0	1.0
Wholesale trade	0	0	0.8	0.8
Personal care services	0	0	0.8	0.8
Retail - Building material and garden equipment and supplies stores	0	0	0.7	0.7
Retail - Miscellaneious store retailers	0	0	0.7	0.7
Retail - Nonstore retailers	0	0	0.7	0.7
Offices of dentists	0	0	0.7	0.7
Retail - Motor vehicle and parts dealers	0	0	0.6	0.6
Elementary and secondary schools	0	0	0.6	0.6
As well as additional full- and part-time jobs in another 62 various sectors of the economy…				*13.3*
Total				**190**

Source: IMPLAN, 2015

Operations Impacts, Typical Year

To estimate the on-going impact of mining activity when full operations are reached, BBER has used the term "Typical Year" to suggest the impact for each year subsequent to reaching full operations by the start of 2021. According to Aquila Resources, Inc., the total estimated annual revenue for a typical year of operations would equal $140 million. Between 40 and 50 people would be employed to operate the mine, 80 to 90 individuals would be employed in the plant, and an additional 20 administrative positions would be created for a total of approximately 150 workers. The total wages and salaries (including benefits) paid to those employees would average $55-65K annually.

Table 6. Non-Ferrous Industry Definition

IMPLAN Sector	*Description*	*NAICS Equivalent*
24	Gold ore mining	212221
25	Silver ore mining	212222
26	Lead and zinc ore mining	212231
27	Copper ore mining	212234

SOURCE: IMPLAN, 2015

The Aquila mine will yield gold, zinc, copper, and silver. IMPLAN categorizes each of these in a separate sector[7]. Currently, only the lead and zinc ore mining industry currently exists in the study area. However, IMPLAN can create a currently non-existent industry using a technique called Analysis by Parts. Analysis by Parts allows the user to create a customized industry based on an existing industry spending pattern. For this analysis, industry spending patterns for the four sectors in Table 6 were used and output was distributed between the four sectors based on their expected rate of output. Forty-one percent of the total anticipated output was attributed to the Lead and Zinc Ore Mining sector, 40% to Gold Ore Mining, 14% to Copper Ore Mining, and 5% to Silver Ore Mining.

Table 7. Non-Ferrous Mining Operations Impacts, Back Forty Project, Typical Year, in 2021 Dollars

Impact Type	***Employment***	***Labor Income***	***Value Added***	***Output***
Direct Effect	150	$9,487,531	$78,179,861	$140,000,000
Indirect Effect	55	$3,504,611	$7,750,001	$13,250,900
Induced Effect	54	$1,802,260	$3,724,798	$6,735,504
Total Effect	259	$14,794,402	$89,654,660	$159,986,404

SOURCE: IMPLAN, 2015

[7] The impact of mining exploration and drilling, identified under NAICS industry code 213 (Support Activities for Mining), is not the focus of this impact, although these activities are accounted for in the IMPLAN model, specifically through IMPLAN sector 39 (Metal Mining Services) and sector 40 (Other Nonmetallic Minerals Services).

Table 8. Top 25 Sectors Impacted by Non-Ferrous Mining Operations by Employment
Back Forty Project, Typical Year

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Lead and zinc ore mining	61.5	14.5	0	76
Gold ore mining	60	0	0	60
Copper ore mining	21	0	0	21
Silver ore mining	7.5	0	0	7.5
Wholesale trade	0	6.2	1.1	7.2
All other crop farming	0	5.9	0	5.9
Maintenance and repair construction of nonresidential structures	0	5.4	0.3	5.7
Truck transportation	0	3.8	0.6	4.4
Limited-service restaurants	0	0.1	3.8	3.9
Full-service restaurants	0	0.2	3.2	3.5
Accounting, tax preparation, bookkeeping, and payroll services	0	2.6	0.4	3
Hospitals	0	0	2.6	2.6
Real estate	0	0.5	2	2.5
Retail - Food and beverage stores	0	0	2.4	2.4
Monetary authorities and depository credit intermediation	0	1	1.4	2.4
Legal services	0	2	0.5	2.4
Retail - General merchandise stores	0	0.2	2.1	2.3
Nursing and community care facilities	0	0	2.3	2.3
Offices of physicians	0	0	2.1	2.1
All other food and drinking places	0	0.1	1.6	1.6
Automotive repair and maintenance, except car washes	0	0.2	1.4	1.6
Labor and civic organizations	0	0	1.6	1.6
Retail - Nonstore retailers	0	0.6	0.9	1.5
Individual and family services	0	0	1.5	1.5
Other local government enterprises	0	0.6	0.8	1.4
As well as additional full- and part-time jobs in another 87 various sectors of the economy…				32.9
Total				**259**

SOURCE: IMPLAN, 2015

Non-Ferrous Mining Tax Impacts

According to the IMPLAN model, the impact on taxes from changes in economic activities can be modeled as follows: Income information can be combined with other social accounts tax information to make estimates of the taxes generated by a change in final demand. Although this is a simple ratio estimate, it gives a good first estimate of tax impact. The IMPLAN model also estimates business tax impacts in this way.

Taxes are paid out of labor income and limit disposable income. Tax policies can be examined with regard to individual tax burdens on different income groups. In input/output modeling, such as IMPLAN, a social accounts matrix allows the examination of the actual magnitude of taxes and transfer payments.

The following estimates of the tax impacts of non-ferrous mining in the four counties of the Upper Peninsula of Michigan and Northeast Wisconsin are based on inputs from the employment in a typical year[8]. The impacts are summarized in the following table (Table 9) as federal and combined state and local taxes. Detailed tables of this tax impact can be found in Appendix B of this report. Note: this impact calculation does not include property taxes on low grade iron ore (Michigan).[9]

Table 9. Summary of Federal and State and Local Tax Impact from Mining Operations
Back Forty Project, Typical Year, in 2021 Dollars

Description	*Employee Compensation*	*Proprietor Income*	*Tax on Production and Imports*	*Households*	*Corporations*	*Grand Total*
Federal Non-Defense	$1,975,371	$142,928	$1,260,041	$1,253,821	$4,386,042	$9,018,203
State/Local Non-Education	$33,695	$0	$10,480,011	$483,663	$603,031	$11,600,400
Total	$2,009,066	$142,928	$11,740,052	$1,737,484	$4,989,073	$20,618,603

SOURCE: IMPLAN, 2015

IV. Population Projections, Housing, and Tourism Trends

As background to the impact analysis, this section highlights trends in population, housing, and tourism for the four-county study area. A brief overview of the economic base shows that manufacturing, transportation, and tourism are among the strongest drivers of the regional economy. More detailed tables are provided in Appendix C of this report.

In Menominee County, a strong manufacturing base in the city of Menominee benefits from access to the port facilities located at the mouth of the Menominee River and the transportation infrastructure in that area. Much of the rest of the county is represented by agriculture and service, including tourism[10]. The other three surrounding counties also benefit from a strong manufacturing sector. Dickinson County is considered one of the industrial hubs of Northern Michigan[11]. In Marinette County in 2013, 32.2% of the population was employed in manufacturing, and more than 40% of payroll came from this industry. Major employers in that county include Marinette Marine Corporation (ship-building) and the Waupaca Foundry (fabricated metal product manufacturing). In fact, the manufacturing industry in Marinette County has been growing in recent years, despite industry losses[12].

Tourism has been considered a strong component of the regional economy, due in part to the presence of the Peshtigo and Menominee Rivers, the Great Lakes shoreline, abundant inland lakes and waters, and thousands of acres of public recreational land[13]. The area is a destination for Wisconsin and Michigan hunters, fishermen, and outdoor enthusiasts.

---

[8] Tax estimates were based on similar levels of employment and labor income in the Lead and Zinc Ore Mining industry, the only industry that currently exists in the four-county region.
[9] Since 1951, Michigan local taxes include the low grade iron ore specific tax, in lieu of general property taxation. Disposition: Distributed to local units in same proportion as general property tax except that school portion is paid to School Aid Fund. Source: http://crcmich.org/PUBLICAT/2010s/2015/Tax%20Outline_ALL.pdf
[10] http://www.nmu.edu/sites/DrupalRuralAndLocal/files/UserFiles/Files/Pre-Drupal/SiteSections/Resources/Menominee.pdf
[11] http://www.nmu.edu/sites/DrupalRuralAndLocal/files/UserFiles/Files/Pre-Drupal/SiteSections/Resources/Dickinson.pdf
[12] http://worknet.wisconsin.gov/worknet_info/downloads/CP/marinette_profile.pdf
[13] http://www.nmu.edu/sites/DrupalRuralAndLocal/files/UserFiles/Files/Pre-Drupal/SiteSections/Resources/Delta.pdf

Population

The following section highlights trends in population for the four-county area, as well as population projections for the coming years. Population in the four-county region reached its peak in the early 2000s and has been experiencing a steady decline since that time. Marinette has the largest population of the four counties (41,000 in 2014) followed by Delta. Menominee and Dickinson counties both have the smallest populations with about a combined total of 25,000 residents in 2014. Population projections for Wisconsin and Michigan suggest that both states will experience slight growth over the next 15 years, with Michigan expected to see approximately 1% growth between 2015 and 2030 and Wisconsin expected to experience slightly higher growth, at around 5% during that period.

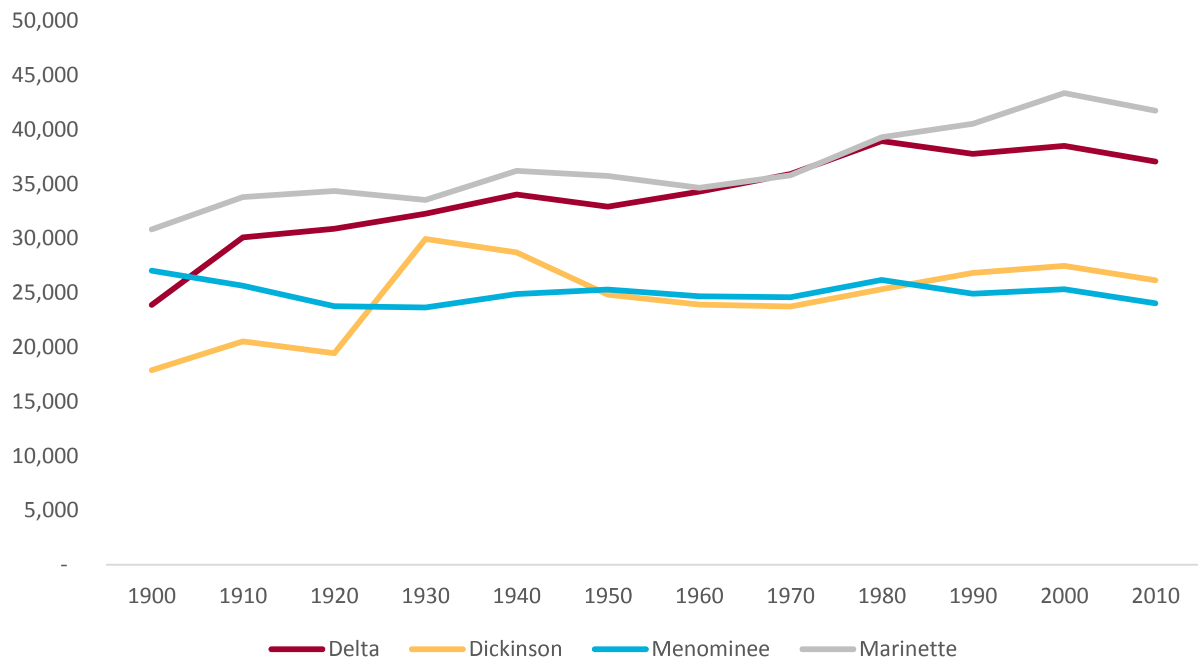
Table 10. Population, Area, and Number of Households by Income for Four-County Study Area, 2013*

	Pop.	*Area (Sq. Mi.)*	*< 10K*	*10-15K*	*15-25K*	*25-35K*	*35-50K*	*50-75K*	*75-100K*	*100-150K*	*150K+*	*Total*
DELTA COUNTY	36,905	1,170										
Households			1,335	1,199	2,480	1,710	2,550	3,233	1,785	1,785	464	15,933
DICKINSON COUNTY	26,098	766										
Households			790	822	1,651	1,376	1,872	2,097	1,376	1,079	304	11,367
MENOMINEE COUNTY	23,791	1,044										
Households			1,027	699	1,389	1,378	1,872	2,182	1,096	589	160	10,362
MARINETTE COUNTY	41,610	1,402										
Households			1,456	1,428	2,580	2,280	2,959	3,686	2,078	1,418	424	18,309

Data is from 2013, the most recent IMPLAN data.

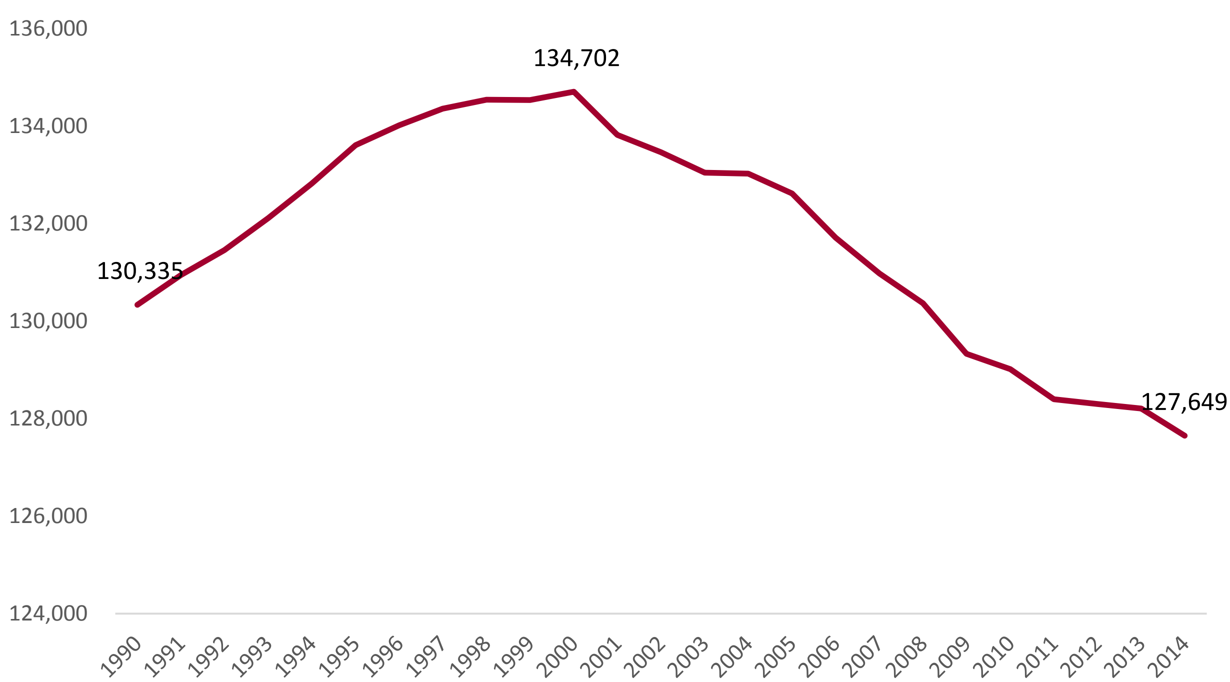
SOURCE: IMPLAN, 2015

Figure 2. Decennial Population Trend for Counties in the Back Forty Project Study Area



SOURCE: UNITED STATES CENSUS, 2015

Figure 3. Annual Four-County Total Population Estimates, 1990 to 2014



SOURCE: UNITED STATES CENSUS, 2015

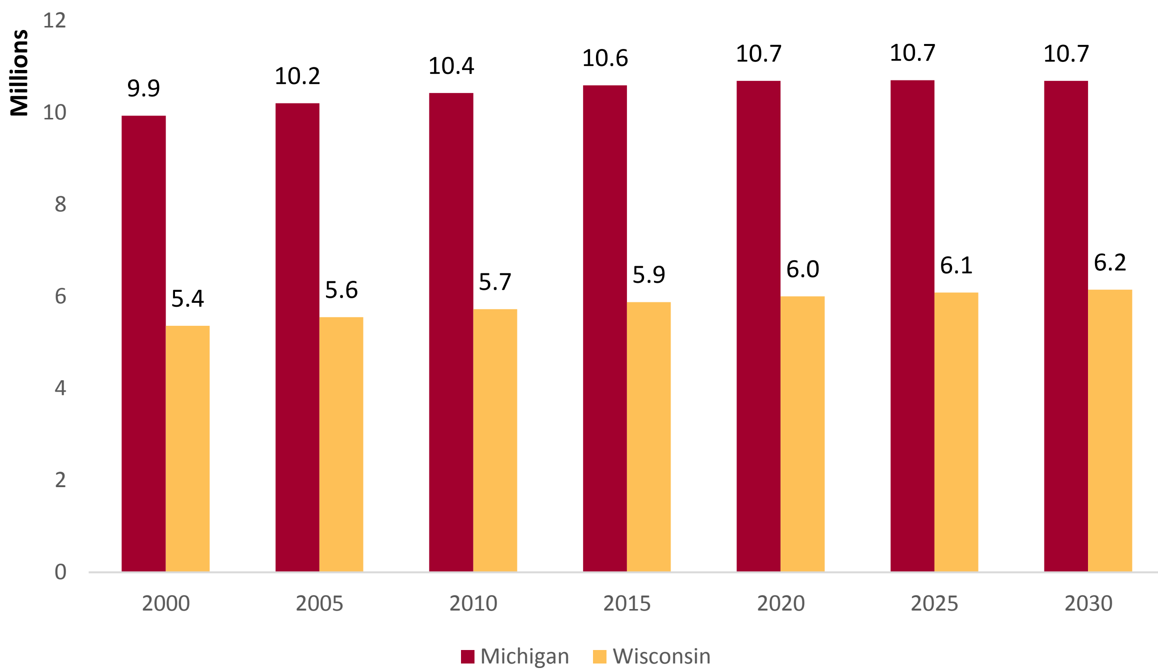
Table 11. Delta, Dickinson, Menominee, and Marinette County Population Percentage Yearly Change, 1990 to 2014, U.S. Census

	Delta	% Yearly Change	Dickinson	% Yearly Change	Menominee	% Yearly Change	Marinette	% Yearly Change	Total
1990	37,849		26,922		24,925		40,639		130,335
1991	38,064	0.57%	27,051	0.48%	24,809	-0.47%	41,017	0.93%	130,941
1992	38,177	0.30%	27,197	0.54%	24,869	0.24%	41,213	0.48%	131,456
1993	38,375	0.52%	27,257	0.22%	24,862	-0.03%	41,618	0.98%	132,112
1994	38,461	0.22%	27,338	0.30%	24,888	0.10%	42,137	1.25%	132,824
1995	38,517	0.15%	27,455	0.43%	25,025	0.55%	42,612	1.13%	133,609
1996	38,596	0.21%	27,540	0.31%	25,123	0.39%	42,757	0.34%	134,016
1997	38,594	-0.01%	27,603	0.23%	25,132	0.04%	43,028	0.63%	134,357
1998	38,598	0.01%	27,593	-0.04%	25,188	0.22%	43,163	0.31%	134,542
1999	38,448	-0.39%	27,497	-0.35%	25,360	0.68%	43,226	0.15%	134,531
2000	38,520	0.19%	27,472	-0.09%	25,326	-0.13%	43,384	0.37%	134,702
2001	38,356	-0.43%	27,136	-1.22%	25,170	-0.62%	43,157	-0.52%	133,819
2002	38,300	-0.15%	27,019	-0.43%	25,023	-0.58%	43,122	-0.08%	133,464
2003	38,157	-0.37%	26,943	-0.28%	24,997	-0.10%	42,946	-0.41%	133,043
2004	38,123	-0.09%	27,231	1.07%	24,987	-0.04%	42,680	-0.62%	133,021
2005	37,982	-0.37%	27,067	-0.60%	24,719	-1.07%	42,850	0.40%	132,618
2006	37,898	-0.22%	26,951	-0.43%	24,472	-1.00%	42,389	-1.08%	131,710
2007	37,584	-0.83%	26,881	-0.26%	24,322	-0.61%	42,190	-0.47%	130,977
2008	37,409	-0.47%	26,622	-0.96%	24,317	-0.02%	42,019	-0.41%	130,367
2009	37,059	-0.94%	26,357	-1.00%	24,118	-0.82%	41,792	-0.54%	129,326
2010	37,069	0.03%	26,168	-0.72%	24,029	-0.37%	41,749	-0.10%	129,015
2011	36,934	-0.36%	26,084	-0.32%	23,922	-0.45%	41,454	-0.71%	128,394
2012	36,831	-0.28%	26,228	0.55%	23,748	-0.73%	41,488	0.08%	128,295
2013	36,819	-0.03%	26,057	-0.65%	23,835	0.37%	41,497	0.02%	128,208
2014	36,559	-0.71%	25,957	-0.38%	23,835	0.00%	41,298	-0.48%	127,649

Note: The above percentages are color-coded green for increase and red for decrease in county population growth, compared to previous year.

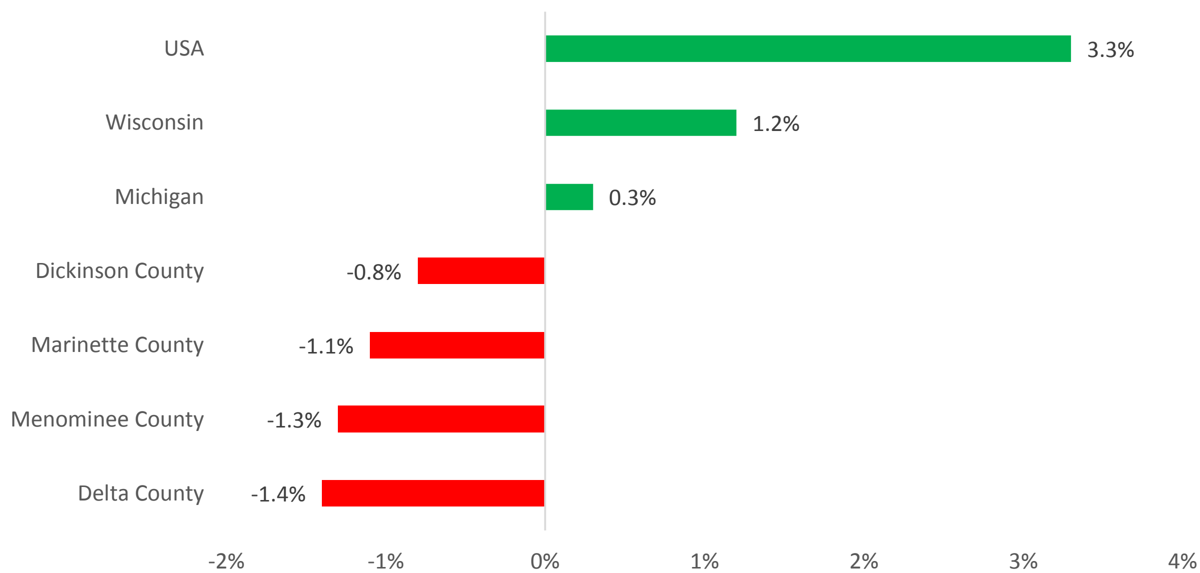
SOURCE: UNITED STATES CENSUS, 2015

Figure 4. Michigan and Wisconsin Population Projections, 2000 to 2030



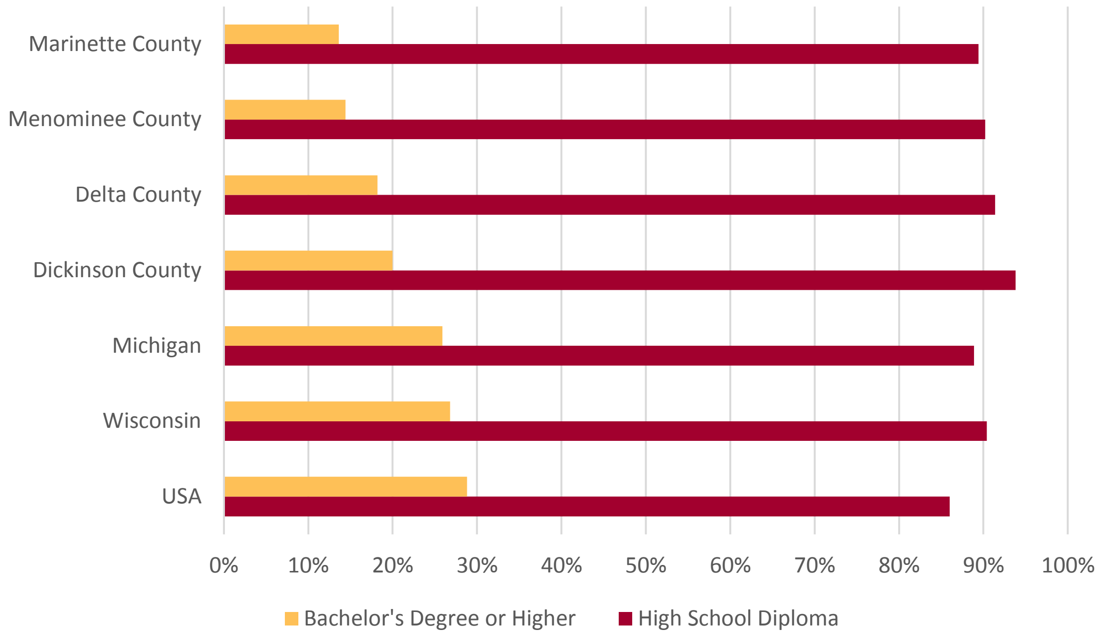
SOURCE: UNITED STATES CENSUS, 2015

Figure 5. Percentage change of Population from April 1, 2010 to July 1, 2014



SOURCE: UNITED STATES CENSUS, 2015

Figure 6. Percentage of Population 25 Years or Older by Degree Earned, 2009 to 2013

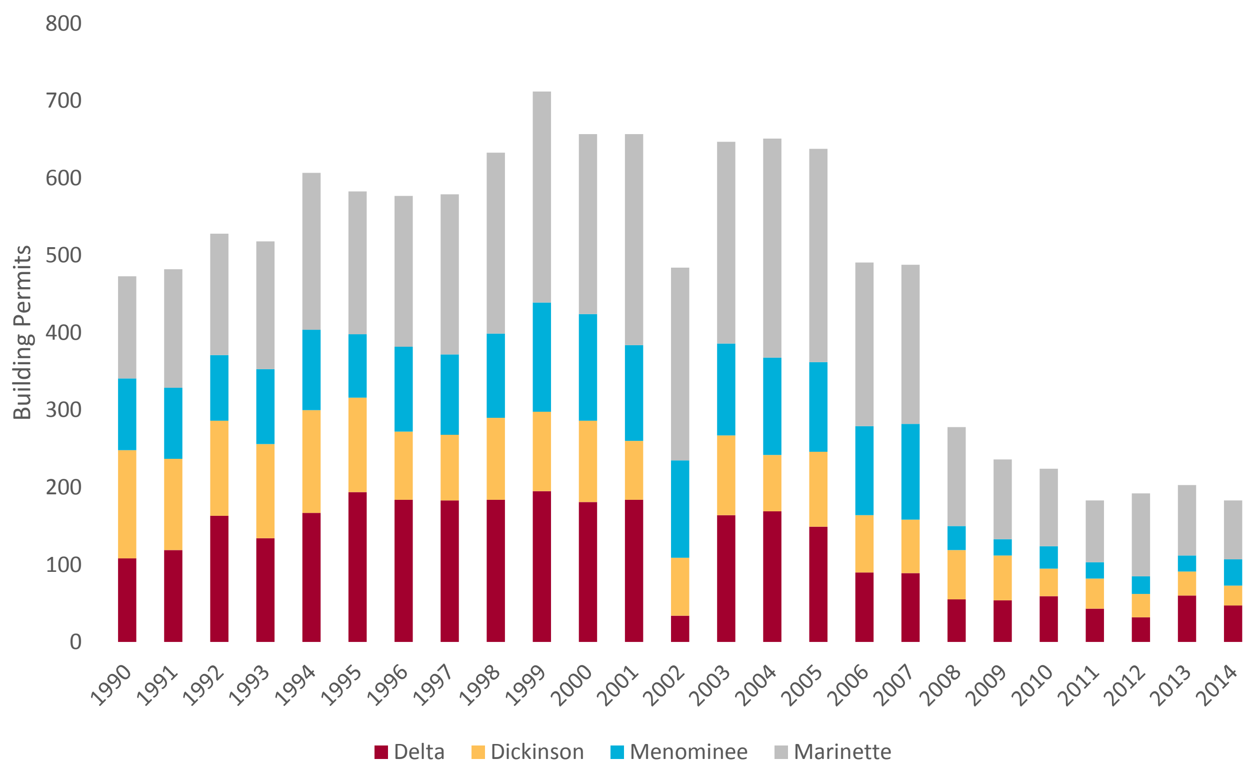


Source: United States Census, 2015

Housing

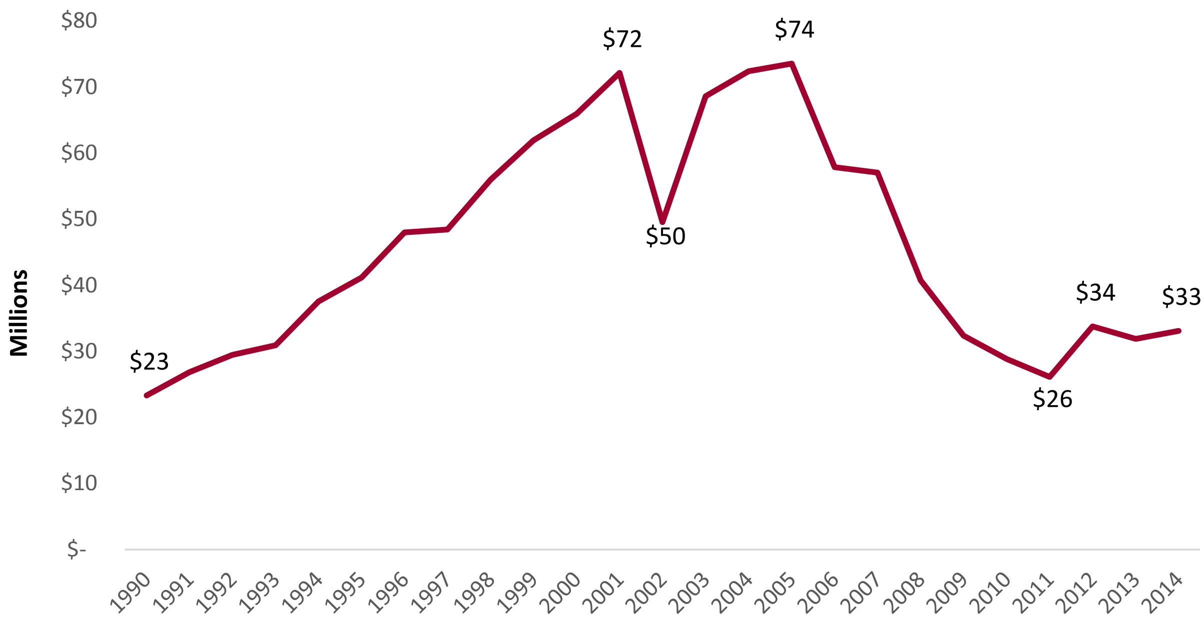
The following section highlights trends in housing for the four-county region, focusing specifically on changes in the number of building permits and construction costs. Overall, the region was experiencing steady growth in construction between 1990 and 2005. During that time, more than 500 building permits were issued annually, with the exception of 2002, where the region witnessed a slight dip in both building permits and construction costs. Then, beginning in 2006, construction activity began to decline rapidly, likely the result of the housing crisis. In the past five years, the region has issued approximately 200 building permits annually and seen construction costs averaging around $30 million per year.

Figure 7. Four-County Annual Construction of Residential Units, 1990 to 2014



SOURCE: UNITED STATES CENSUS, 2015

Figure 8. Four-County Total Family Home Construction Cost, 1990 to 2014



SOURCE: UNITED STATES CENSUS, 2015

Tourism

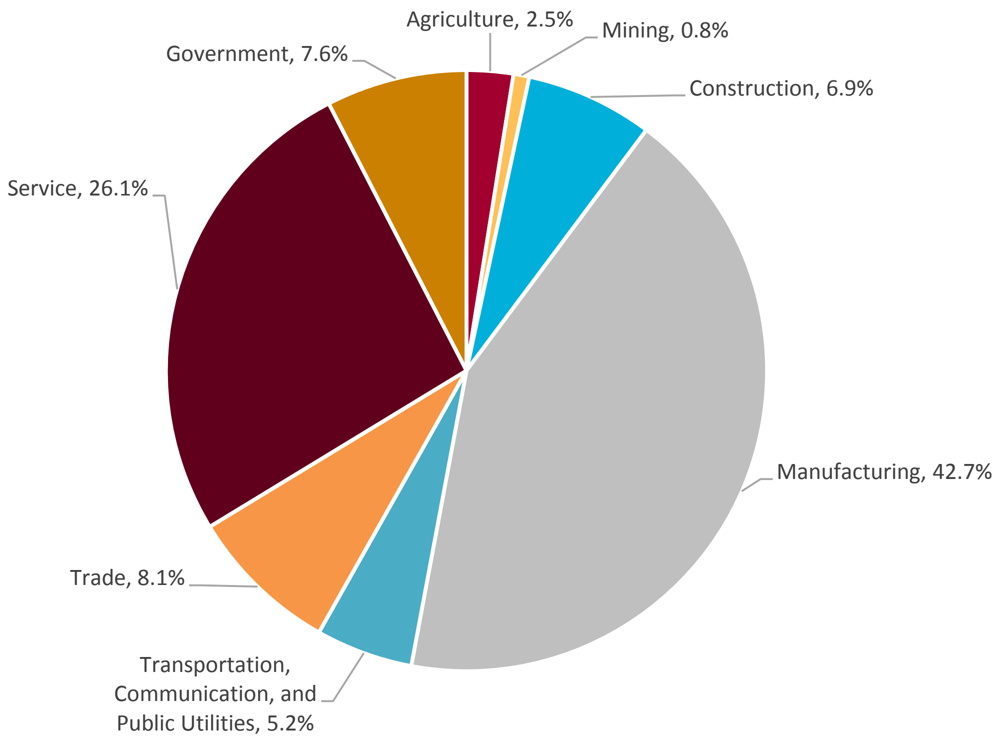
This section highlights the impact of the Tourism and Hospitality industry in the four-county area. Table 12 shows the Tourism and Hospitality sectors of the four-county economic base, ranked by output in millions of dollars for year 2013. Overall, the sectors in this industry contribute more than $400 million in output annually and represent 11% of the employment regionally.

Table 12. Tourism and Hospitality Sectors of the Four-County Economic Base, Ranked by Output

Tourism and Hospitality Sectors	*Output*	*Employment (Full- and Part-time)*	*Value Added*
Limited-service restaurants	$105,236,137	2,212.2	$59,997,022
Retail stores - food and beverage	$76,388,985	1,317.5	$45,661,148
Full-service restaurants	$66,665,016	1,746.9	$26,193,233
All other food services and drinking places	$54,619,553	842.5	$19,361,946
Hotels and motels - including casino hotels	$36,270,531	473.5	$19,866,967
Other amusement and recreation industries	$20,116,861	374.9	$10,286,256
Retail Stores - Sporting goods - hobby - book and music	$16,215,271	304	$9,575,277
Gambling industries (except casino hotels)	$8,594,314	122.6	$2,557,082
Scenic and sightseeing transportation	$5,772,994	9.1	$5,121,097
Performing arts companies	$5,552,405	102.5	$2,722,409
Fitness and recreational sports centers	$5,149,374	118.7	$2,909,155
Independent artists - writers - and performers	$4,704,412	45.8	$1,626,232
Promoters of performing arts and sports	$3,124,825	73.2	$979,803
Bowling centers	$1,785,609	44.2	$917,025
Other accommodations	$ 1,679,995	29.1	$978,477
Museums - historical sites - zoos - and parks	$1,292,991	20.8	$306,970
Commercial Sports Except Racing	$784,709	38.9	$278,039
Total	$418,990,245	7,898.8	$210,776,028
Tourism and Hospitality Sectors % of Total Economy	3.6%	11.0%	4.3%
Four-county Economy, all sectors totals	$11,515,496,282	71,600.4	$4,850,138,199

SOURCE: IMPLAN, 2015

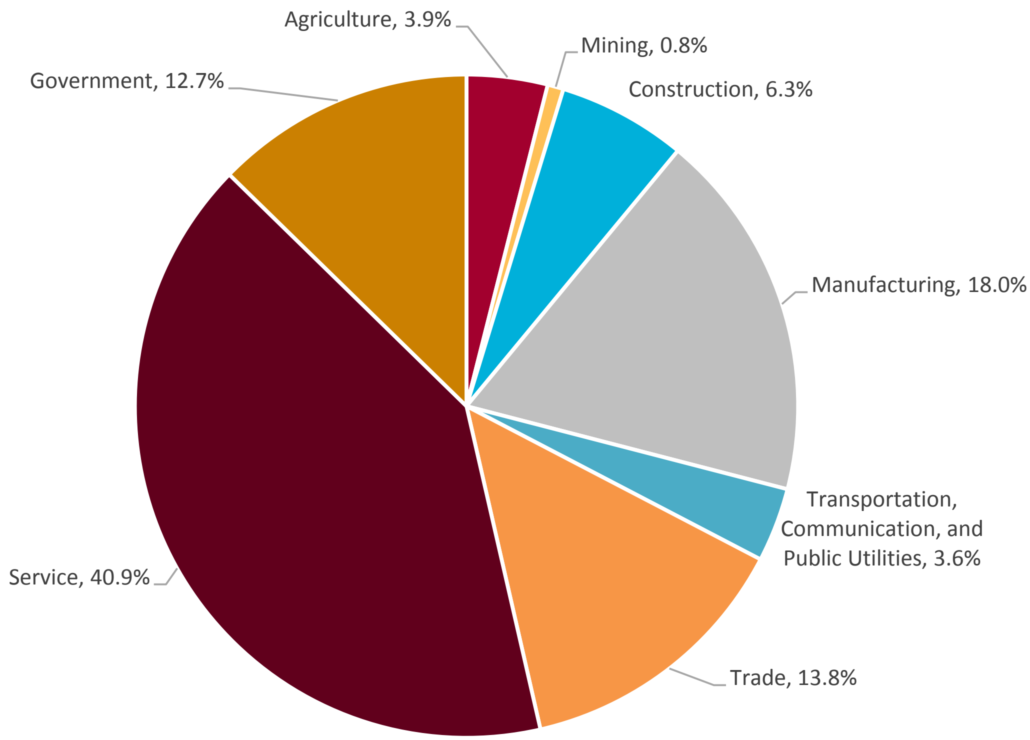
Figure 9. Four-County Economy: Sales (Output) by Major Industrial Sector, 2013



SOURCE: IMPLAN, 2015

Figure 9 shows the economic base of the four-county economy by output for each major sector for the year 2013. Manufacturing contributes the largest share of output to the region at 42.7%. The service industry (which includes Tourism) is the second largest contributor at 26.1%.

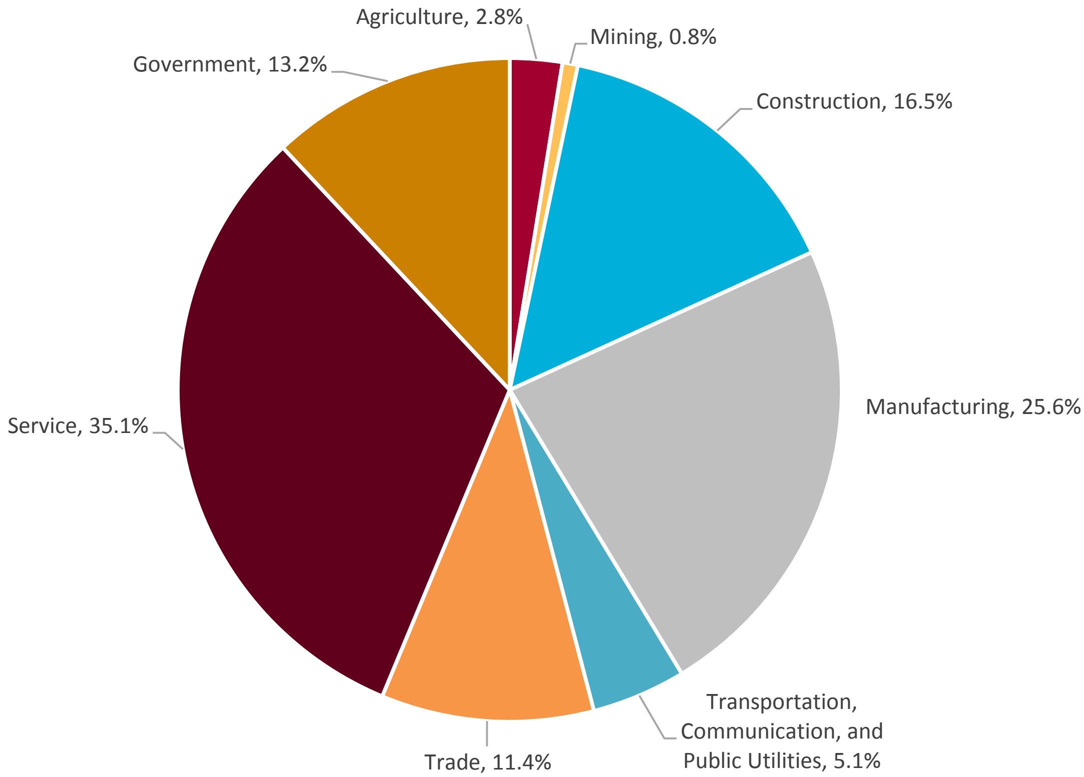
Figure 10. Four-County Economy: Employment by Major Industrial Sector, 2013



SOURCE: IMPLAN, 2015

Figure 10 shows the same major sectors by their share of overall employment. The Service sector (including Tourism) employs the greatest share of the population (40.9%), followed by Manufacturing (18.0%).

Figure 11. Four-County Economy: Value Added by Major Industrial Sector, 2013



SOURCE: IMPLAN, 2015

Figure 11 breaks the sectors down by their share of the region's value added. Value added is a measure of the impacting industry's contribution to the local community; it includes wages, rents, interest, and profits. It can be thought of as the sector's contribution to the regional GDP. In this case, the Service sector contributes 35.1% to the local community and Manufacturing contributes approximately 25%. Other major contributors include Construction (16.5%) and Government (13.2%).

Table 13. Employment in Tourism Resulting from Non-Ferrous Mining Operations, Typical Year

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Limited-service restaurants	0.0	0.1	3.8	4.0
Full-service restaurants	0.0	0.2	3.3	3.5
Retail - food and beverage stores	0.0	0.0	2.4	2.4
All other food and drinking places	0.0	0.1	1.6	1.7
Retail - Sporting goods, hobby, musical instrument and book stores	0.0	0.1	0.5	0.6
Other amusement and recreation industries	0.0	0.0	0.5	0.5
Fitness and recreational sports centers	0.0	0.0	0.2	0.2
Gambling industries (except casino hotels)	0.0	0.0	0.2	0.2
Performing arts companies	0.0	0.0	0.2	0.2
Bowling centers	0.0	0.0	0.1	0.1
Independent artists, writers, and performers	0.0	0.0	0.0	0.1
Promoters of performing arts and sports and agents for public figures	0.0	0.0	0.1	0.1
Commercial Sports except racing	0.0	0.0	0.1	0.1
Hotels and motels, including casino hotels	0.0	0.0	0.0	0.1
Employment Impacts (Tourism Sectors)	**0.0**	**0.5**	**13.0**	**13.8**
Total Employment Impacts (All Sectors)	**150**	**72**	**54**	**276**

SOURCE: IMPLAN, 2015

Finally, Table 13 shows the indirect and induced employment results for each of the affected tourism sectors[14] as a result of non-ferrous mining operations from the Back Forty Project. Only those sectors that saw indirect or induced impacts as a result of mining operations are shown. The total direct non-ferrous mining employment of 150 individuals in 2021 would generate 0.5 indirect jobs and 13 induced jobs in tourism for the region.

[14] The full list of IMPLAN Tourism sectors can be found in Table 10

V. Conclusion

Construction Impacts: The IMPLAN model used in this study estimated that, in total, the two-year construction project is estimated to add nearly $81 million in output to the four-county region in the first year (2018) and more than $160 million in additional output in the second year (2019). For every direct construction job created as a result of the mining construction project in 2018, another 0.7 jobs will be created in the larger economy.

Non- Ferrous Mining Construction Impacts, Back Forty Project, 2018 and 2019[15]

		Direct Effect	*Indirect Effect*	*Induced Effect*	*Total*
Year 2018					
	Value Added	$19,829,887	$5,310,027	$5,324,950	$30,464,864
	Output	$61,124,773	$10,176,572	$9,567,869	$81,322,981
	Employment	254	96	81	431
Year 2019					
	Value Added	$21,213,138	$10,685,216	$5,602,997	$37,501,351
	Output	$128,660,000	$21,504,732	$10,088,419	$160,253,151
	Employment	210	191	84	484

SOURCE: IMPLAN, 2015

Operations Impacts: Both Pre-production level operations and typical year operations impact models were created. During the Pre-production phase, an estimated 150 people will be directly employed, though no measureable output results from this phase. Because of their income and their spending, those employees were estimated to result in an additional 40 jobs being supported and increase regional output through induced effects by over $4.9 million in 2020.

Non-Ferrous Mining Pre-Production Operations Impacts, Back Forty Project, 2020 dollars

		Direct Effect	*Indirect Effect*	*Induced Effect*	*Total*
2020					
	Value Added	$9,487,531	$0	$2,717,425	$12,204,956
	Output	$0	$0	$4,903,120	$4,903,120
	Employment	150	0	40	190

SOURCE: IMPLAN, 2015

For a typical year (after the Pre-production phase), the model also estimated that for every job created as a result of non-ferrous mining operations, 0.95 jobs are likely to be created in other sectors of the four counties' economy. Mining operations in the region are predicted to add almost 260 new jobs to the region and increase output by nearly $160 million annually.

[15] Employment impacts from construction cannot be summed for a total over the two year construction period as this employment may be from recurring jobs.

Non-Ferrous Mining Operations Impacts, Back Forty Project, Typical Year, 2021 dollars

	Direct Effect	*Indirect Effect*	*Induced Effect*	*Total*
Typical Year				
Value Added	$78,179,861	$6,917,532	$3,324,697	$80,024,372
Output	$140,000,000	$13,250,900	$6,735,504	$159,986,404
Employment	150	55	54	259

SOURCE: IMPLAN, 2015

The indirect and induced jobs created will be in sectors closely related to the mining industry such as Wholesale Trade, Maintenance and Repair of Nonresidential Structures, Truck Transportation, Limited-service Restaurants, Full-service Restaurants, and Accounting Services. Other induced or indirect employment will be created in sectors such as Offices of Health Practitioners and Retail Stores as well.

Tax Impacts: Tax impacts are summarized in the following table, which shows that in a typical year of operations, federal taxes from non-ferrous mining activity are estimated to total about $9 million, and state and local taxes are estimated to be approximately $11.6 million. In total, in a typical year, non-ferrous mining is estimated to pay more than $20 million in taxes to federal and state and local government.

Summary of Federal and State and Local Tax Impact from Mining Operations, Back Forty Project, Typical Year

Description	***Employee Compensation***	***Proprietor Income***	***Tax on Production and Imports***	***Households***	***Corporations***	***Grand Total***
Federal Government Non-Defense	$1,975,371	$142,928	$1,260,041	$1,253,821	$4,386,042	$9,018,203
State/Local Non-Education	$33,695	$0	$10,480,011	$483,663	$603,031	$11,600,400
Total	$2,009,066	$142,928	$11,740,052	$1,737,484	$4,989,073	$20,618,603

SOURCE: IMPLAN, 2015

■

NOTE - Readers are also encouraged to remember that the Bureau of Business and Economic Research (BBER) an entity of the UMD Labovitz School was asked to supply an economic impact analysis only. Any subsequent policy recommendations should be based on the "big picture" of total impact.

Appendix A: Model Assumptions

Construction

1. Impacts on construction: The IMPLAN industries selected for sectoring this impact activity are:
   58. Construction of other new non-residential structures
   395. Wholesale Trade
   449. Architectural, engineering, and related services

2. Construction years are assumed to be 2018 and 2019.

3. Construction costs are estimated to be $261.4 million in total, distributed as follows:

Expense (% local)	*Estimated Cost*	*Costs sourced locally*	*Year 1 (30%)*	*Year 2 (70%)*
Construction (100% local)	$183.8 million	$183.8 million	$55.1 million	$128.6 million
Engineering / Management (7.5% local)	$33.4 million	$2.5 million	$2.5 million	--
Equipment (45% local)	$44.2 million	$19.9 million	$19.9 million	--
Total	$261.4 million	$206.2 million	$77.5 million	$128.6 million

SOURCE: IMPLAN, 2015

4. Construction jobs are divided between two years. According to Aquila Resources, 210 construction workers would be employed throughout the project.

Operations

1. For estimating impacts on copper, zinc, gold and silver (non-ferrous metals) the appropriate IMPLAN industrial sectors are (underlined ores are of particular interest to the four counties):
   24. Gold ore mining
   25. Silver ore mining
   26. Lead and zinc ore mining
   27. Copper ore mining

2. Estimated life span of the typical year impact will be 7-8 years open pit base case, 16 years with underground base case.

3. Pre-production (2020) operations assumes full employment and wages, but no output.

4. The typical year (2021) inputs include $140 million output and 150 jobs, with an average salary of approximately $60,000. For purposes of modeling, employment and output were distributed between the four mining sectors based on the following ratio:

Sector	*% Output*	*Output ($ USD)*	*Employment*
Gold ore mining	40%	$56 million	60
Silver ore mining	5%	$7 million	7.5
Lead and zinc ore mining	41%	$57.4 million	61.5
Copper ore mining	14%	$19.6 million	21
Total	100%	$140 million	150

Appendix B: Tax Impact Details

As noted in the report above, according to the IMPLAN model, the impact on taxes from changes in economic activities can be modeled as follows: Income information can be combined with other social accounts tax information to make estimates of the taxes generated by a change in final demand. Although this is a simple ratio estimate, it gives a good first estimate of tax impact. The IMPLAN model also estimates business tax impacts in this way.

Taxes are paid out of labor income and limit disposable income. Tax policies can be examined with regard to individual tax burdens on different income groups. In input-output modeling, such as IMPLAN, a social accounts matrix allows you to examine the actual magnitude of taxes and transfer payments.

The following estimates of the tax impacts of non-ferrous mining in the four counties of the Upper Peninsula of Michigan and Northeast Wisconsin are based on inputs from the employment in a typical year. The impacts are summarized in the body of the report as corporate, federal, and combined state and local taxes. Detailed tables of this tax impact estimate are presented below. Note: this impact calculation does not include property taxes on low grade iron ore (Michigan).[16]

Table 14. Federal Tax Impact, Back Forty Project Mining Impact Operations, Typical Year

Description	*Employee Compensation*	*Proprietor Income*	*Tax on Production and Imports*	*Households*	*Corporations*
Social Ins Tax- Employee Contribution	$899,360	$142,038			
Social Ins Tax- Employer Contribution	$893,111				
Tax on Production and Imports: Excise Taxes			$825,615		
Tax on Production and Imports: Custom Duty			$341,834		
Tax on Production and Imports: Fed NonTaxes			$86,907		
Corporate Profits Tax					$4,372,519
Personal Tax: Income Tax				$1,159,573	
Total Federal Tax	$1,792,471	$142,038	$1,254,356	$1,159,573	$4,372,519

SOURCE: IMPLAN, 2015

[16] More discussion on mining taxes in Michigan can include:
Since 1951 Michigan local taxes include the low grade iron ore specific tax, In lieu of general property taxation. Disposition: Distributed to local units in same proportion as general property tax except that school portion is paid to School Aid Fund. Source: http://crcmich.org/PUBLICAT/2010s/2015/Tax%20Outline_ALL.pdf

Table 15. State and Local Tax Impact, Back Forty Project Mining Impact Operations, Typical Year

Description	*Employee Compensation*	*Proprietor Income*	*Tax on Production and Imports*	*Households*	*Corporations*
Corporate Profits Tax					$531,117
Dividends					$70,054
Personal Tax: Income Tax				$348,836	
Personal Tax: Motor Vehicle License				$21,301	
Personal Tax: NonTaxes (Fines- Fees				$60,593	
Personal Tax: Other Tax (Fish/Hunt)				$8,089	
Personal Tax: Property Taxes				$8,488	
Social Ins Tax- Employee Contribution	$10,423	$0			
Social Ins Tax- Employer Contribution	$20,152				
Tax on Production and Imports: Motor Vehicle Lic			$122,842		
Tax on Production and Imports: Other Taxes			$342,868		
Tax on Production and Imports: Property Tax			$5,121,495		
Tax on Production and Imports: S/L NonTaxes			$74,271		
Tax on Production and Imports: Sales Tax			$4,756,818		
Tax on Production and Imports: Severance Tax			$14,430		
Total State and Local Tax	$30,575	$0	$10,432,725	$447,307	$601,171

*This includes licensing for commercial vehicles as well as fees for title registration, license plates, vehicle inspection, vehicle mileage and weight taxes on motor carriers, etc. Source: Bureau of Census, Appendix for definition of taxes.

SOURCE: IMPLAN, 2015

Appendix C: Demographic and Economic Trend Data

Population

Table 16. Decennial Population Trend for Delta, Dickinson, Menominee, and Marinette Counties, U.S. Census

County	*1900*	*1910*	*1920*	*1930*	*1940*	*1950*	*1960*	*1970*	*1980*	*1990*	*2000*	*2010*
Delta	23,881	30,108	30,909	32,280	34,037	32,913	34,298	35,924	38,947	37,780	38,520	37,069
Dickinson	17,890	20,524	19,456	29,941	28,731	24,844	23,917	23,753	25,341	26,831	27,472	26,168
Menominee	27,046	25,648	23,778	23,652	24,883	25,299	24,685	24,587	26,201	24,920	25,326	24,029
Marinette	30,822	33,812	34,361	33,530	36,225	35,748	34,660	35,810	39,314	40,548	43,384	41,749
4-County Total	99,639	110,092	108,504	119,403	123,876	118,804	117,560	120,074	129,803	130,079	134,702	129,015

Source: United States Census, 2015

Table 17. Delta, Dickinson, Menominee, and Marinette Counties, Population Estimates, 1990 to 2014

	Delta	*Dickinson*	*Menominee*	*Marinette*	*Total*
1990	37,849	26,922	24,925	40,639	130,335
1991	38,064	27,051	24,809	41,017	130,941
1992	38,177	27,197	24,869	41,213	131,456
1993	38,375	27,257	24,862	41,618	132,112
1994	38,461	27,338	24,888	42,137	132,824
1995	38,517	27,455	25,025	42,612	133,609
1996	38,596	27,540	25,123	42,757	134,016
1997	38,594	27,603	25,132	43,028	134,357
1998	38,598	27,593	25,188	43,163	134,542
1999	38,448	27,497	25,360	43,226	134,531
2000	38,520	27,472	25,326	43,384	134,702
2001	38,356	27,136	25,170	43,157	133,819
2002	38,300	27,019	25,023	43,122	133,464
2003	38,157	26,943	24,997	42,946	133,043
2004	38,123	27,231	24,987	42,680	133,021
2005	37,982	27,067	24,719	42,850	132,618
2006	37,898	26,951	24,472	42,389	131,710
2007	37,584	26,881	24,322	42,190	130,977
2008	37,409	26,622	24,317	42,019	130,367
2009	37,059	26,357	24,118	41,792	129,326
2010	37,069	26,168	24,029	41,749	129,015
2011	36,934	26,084	23,922	41,454	128,394
2012	36,831	26,228	23,748	41,488	128,295
2013	36,819	26,057	23,835	41,497	128,208
2014	36,559	25,957	23,835	41,298	127,649

Source: United States Census, 2015

Table 18. U.S. Census Demographic Detail of Delta, Dickinson, Menominee, and Marinette Counties, Populations, 2014

	Delta	*Dickinson*	*Menominee*	*Marinette*	*Michigan*	*Wisconsin*	*USA*
Population, 2014 estimate	36,559	25,957	23,714	41,298	9,909,877	5,757,564	318,857,056
Population, 2010 (April 1) estimates base	37,069	26,168	24,029	41,749	9,884,133	5,687,289	308,758,105
Population, percent change - April 1, 2010 to July 1, 2014	-1.40%	-0.80%	-1.30%	-1.10%	0.30%	1.20%	3.30%
Population, 2010	37,069	26,168	24,029	41,749	9,883,640	5,686,986	308,745,538
Persons under 5 years, percent, 2014	5.10%	5.00%	4.70%	4.70%	5.80%	5.90%	6.20%
Persons under 18 years, percent, 2014	20.30%	20.10%	19.70%	19.60%	22.40%	22.60%	23.10%
Persons 65 years and over, percent, 2014	21.40%	20.40%	21.60%	21.70%	15.40%	15.20%	14.50%
Female persons, percent, 2014	50.40%	49.90%	49.40%	49.80%	50.90%	50.30%	50.80%
White alone, percent, 2014 (a)	94.60%	96.90%	94.70%	97.00%	79.90%	87.80%	77.40%
Black or African American alone, percent, 2014 (a)	0.30%	0.50%	0.60%	0.50%	14.20%	6.60%	13.20%
American Indian and Alaska Native alone, percent, 2014 (a)	2.50%	0.70%	2.80%	0.70%	0.70%	1.10%	1.20%
Asian alone, percent, 2014 (a)	0.40%	0.50%	0.40%	0.60%	2.90%	2.60%	5.40%
Native Hawaiian and Other Pacific Islander alone, percent, 2014 (a)	Z*	0.10%	Z	Z	Z	Z	0.20%
Two or More Races, percent, 2014	2.20%	1.30%	1.50%	1.20%	2.30%	1.80%	2.50%
Hispanic or Latino, percent, 2014 (b)	1.10%	1.40%	1.70%	1.50%	4.80%	6.50%	17.40%
White alone, not Hispanic or Latino, percent, 2014	93.70%	95.80%	93.40%	95.70%	75.80%	82.20%	62.10%
Living in same house 1 year & over, percent, 2009-2013	89.70%	88.60%	89.30%	89.90%	85.30%	85.80%	84.90%
Foreign born persons, percent, 2009-2013	1.20%	1.40%	1.00%	1.60%	6.10%	4.70%	12.90%
Language other than English spoken at home, pct age 5+, 2009-2013	2.30%	2.60%	2.70%	3.50%	9.10%	8.60%	20.70%
High school graduate or higher, percent of persons age 25+, 2009-2013	91.40%	93.80%	90.20%	89.40%	88.90%	90.40%	86.00%
Bachelor's degree or higher, percent of persons age 25+, 2009-2013	18.20%	20.00%	14.40%	13.60%	25.90%	26.80%	28.80%
Veterans, 2009-2013	4,361	2,815	2,598	4,448	672,213	408,870	21,263,779
Mean travel time to work (minutes), workers age 16+, 2009-2013	18	15.2	20.2	20.3	24	21.7	25.5
Housing units, 2014	20,193	13,995	14,154	30,403	4,539,871	2,648,317	133,957,180
Homeownership rate, 2009-2013	79.30%	81.20%	80.80%	77.50%	72.10%	68.10%	64.90%
Housing units in multi-unit structures, percent, 2009-2013	10.20%	8.80%	9.10%	9.20%	17.90%	25.40%	26.00%
Median value of owner-occupied housing units, 2009-2013	$100,200	$85,500	$95,300	$108,200	$121,700	$167,100	$176,700
Households, 2009-2013	15,885	11,432	10,787	18,573	3,823,280	2,288,332	115,610,216
Persons per household, 2009-2013	2.29	2.25	2.18	2.18	2.53	2.43	2.63

Per capita money income in past 12 months (2013 dollars), 2009-2013	$22,471	$24,611	$22,331	$23,555	$25,681	$27,523	$28,155
Median household income, 2009-2013	$42,676	$44,136	$41,739	$40,490	$48,411	$52,413	$53,046
Persons below poverty level, percent, 2009-2013	16.40%	12.70%	13.60%	13.20%	16.80%	13.00%	15.40%
Private nonfarm establishments, 2013	1,064	883	458	1,080	217,494	137,983	7,488,353
Private nonfarm employment, 2013	11,848	12,202	5,318	16,236	3,535,685	2,401,032	118,266,253
Private nonfarm employment, percent change, 2012-2013	-0.50%	-4.50%	4.80%	-1.90%	1.90%	0.50%	2.00%
Nonemployer establishments, 2013	2,015	1,435	1,339	2,266	687,136	335,177	23,005,620
Total number of firms, 2007	3,284	2,614	1,946	3,737	816,972	433,797	27,092,908
Black-owned firms, percent, 2007	F*	F	F	F	8.90%	2.60%	7.10%
American Indian- and Alaska Native-owned firms, percent, 2007	F	F	F	F	0.70%	0.60%	0.90%
Asian-owned firms, percent, 2007	F	F	F	S	2.60%	1.60%	5.70%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F	F	F	F	0.10%	S*	0.10%
Hispanic-owned firms, percent, 2007	F	F	S	S	1.30%	1.30%	8.30%
Women-owned firms, percent, 2007	S	S	S	17.50%	30.40%	25.90%	28.80%
Manufacturers shipments, 2007 ($1000)	712,562	D*	418,452	1,784,187	234,455,768	163,563,195	5,319,456,312
Merchant wholesaler sales, 2007 ($1000)	D	D	D	D	107,109,349	59,996,244	4,174,286,516
Retail sales, 2007 ($1000)	459,804	417,302	166,886	526,911	109,102,594	72,283,321	3,917,663,456
Retail sales per capita, 2007	$12,298	$15,399	$6,914	$12,458	$10,855	$12,904	$12,990
Accommodation and food services sales, 2007 ($1000)	46,419	28,601	17,217	54,376	14,536,648	9,247,311	613,795,732
Building permits, 2014	47	32	47	76	15,933	14,622	1,046,363
Land area in square miles, 2010	1,171.10	761.4	1,044.08	1,399.35	56,538.90	54,157.80	3,531,905.43
Persons per square mile, 2010	31.7	34.4	23	29.8	174.8	105	87.4
FIPS Code	41	43	109	75	26	55	

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 25 firms
S: Suppressed; does not meet publication standards
Z: Value greater than zero but less than half unit of measure shown
Source: *United States Census, 2015*

Housing

Table 19. Delta, Dickinson, Menominee, and Marinette Counties' Annual New Privately Owned Residential Building Permits Estimates, 1990 to 2014, U.S. Census

		Single Family Units	*Construction Cost*
Delta			
	1990	108	$6,146,093
	1991	119	$7,181,580
	1992	163	$8,688,594
	1993	134	$8,213,099
	1994	167	$12,709,510
	1995	194	$15,553,056
	1996	184	$16,579,340
	1997	183	$16,859,455
	1998	184	$17,085,325
	1999	195	$19,714,454
	2000	181	$23,536,112
	2001	184	$28,377,953
	2002	34	$3,799,410
	2003	164	$18,611,299
	2004	169	$23,215,701
	2005	149	$16,446,875
	2006	90	$12,726,336
	2007	89	$11,992,690
	2008	55	$7,896,034
	2009	54	$6,860,347
	2010	59	$7,670,701
	2011	43	$5,187,581
	2012	32	$4,809,860
	2013	60	$10,086,510
	2014	47	$7,390,500
	Total	3,041	$317,338,415
Dickinson			
	1990	140	$7,176,998
	1991	118	$6,971,950
	1992	123	$7,304,040
	1993	122	$7,892,865
	1994	133	$8,276,756
	1995	122	$8,349,800
	1996	88	$7,162,400

	1997	85	$6,410,540
	1998	106	$9,015,251
	1999	103	$9,320,387
	2000	105	$9,538,754
	2001	76	$7,499,735
	2002	75	$6,392,883
	2003	103	$9,518,017
	2004	73	$7,723,188
	2005	97	$10,692,687
	2006	74	$8,345,624
	2007	69	$7,459,540
	2008	64	$5,522,821
	2009	58	$7,242,916
	2010	36	$4,590,960
	2011	39	$4,975,640
	2012	30	$3,640,167
	2013	31	$5,124,508
	2014	26	$6,778,000
	Total	2,096	$182,926,427
Menominee			
	1990	93	$3,472,757
	1991	92	$3,388,309
	1992	85	$3,297,000
	1993	97	$3,771,962
	1994	104	$4,440,704
	1995	82	$5,503,584
	1996	110	$7,717,530
	1997	104	$6,729,321
	1998	109	$7,561,489
	1999	141	$8,842,265
	2000	138	$10,880,478
	2001	124	$9,725,805
	2002	126	$10,900,227
	2003	119	$9,639,820
	2004	126	$10,089,548
	2005	116	$8,652,469
	2006	115	$8,627,708
	2007	124	$8,032,448
	2008	31	$3,841,618
	2009	21	$2,933,518
	2010	29	$2,763,068

	2011	21	$3,467,590
	2012	23	$3,915,546
	2013	21	$3,705,986
	2014	34	$7,992,679
	Total	2,185	$159,893,429
Marinette			
	1990	132	$6,519,035
	1991	153	$9,325,312
	1992	157	$10,190,386
	1993	165	$11,037,948
	1994	203	$12,126,718
	1995	185	$11,755,691
	1996	195	$16,557,680
	1997	207	$18,453,397
	1998	234	$22,316,802
	1999	273	$24,064,134
	2000	233	$21,991,108
	2001	273	$26,516,492
	2002	249	$28,439,665
	2003	261	$30,819,778
	2004	283	$31,373,380
	2005	276	$37,776,326
	2006	212	$28,188,633
	2007	206	$29,564,165
	2008	128	$23,468,770
	2009	103	$15,329,050
	2010	100	$13,788,584
	2011	80	$12,483,931
	2012	107	$21,397,348
	2013	91	$12,959,566
	2014	76	$10,945,243
	Total	4,582	$487,389,142
Combined			
	1990	473	$23,314,883
	1991	482	$26,867,151
	1992	528	$29,480,020
	1993	518	$30,915,874
	1994	607	$37,553,688
	1995	583	$41,162,131
	1996	577	$48,016,950

1997	579	$48,452,713
1998	633	$55,978,867
1999	712	$61,941,240
2000	657	$65,946,452
2001	657	$72,119,985
2002	484	$49,532,185
2003	647	$68,588,914
2004	651	$72,401,817
2005	638	$73,568,357
2006	491	$57,888,301
2007	488	$57,048,843
2008	278	$40,729,243
2009	236	$32,365,831
2010	224	$28,813,313
2011	183	$26,114,742
2012	192	$33,762,921
2013	203	$31,876,570
2014	183	$33,106,422
Total	11,904	$1,147,547,413

Source: United States Census, 2015